

Fish and Game Commission

Meeting Binder



June 20-21, 2018

Commission Meeting

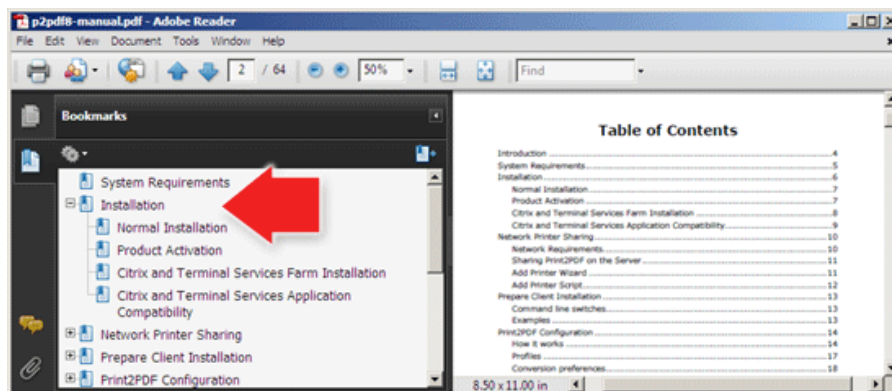
Sacramento

EASY GUIDE TO USING THE BINDER

1. Download and open the binder document using your Adobe Acrobat program/app.
2. If a bookmark panel does not automatically appear on either the top or left side of the screen, click/tap on the “bookmark symbol” located near the top left-hand corner.



3. To make adjustments to the view, use the Page Display option in the View tab. You should see something like:



4. We suggest leaving open the bookmark panel to help you move efficiently among the staff summaries and numerous supporting documents in the binder. It's helpful to think of these bookmarks as a table of contents that allows you to go to specific points in the binder without having to scroll through hundreds of pages.
5. You can resize the two panels by placing your cursor in the dark, vertical line located between the panels and using a long click /tap to move in either direction. ⌘↔
6. You may also adjust the sizing of the documents by adjusting the sizing preferences located on the Page Display icons found in the top toolbar or in the View tab.
7. Upon locating a staff summary for an agenda item, notice that you can obtain more information by clicking/tapping on any item underlined in blue.
8. Return to the staff summary by simply clicking/tapping on the item in the bookmark panel.
9. Do not hesitate to contact staff if you have any questions or would like assistance.

INTRODUCTIONS FOR FISH AND GAME COMMISSION MEETINGS

Fish and Game Commission

Eric Sklar	President (Saint Helena)
Anthony Williams	Vice-President (Huntington Beach)
Jacque Hostler-Carmesin	Member (McKinleyville)
Russell Burns	Member (Napa)
Peter Silva	Member (Jamul)

Commission Staff

Valerie Termini	Executive Director
Melissa Miller-Henson	Deputy Executive Director
Mike Yaun	Legal Counsel
Susan Ashcraft	Marine Advisor
Ari Cornman	Wildlife Advisor
Sherrie Fonbuena	Analyst
Sergey Kinchak	Analyst

California Department of Fish and Wildlife

Chuck Bonham	Director
Wendy Bogdan	General Counsel
David Bess	Deputy Director and Chief, Law Enforcement Division
Stafford Lehr	Deputy Director, Wildlife and Fisheries Division
Jordan Traverso	Deputy Director, Communications, Education and Outreach
Kari Lewis	Wildlife Branch Chief
Kevin Shaffer	Fisheries Branch Chief
Craig Shuman	Marine Region Manager

I would also like to acknowledge special guests who are present:
(i.e., elected officials, tribal chairpersons, other special guests)

OVERVIEW OF FISH AND GAME COMMISSION BUSINESS MEETINGS

- This is the 149th year of continuous operation of the California Fish and Game Commission in partnership with the California Department of Fish and Wildlife. Our goal is the preservation of our heritage and conservation of our natural resources through informed decision making. These meetings are vital in achieving that goal. In that spirit, we provide the following information to be as effective and efficient toward that end. Welcome and please let us know if you have any questions.
- We are operating under Bagley-Keene Open Meeting Act and these proceedings are being recorded and broadcast via Cal-Span.
- In the unlikely event of an emergency, please note the location of the nearest emergency exits. Additionally, the restrooms are located _____.
- Items may be heard in any order pursuant to the determination of the Commission President.
- The amount of time for each agenda item may be adjusted based on time available and the number of speakers.
- Speaker cards need to be filled out legibly and turned in to the staff before we start the agenda item. Please make sure to list the agenda items you wish to speak to on the speaker card.
- We will be calling the names of several speakers at a time so please line up behind the speakers' podium when your name is called. If you are not in the room when your name is called you may forfeit your opportunity to speak on the item.
- When you speak, please state your name and any affiliation. Please be respectful. Disruptions from the audience will not be tolerated. Time is precious so please be concise.
- To receive meeting agendas and regulatory notices about those subjects of interest to you, please visit the Commission's website, www.fgc.ca.gov, and sign up for our electronic mailing lists.
- All petitions for regulation change must be submitted in writing on the authorized petition form, FGC 1, Petition to the California Fish and Game Commission for Regulation Change, available at <http://www.fgc.ca.gov/public/information/petitionforregulatorychange.aspx>.
- **Reminder!** Please silence your mobile devices and computers to avoid interruptions.
- **Warning!** The use of a laser pointer by someone other than a speaker doing a presentation may result in arrest.

Commissioners
Eric Sklar, President
Saint Helena

Anthony C. Williams, Vice President
Huntington Beach

Jacque Hostler-Carmesin, Member
McKinleyville

Russell E. Burns, Member
Napa

Peter S. Silva, Member
Jamul

STATE OF CALIFORNIA
Edmund G. Brown Jr., Governor

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Fish and Game Commission



Wildlife Heritage and Conservation
Since 1870

MEETING AGENDA

June 20-21, 2018

Natural Resources Building – Auditorium, First Floor
1416 Ninth Street, Sacramento, CA 95814

The meeting will be live streamed at www.fgc.ca.gov/meetings/2018

NOTE: See important meeting deadlines and procedures at the end of the agenda. Unless otherwise indicated, the California Department of Fish and Wildlife is identified as Department.

DAY 1 – JUNE 20, 2018, 8:30 AM

Call to order/roll call to establish quorum

1. **Consider approving agenda and order of items**
2. **Public comment for items not on agenda**
Receive public comment regarding topics within the Commission's authority that are not included on the agenda. The Commission **may not** discuss or take action on any matter raised during this item, except to decide whether to place the matter on the agenda of a future meeting. (Sections 11125, 11125.7(a), Government Code)

CONSENT ITEMS

3. **White Seabass Fishery Management Plan**
Receive the Department's White Seabass Fishery Management Plan 2016-2017 Annual Review.
(Pursuant to Section 5.9, White Seabass Fishery Management Plan)
4. **Kelp bed lease renewal offshore San Diego**
Consider approving request from KNOCEAN Sciences, Inc. to renew the company's lease for Kelp Bed No. 3 for exclusive privilege to harvest kelp, for a period of five years.
(Pursuant to subsection 165.5(i), Title 14, CCR)
5. **Kelp harvest plan for mechanical harvest offshore San Diego**
Receive and consider approving KNOCEAN Sciences, Inc.'s five-year kelp harvest plan required for mechanical harvest of kelp.
(Pursuant to subsection 165(c)(6), Title 14, CCR)

6. **Executive Director's report**
Receive update from the Executive Director on staff and legislative information of note.
 - (A) Staff report
 - (B) Legislative update and possible action
7. **Strategic planning**
Receive update on the strategic planning effort underway.
 - (A) Process update
 - (B) Review mission and vision statements
 - (C) Discuss potential core values
8. **Prosecutor of the Year award**
Announce recipient of the Commission's annual Prosecutor of the Year award.
9. **Tribal Committee**
Discuss updates and/or recommendations from the Tribal Committee (TC). Consider approving new topics for TC to address at a future meeting.
 - (A) June 19, 2018 meeting summary
 - I. Receive and consider adopting recommendations
 - (B) Work plan development
 - I. Update on work plan and draft timeline
 - II. Discuss and consider approving new topics
 - (C) Consider adopting the co-management vision statement
10. **Marine Resources Committee**
Discuss and approve draft agenda topics for the next Marine Resources Committee (MRC) meeting. Consider approving new topics for MRC to address at a future meeting.
 - (A) Work plan development
 - I. Update on work plan and draft timeline
 - II. Discuss and consider approving new topics
11. **Commercial non-Cancer crab incidental take allowances**
Consider authorizing publication of notice of intent to add regulations specifying incidental take allowances for crabs other than the genus *Cancer* in commercial trap fisheries, following emerging fisheries determination pursuant to Section 7090, Fish and Game Code.
(Section 126.1, subsection 125.1(c)(3), and Section 126; Title 14, CCR)
12. **Tribal take in marine protected areas**
Discuss proposed changes to regulations concerning tribal take in six marine protected areas.
(Subsections 632(b)(33), 632(b)(34), 632(b)(97), 632(b)(98), 632(b)(112) and 632(b)(117); Title 14, CCR)

13. **Rockport Rocks Special Closure**
Discuss repealing regulations concerning Rockport Rocks Special Closure.
(Subsection 632(b)(17), Title 14, CCR)
14. **Ocean salmon auto-conformance**
Update on automatic conformance of state ocean salmon recreational fishing regulations to federal regulations.
(Pursuant to Section 1.95, Title 14, CCR)
15. **Meeting dates and locations for 2019**
Receive and discuss proposed meeting dates and locations for January through December of 2019.
16. **Marine Life Management Act Master Plan**
Consider adopting the “2018 Master Plan for Fisheries: A Guide for Implementation of the Marine Life Management Act”.
17. **Ocean litter prevention strategy**
Receive and consider endorsing the California Ocean Protection Council’s “2018 California Ocean Litter Prevention Strategy”.
18. **Tijuana River and Tijuana Estuary**
Informational presentation from the California State Coastal Conservancy regarding cross-border pollution challenges and actions in the Tijuana River and Tijuana Estuary.
19. **Marine petitions for regulation change**
Consider petitions for regulation change submitted by members of the public to adopt, amend, or repeal a regulation.
(Pursuant to Section 662, Title 14, CCR)
 - (A) Action on current petitions for regulation change
 - I. Petition #2018-004: Consider authorizing an experimental, small-scale, commercial squid fishery and harvest quota north of Point Arena for a five-year period
 - (B) Action on pending regulation petitions referred to staff and the Department for review – None scheduled
20. **Marine non-regulatory requests**
Consider requests for non-regulatory action.
 - (A) Action on current requests
 - (B) Action on pending requests referred to staff and the Department for review
21. **Department informational items (marine)**
The Department will highlight marine items of note since the last Commission meeting.
 - (A) Director’s report
 - (B) Law Enforcement Division

- (C) Marine Region
 - I. Update on red abalone fishery management plan timing and fishery closure sunset date
 - II. Update on sheephead fillet length study

Recess

DAY 2 – JUNE 21, 2018, 8:30 AM

Call to order/roll call to establish quorum

22. Public comment for items not on agenda

Receive public comment regarding topics within the Commission's authority that are not included on the agenda. The Commission **may not** discuss or take action on any matter raised during this item, except to decide whether to place the matter on the agenda of a future meeting. (Sections 11125, 11125.7(a), Government Code)

CONSENT ITEMS

23. Duck Stamp projects

Consider approving proposed Duck Stamp projects for Fiscal Year 2018-19.
(Pursuant to Section 3702, Fish and Game Code)

24. Initial private lands wildlife habitat enhancement and management area (PLM) license and plan

Consider approving initial PLM plan and 2018-2023 license for:
(Pursuant to Section 601, Title 14, CCR)

- (A) Lassen County
 - I. Observation Peak Ranch

25. Five-year PLM plans

Consider approving five-year PLM plans and 2018-2023 licenses for:
(Pursuant to Section 601, Title 14, CCR)

- (A) Los Angeles County
 - I. Santa Catalina Island
- (B) Modoc County
 - I. Basin View Ranch
 - II. SL Ranch
- (C) Monterey County
 - I. Alexander Ranch
 - II. Hartnell Ranch
- (D) Monterey County/San Benito County
 - I. Morisoli Ranch
- (E) San Bernardino County
 - I. Big Morongo Springs Ranch

- (F) San Luis Obispo County
 - I. Carrizo Ranch
- (G) Shasta County
 - I. Black Ranch
 - II. Hathaway Oak Run Ranch
- (H) Yuba County
 - I. Sugarloaf-Bangor Ranch

26. **Annual PLM plans**

Consider approving annual PLM plans and 2018-2019 licenses for:
(Pursuant to Section 601, Title 14, CCR)

- (A) Butte County
 - I. Deseret Farms - Ballard Unit
 - II. Deseret Farms - Wilson Unit
 - III. Llano Seco Rancho
 - IV. Soper-Wheeler
- (B) Butte County/Tehama County
 - I. Rock Creek
- (C) Calaveras County
 - I. Ordway Ranch
- (D) Glenn County
 - I. Bird Haven Ranch
 - I. Spurlock Ranch
- (E) Kern County/Los Angeles County
 - I. Tejon Ranch
- (F) Lassen County
 - I. Ash Valley Ranch
 - II. Clarks Valley Ranch
 - III. Dixie Valley Ranch
 - IV. Five Dot Ranch - Avila
 - V. Five Dot Ranch - Horse Lake
 - VI. Five Dot Ranch - School Section
 - VII. Five Dot Ranch - Tunnel Springs
 - VIII. Five Dot Ranch - Willow Creek
 - IX. Kramer Ranch PLM
 - X. Mendiboure Cold Springs Ranch
 - XI. Mendiboure Ranch
 - XII. Red Rock Ranch
 - XIII. Walton Homestead Family, LLC
- (G) Mendocino County
 - I. Ackerman-South Daugherty WMA
 - II. Capistran Ranch
 - III. R-R Ranch
 - IV. Schneider Ranch
- (H) Modoc County
 - I. Lookout Ranch

- (I) Monterey County
 - I. Bardin Ranch
 - II. Sky Rose Ranch, LLC
- (J) Shasta County
 - I. Clover Creek Ranch Plm
 - II. JS Ranch
 - III. Rickert Ranch
 - IV. Triple B Ranch
- (K) Siskiyou County
 - I. Long Prairie Farms
 - II. Pondosa
 - III. Red Rock Valley Farms
- (L) Tehama County
 - I. Big Bluff Ranch
 - II. Corning Land and Cattle Company
 - III. El Rancho Rio Frio
 - IV. Little Dry Creek Ranch
 - V. Salt Creek Ranch

27. **Foothill yellow-legged frog**

Receive the Department's request for a six-month extension of time to submit its status review report on the petition to list foothill yellow-legged frog (*Rana boylei*) as an endangered or threatened species under the California Endangered Species Act (CESA).

(Pursuant to Section 2074.6, Fish and Game Code)

28. **Humboldt marten**

Receive the Department's one-year status review report on the petition to list Humboldt marten (*Martes caurina humboldtensis*) as an endangered species under CESA.

(Pursuant to Section 2075, Fish and Game Code)

29. **Wildlife Resources Committee**

Discuss any updates from the Wildlife Resources Committee (WRC). Consider approving new topics for WRC to address at a future meeting.

- (A) Work plan development
 - I. Update on work plan and draft timeline
 - II. Discuss and consider approving new topics

30. **Sage grouse preference points and draw**

Discuss proposed regulations concerning sage grouse preferential points and draw. (Section 716; subsections 300(a)(1)(D)5., 300(a)(1)(D)6., 300(a)(2)(D)3., and 300(a)(3)(F)3.; Title 14, CCR)

31. **Resident upland game bird**

Consider adopting proposed changes to resident upland game bird hunting regulations. (Subsection 300(a)(1)(D)4.; Title 14, CCR)

32. **Chronic wasting disease**
Department presentation on chronic wasting disease in cervids.
33. **Wildlife and inland fisheries petitions for regulation change**
Consider requests submitted by members of the public to adopt, amend, or repeal a regulation.
(Pursuant to Section 662, Title 14, CCR)
- (A) Action on current petitions for regulation change
 - I. Petition #2018-002: Consider preference points on elk type, eliminate “either-sex designation,” and require tags based on gender
 - II. Petition #2018-003: Consider including Big Sandy Wildlife Area as an area for training hunting dogs
 - (B) Action on pending regulation petitions referred to staff and the Department for review
 - I. Petition #2015-008: Consider repealing hunting of American badger and gray fox
 - II. Petition #2017-012: Consider increasing bag limit and reducing size limit for striped bass in rivers and ocean waters south of the Golden Gate Bridge
34. **Wildlife and inland fisheries non-regulatory requests**
Consider requests for non-regulatory action.
- (A) Action on current requests
 - (B) Action on pending requests referred to staff and the Department for review
35. **Department informational items (wildlife and inland fisheries)**
The Department will highlight wildlife and inland fisheries items of note since the last Commission meeting.
- (A) Director’s report
 - I. Update on tricolored blackbird population estimates and progress with safe harbor agreements
 - (B) Wildlife and Fisheries Division, and Ecosystem Conservation Division
 - I. Update on efforts to eradicate nutria in California
36. **Commission administrative items**
Discuss and consider action on the upcoming meeting agenda items and rulemaking timetable.
- (A) Next meeting – August 22-23, 2018 in Fortuna
 - (B) Rulemaking timetable updates
 - (C) New business

Adjourn

EXECUTIVE SESSION

(Not Open to Public)

At a convenient time during the regular agenda of the meeting listed above, the Commission will recess from the public portion of the agenda and conduct a closed session on the agenda items below. The Commission is authorized to discuss these matters in a closed session pursuant to Government Code Section 11126, subdivisions (a)(1), (c)(3), and (e)(1), and Fish and Game Code Section 309. After closed session, the Commission will reconvene in public session, which may include announcements about acts taken during closed session.

(A) Pending litigation to which the Commission is a Party

- I. Keith Robert Walker v. Kamala Harris et al. (suction dredging)
- II. Dennis Sturgell v. California Fish and Game Commission, California Department of Fish and Wildlife, and Office of Administrative Hearings (revocation of Dungeness crab vessel permit No. CT0544-T1)
- III. Kele Young v. California Fish and Game Commission, et al. (restricted species inspection fee waiver)
- IV. California Cattlemen's Association and California Farm Bureau Federation v. California Fish and Game Commission (gray wolf listing)
- V. Tri-State Crab Producers Assoc. v. California Department of Fish and Wildlife, California Fish and Game Commission (Dungeness Crab "Fair Start" provision in Section 8279.1 of the Fish and Game Code)
- VI. Center for Biological Diversity and Project Coyote/Earth Island Institute v. California Fish and Game Commission and California Department of Fish and Wildlife (trapping fees)
- VII. Public Interest Coalition v. California Fish and Game Commission (CEQA compliance during adoption of dog collar regulation)
- VIII. Pacific Star Sportfishing, Inc. v. California Fish and Game Commission, et al. (suspension of commercial vessel fishing permit)

(B) Possible litigation involving the Commission

(C) Staffing

(D) Deliberation and action on license and permit items

- I. Consider the Proposed Decision In the Matter of the Accusation Against Aaron Lance Newman.

California Fish and Game Commission 2018 Meeting Schedule

Note: As meeting dates and locations can change, please visit www.fgc.ca.gov for the most current list of meeting dates and locations.

Meeting Date	Commission Meeting	Committee Meeting	Other Meetings
June 27			Fishing Communities Public Meeting Redwood Coast Senior Center 490 N Harold Street Fort Bragg, CA 95437
July 17		Marine Resources California Department of Parks and Recreation Orange Coast District Office Training Room 3030 Avenida del Presidente San Clemente, CA 92672	
August 22-23	River Lodge Conference Center 1800 Riverwalk Drive Fortuna, CA 95540		
September 20		Wildlife Resources Resources Building Auditorium, First Floor 1416 Ninth Street Sacramento, CA 95814	
October 16		Tribal Radisson Fresno Conference Center 1055 Van Ness Avenue Fresno, CA 93721	
October 17-18	Radisson Fresno Conference Center 1055 Van Ness Avenue Fresno, CA 93721		
November 14		Marine Resources Resources Building Auditorium, First Floor 1416 Ninth Street Sacramento, CA 95814	
December 12-13	QLN Conference Center 1938 Avenida del Oro Oceanside, CA 92056		

OTHER 2018 MEETINGS OF INTEREST

Association of Fish and Wildlife Agencies

- September 9-12, Tampa, FL

Pacific Fishery Management Council

- September 5-12, Seattle, WA
- November 1-8, San Diego, CA

Pacific Flyway Council

- September 28, Flagstaff, AZ

Western Association of Fish and Wildlife Agencies

- July 12-17, Eugene, OR

Wildlife Conservation Board

- August 30, Sacramento, CA
- November 15, Sacramento, CA

IMPORTANT COMMISSION MEETING PROCEDURES INFORMATION

WELCOME TO A MEETING OF THE CALIFORNIA FISH AND GAME COMMISSION

This is the 149th year of operation of the Commission in partnership with the California Department of Fish and Wildlife. Our goal is the preservation of our heritage and conservation of our natural resources through informed decision making; Commission meetings are vital in achieving that goal. In that spirit, we provide the following information to be as effective and efficient toward that end. Welcome and please let us know if you have any questions.

PERSONS WITH DISABILITIES

Persons with disabilities needing reasonable accommodation to participate in public meetings or other Commission activities are invited to contact the Reasonable Accommodation Coordinator at (916) 651-1214. Requests for facility and/or meeting accessibility should be received at least 10 working days prior to the meeting to ensure the request can be accommodated.

STAY INFORMED

To receive meeting agendas and regulatory notices about those subjects of interest to you, please visit the Commission's website, www.fgc.ca.gov, to sign up on our electronic mailing lists.

SUBMITTING WRITTEN COMMENTS

The public is encouraged to comment on any agenda item. Submit written comments by one of the following methods: **E-mail** to fgc@fgc.ca.gov; **mail** to California Fish and Game Commission, P.O. Box 944209, Sacramento, CA 94244-2090; **deliver** to California Fish and Game Commission, 1416 Ninth Street, Room 1320, Sacramento, CA 95814; or **hand-deliver to a Commission meeting**. Materials provided to the Commission may be made available to the general public.

COMMENT DEADLINES

The **Written Comment Deadline** for this meeting is **5:00 p.m. on June 7, 2018**. Written comments received at the Commission office by this deadline will be made available to Commissioners prior to the meeting.

The **Late Comment Deadline** for this meeting is **noon on June 15, 2018**. Comments received by this deadline will be marked "late" and made available to Commissioners at the meeting.

After these deadlines, written comments may be delivered in person to the meeting – Please bring ten (10) copies of written comments to the meeting.

NON-REGULATORY REQUESTS

All non-regulatory requests will follow a two-meeting cycle to ensure proper review and thorough consideration of each item. All requests submitted by the **Late Comment Deadline** (or heard during public comment at the meeting) will be scheduled for receipt at this meeting, and scheduled for consideration at the next business meeting.

PETITIONS FOR REGULATION CHANGE

Any person requesting that the Commission adopt, amend, or repeal a regulation must complete and submit form FGC 1, titled, "Petition to the California Fish and Game Commission for Regulation Change" (as required by Section 662, Title 14, CCR). The form is available at

<http://www.fgc.ca.gov/public/information/petitionforregulatorychange.aspx>. To be received by the Commission at this meeting, petition forms must have been delivered by the **Late Comment Deadline** (or delivered during public comment at the meeting). Petitions received at this meeting will be scheduled for consideration at the next business meeting, unless the petition is rejected under staff review pursuant to subsection 662(b), Title 14, CCR.

VISUAL PRESENTATIONS/MATERIALS

All electronic presentations must be submitted by the **Late Comment Deadline** and approved by the Commission executive director before the meeting.

1. Electronic presentations must be provided by email to fgc@fgc.ca.gov.
2. All electronic formats must be Windows PC compatible.
3. It is recommended that a print copy of any electronic presentation be submitted in case of technical difficulties.
4. A data projector, laptop and presentation mouse will be available for use at the meeting.

CONSENT CALENDAR

A summary of all items will be available for review at the meeting. Items on the consent calendar are generally non-controversial items for which no opposition has been received and will be voted upon under single action without discussion. Any item may be removed from the consent calendar by the Commission upon request of a Commissioner, the Department, or member of the public who wishes to speak to that item, to allow for discussion and separate action.

LASER POINTERS may only be used by a speaker during a presentation; use at any other time may result in arrest.

SPEAKING AT THE MEETING

To speak on an agenda item, please complete a "Speaker Card" and give it to the designated staff member before the agenda item is announced. Cards will be available near the entrance of the meeting room. Only one speaker card is necessary for speaking to multiple items.

1. Speakers will be called in groups; please line up when your name is called.
2. When addressing the Commission, give your name and the name of any organization you represent, and provide your comments on the item under consideration.
3. If there are several speakers with the same concerns, please appoint a spokesperson and avoid repetitive testimony.
4. The presiding commissioner will allot between one and three minutes per speaker per agenda item, subject to the following exceptions:
 - a. The presiding commissioner may allow up to five minutes to an individual speaker if a minimum of three individuals who are present when the agenda item is called have ceded their time to the designated spokesperson, and the individuals ceding time forfeit their right to speak to the agenda item.
 - b. Individuals may receive advance approval for additional time to speak if requests for additional time to speak are received by email or delivery to the Commission office by the **Late Comment Deadline**. The president or designee will approve or deny the

request no later than 5:00 p.m. two days prior to the meeting.

- c. An individual requiring an interpreter is entitled to at least twice the allotted time pursuant to Government Code Section 11125.7(c).
 - d. An individual may receive additional time to speak to an agenda item at the request of any commissioner.
5. If you are presenting handouts/written material to the Commission at the meeting, please provide ten (10) copies to the designated staff member just prior to speaking.

STAFF SUMMARY FOR JUNE 20-21, 2018

EXECUTIVE SESSION**Today's Item****Information** ☐**Action** ☒

Executive session will include four standing topics:

- (A) Pending litigation to which FGC is a party
- (B) Possible litigation involving FGC
- (C) Staffing
- (D) Deliberation and action on license and permit items

Summary of Previous/Future Actions (N/A)**Background**

During the public portion of its meeting, FGC will call a recess and reconvene in a closed session pursuant to the authority of Government Code subsections 11126(a)(1), (c)(3), and (e)(1), and Section 309 of the Fish and Game Code. FGC will address the following items in closed session:

- (A) Pending litigation to which FGC is a party
See agenda for a complete list of pending civil litigation to which FGC is a party.
- (B) Possible litigation involving FGC
None to report at the time the meeting binder was prepared.
- (C) Staffing
The executive director recently hired a new staff member serving as wildlife advisor, who started on May 30, 2018. The executive director recently hired a new staff member for the seasonal clerk position, who started on Jun 7, 2018. Effective Jun 20, one of FGC's associate governmental program analyst positions will become vacant; the position will be advertised by the time of this meeting. The legal/regulatory clerk position is currently vacant.
- (D) Deliberation and action on license and permit items
DFW filed an accusation with FGC against Aaron Lance Newman regarding permanent revocation of Mr. Newman's hunting and sport fishing privileges. Mr. Newman filed a notice of defense. FGC staff referred the matter to the Office of Administrative Hearings (OAH); OAH conducted a hearing, and submitted a proposed decision for FGC consideration (Exhibit D1).

Mr. Newman requested that FGC delay this decision until its Aug 22-23, 2018 meeting; however, Government Code Section 11517, subdivision (c) requires FGC to reach a decision on the matter within 100 days of the receipt of the proposed decision; failure to do so within that time results in the proposed decision being deemed adopted by FGC. In this case, the 100 days expires on Aug 18, 2018.

STAFF SUMMARY FOR JUNE 20-21, 2018

Recommendation

- (D) **FGC staff:** Adopt the proposed decision in the adjudicatory matter of the accusation against Aaron Lance Newman that provides for permanent revocation of hunting and sport fishing privileges.

Exhibits

D1. Proposed decision, filed May 9, 2018

Motion/Direction

- (D) Moved by _____ and seconded by _____ that the Commission adopts the proposed decision in the matter of the accusation against Aaron Lance Newman.

STAFF SUMMARY FOR JUNE 20-21, 2018

2. PUBLIC COMMENT (DAY 1)**Today's Item****Information** ☒**Action** ☐

Receipt of public comments, petitions for regulation change, and requests for non-regulatory actions for items not on the agenda.

Summary of Previous/Future Actions

- **Today's receipt of requests and comments** **Jun 20-21, 2018; Sacramento**
- Direction to grant, deny or refer **Aug 22-23, 2018; Fortuna**

Background

This agenda item is primarily to provide the public an opportunity to address FGC on topics not on the agenda. Staff also includes written materials and comments received prior to the meeting as exhibits in the meeting binder (if received by written comment deadline), or as late comments at the meeting (if received by late comment deadline), for official FGC "receipt."

Public comments are generally categorized into three types under public forum: (1) petitions for regulation change; (2) requests for non-regulatory action; and (3) informational-only comments. Under the Bagley-Keene Open Meeting Act, FGC cannot discuss any matter not included on the agenda, other than to schedule issues raised by the public for consideration at future meetings. Thus, petitions for regulation change and non-regulatory requests generally follow a two-meeting cycle (receipt and direction); FGC will determine the outcome of the petitions for regulation change and non-regulatory requests received at today's meeting at the next in-person FGC meeting following staff evaluation.

As required by the Administrative Procedure Act, petitions for regulation change will be either denied or granted and notice made of that determination. Action on petitions received at previous meetings is scheduled under a separate agenda item titled "Petitions for regulation change." Action on non-regulatory requests received at previous meetings is scheduled under a separate agenda item titled "Non-regulatory requests."

Significant Public Comments

1. Petitions for regulation change are summarized in Exhibit 1, and the original petitions are provided as exhibits 2 and 3.
2. Informational comments are provided in exhibits 4-12.

Recommendation

Consider whether any new future agenda items are needed to address issues that are raised during public comment and are within FGC's authority.

Exhibits

1. Summary table of new petitions for regulation change received by Jun 7 at 5:00 p.m.
2. Petition 2018-005: Bicycles in wildlife area, received May 8, 2018

STAFF SUMMARY FOR JUNE 20-21, 2018

3. Petition 2018-008: Add section of Rush Creek (Mono County) to fishing regulations, received Jun 5, 2018
4. Email from Eric Mills, Action for Animals, providing a link to an article regarding the Arkansas Game and Fish Commission agreeing to consider ending unlimited commercial take of wild freshwater turtles, received Apr 28, 2018
5. Letter from Dennis Fox regarding apex predators, with an attached article describing a mouse infestation in Kern County during the 1920s, received May 3, 2018
6. Email from Patricia McPherson providing a link to an article regarding a possible crime ring operating out of Ballona Wetlands, received May 3, 2018
7. Email from Eric Mills, Action for Animals, providing a link to an article regarding the release of American bullfrogs in Singapore, received May 4, 2018
8. Email from Brooks Taylor expressing opinions regarding big game tag allocation in California, received May 8, 2018
9. Email from Eric Mills, Action for Animals, providing a link to an article regarding a pathogenic chytrid fungus killing frogs globally, received May 10, 2018
10. Letter from Antonia Dobrec, President of Ocean West Homeowners Board of Directors, addressed to the Chairman/CEO of Dollar General, with copies provided to various entities, including the Commission, expressing opposition to a store opening in McKinleyville, received May 14, 2018
11. Email from Joshua Russo reporting on the Waterman's Alliance May 26-27 purple urchin removal event, received May 28, 2018
12. Letter from Santa Barbara Sea Ranch with attached application for lease of state water bottoms for aquaculture, received Jun 5, 2018

Motion/Direction (N/A)

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3. WHITE SEABASS (CONSENT)**Today's Item**Information ☐Action ☒

Receive DFW's *White Seabass Fishery Management Plan 2016-2017 Annual Review* report.

Summary of Previous/Future Actions

- Adopted White Seabass Fishery Management Plan 2002
- Received annual reviews 2003-2017
- **Today receive 2016-2017 annual review Jun 20-21, 2018; Sacramento**

Background

White seabass is managed under the *White Seabass Fishery Management Plan* (FMP) adopted by FGC in 2002, which requires annual monitoring and review of the commercial and recreational fisheries and resource. The annual review includes fishery-dependent and fishery-independent data, if available, documented changes within the social and economic structure of industries that utilize the white seabass resource within California, information on the harvest of white seabass in Mexican waters, and other relevant data. The data is used to evaluate the status of the resource relative to criteria ("points of concern") adopted by FGC to help determine when management measures are needed to address resource issues.

The White Seabass Scientific and Constituent Advisory Panel (WSSCAP) was established to assist DFW and FGC with reviewing annual fishery assessments, as well as management recommendations and plan amendments when needed. DFW met with WSSCAP in Apr 2018 to review fishery information for the 2016-2017 season (Sep 1 to Aug 31) and consider whether current management measures are providing adequate protection for the white seabass resource. Based on review of the points of concern, DFW and WSSCAP concurred that none of the points of concern were met and, thus, no criteria for additional management measures were met in 2016-2017.

Landings in the recreational fishery increased for a second year in 2016-2017; however, consistent with the trend of several years of decreases in commercial landings of white seabass, there were additional declines in commercial landings and vessel participation in 2016-2017. An existing or imminent overfishing condition was not indicated from the scientific information presently available.

Today DFW is providing a transmittal memo and its annual review (exhibits 1-2) to support its recommendation that no changes be made to current management of the commercial and recreational white seabass fisheries.

Significant Public Comments (N/A)**Recommendation**

FGC staff: Staff concurs with DFW review and findings, and recommends that FGC conclude its review without any changes the the fisheries management or to the FMP under a motion to adopt the consent calendar.

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DFW: DFW recommends no changes to current recreational and commercial white seabass fisheries management or to the FMP.

Exhibits

1. DFW memo, dated May 22, 2018
2. DFW report, *White Seabass Fishery Management Plan 2016-2017 Annual Review*, dated Apr 2018

Motion/Direction

Moved by _____ and seconded by _____ that the Commission adopts the consent calendar, items 3-5.

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4. KNOCEAN SCIENCES KELP HARVEST LEASE (CONSENT)**Today's Item****Information** ☐**Action** ☒

Approve KNOCEAN Sciences, Inc.'s (KNOCEAN) request to renew the company's kelp harvesting lease for Administrative Kelp Bed (Kelp Bed) No. 3, for a period of five years.

Summary of Previous/Future Actions

- FGC awarded lease of Kelp Bed No. 3 May 4-5, 2011; Ontario
- **Today approve lease renewal Jun 20-21, 2018; Sacramento**

Background

FGC has authority to lease to any person the exclusive privilege to harvest kelp in any designated kelp bed defined in regulation under terms agreed upon between FGC and the lessee (Fish and Game Code Section 6700, and Title 14 Section 165.5). In Apr 2012, FGC awarded KNOCEAN a five-year lease for Kelp Bed No. 3, covering approximately 2.6 square miles in San Diego County, for the exclusive harvest of giant kelp (*Macrocystis pyrifera*) to convert into products for uses such as bio-marine based nutraceuticals, cosmeceuticals, and food ingredients. The lease identified a term commencing on Apr 8, 2013, and expiring Apr 7, 2018; however, the lease was not executed until Jul 11, 2013 (Exhibit 1) and, therefore, does not expire until Jul 10, 2018.

On Nov 27, 2017, KNOCEAN requested a lease renewal of Kelp Bed No. 3 under the same terms and conditions as the current lease, and provided a lease development plan; at DFW's request, a revised request was submitted on Mar 15, 2018 (Exhibit 2) to clarify its royalty bid of \$3.00 per wet ton and to provide a kelp harvest plan (scheduled for approval under Agenda Item 5, this meeting). KNOCEAN requested a lease term of 20 years; however, in recent lease renewals, FGC has determined that a five-year renewal period allows for opportunity to review lease terms, including royalty rates.

DFW reviewed the application, financial capabilities, and harvest plan, and has determined that KNOCEAN has met the standards necessary for obtaining a lease, as set forth in Title 14 Section 165.5(b) (Exhibit 3). After FGC approval, kelp harvest leases are subject to final review and approval by the California Department of General Services.

Significant Public Comments (N/A)**Recommendation**

FGC staff: Under a motion to adopt the consent calendar, authorize execution of a lease amendment, to commence upon execution by all parties, renewing the existing kelp lease as recommended by DFW.

DFW: Approve renewal of the lease granting the exclusive privilege to harvest kelp at Kelp Bed No. 3 for a period of five years (Exhibit 3).

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Exhibits

1. KNOCEAN Sciences, Inc. lease for Kelp Bed No. 3, executed Jul 11, 2013
2. Email from Tony Kopp, KNOCEAN Sciences, Inc., with revised request, received Mar 15, 2018, and original request and development plan, received Nov 27, 2017
3. DFW memo, received Jun 12, 2018

Motion/Direction

Moved by _____ and seconded by _____ that the Commission adopts the consent calendar, items 3-5.

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5. KNOCEAN SCIENCES KELP HARVEST PLAN (CONSENT)**Today's Item**Information ☐Action ☒

Consider approving KNOCEAN Sciences, Inc.'s (KNOCEAN's) updated, five-year, kelp harvest plan required for mechanical harvest of kelp.

Summary of Previous/Future Actions

- FGC adopted new kelp regulations Nov 6, 2013; La Quinta
- FGC received draft kelp harvest plan Apr 18-19, 2018; Ventura
- **Today approve kelp harvest plan Jun 20-21, 2018; Sacramento**

Background

Under Agenda Item 4 (this meeting), FGC is scheduled to approve a request from KNOCEAN, received at the Apr 2018 FGC meeting, to renew its kelp harvest lease for Administrative Kelp Bed No. 3 in San Diego (see Exhibit 2 of Agenda Item 4). KNOCEAN wishes to use a mechanical harvester as its primary kelp harvesting method.

New kelp regulations adopted by FGC in Nov 2013 require FGC-approved kelp harvest plans for all mechanical kelp harvest of giant kelp (*Macrocystis pyrifera*) (subsections 165(c)(6) and 165.5(b)(2), Title 14). In accordance with the regulations, KNOCEAN submitted a draft kelp harvest plan, which covers the five-year lease renewal period (Exhibit 1).

DFW has reviewed the draft updated plan, determined that it meets all requirements, and recommends approval (Exhibit 2).

Significant Public Comments (N/A)**Recommendation**

FGC staff: Under a motion to adopt the consent calendar, approve this item as recommended by DFW.

DFW: Approve the kelp harvest plan as proposed for a five-year period.

Exhibits

1. Kelp harvest plan for KNOCEAN Sciences, Inc., received Mar 15, 2018
2. DFW memo, received Jun 12, 2018 (see Exhibit 3 under Agenda Item 4)

Motion/Direction

Moved by _____ and seconded by _____ that the Commission adopts the consent calendar, items 3-5.

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6A. EXECUTIVE DIRECTOR'S REPORT – STAFF REPORT**Today's Item**Information ☒Action ☐

Receive the staff report, including staffing update and staff time allocations.

Summary of Previous/Future Actions (N/A)**Background**

Staffing update: Hiring of wildlife advisor; continued onboarding and training of newer staff members; seasonal clerk recruitment advances; regulatory analyst vacancy.

- After a significant recruitment, we are pleased to welcome Ari Cornman as our new wildlife advisor. Ari brings a wealth of experience, most recently as a senior wildlife biologist for the Little Band of Ottawa Indians in Manistee, Michigan. Prior to Michigan, he was a biologist for many years with the US Fish and Wildlife Service with a diverse background in field work and policy development. Since starting work here on May 30, Ari is quickly becoming familiar with FGC processes, work products, and subject-matter.
- Staff held multiple interviews for the seasonal clerk position and extended an offer to Antoinette Bottoms-Perez. Antoinette's extensive administrative and customer service background, and her positive and warm personality, will make a positive impact on FGC operations. Her first day was Jun 7.
- Regrettably, one of our regulatory analysts, Rick Pimentel, has accepted a position with another state agency. His last day with FGC is Jun 19. He is a productive and valuable staff member and will be missed. Staff has completed the recruitment package for the associate governmental program analyst position, with applications due Jun 28, 2018.
- Recent legislation has created the need to amend Title 14 with new Fish and Game Code citations; as this project will generate significant workload, a retired annuitant with a legal or regulatory background is needed to provide project support. Management has been focused on completing onboarding for our three most recent recruits, and hiring for the wildlife advisor and seasonal clerk positions. In the meantime, FGC staff is addressing updates to Title 14 on a regulation-by-regulation basis with individual rulemaking files.

Staff time allocations: In order to illustrate where commission staff spends its time, Exhibit 1 highlights the significant categories for the previous two months. As expected, *Commission Meetings* made up a full quarter of staff time in Apr, while this number was only 10% in May. We continue to see a higher than normal allocation to *Administration and Leave*, which is largely due to training new staff and mandatory leave for individuals to reduce excessive leave balances. As we reach full staffing levels and new staff is trained, we expect to see a drop in *Administration*, though higher levels of *Leave* will continue for at least the next year.

Significant Public Comments (N/A)**Recommendation (N/A)**

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Exhibits

1. "Staff Report on Time Allocation and Activities," dated Jun 7, 2018

Motion/Direction (N/A)

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6B. EXECUTIVE DIRECTORS REPORT – LEGISLATIVE UPDATE**Today's Item****Information** ☒**Action** ☒

Review and discuss legislation of interest, and provide staff direction.

Summary of Previous/Future Actions (N/A)**California Legislative Calendar 2018**

- Jun 29 - Last day for policy committees to hear and report fiscal bills.
- Jul 6 - Last day for policy committees to meet. Summer Recess begins upon adjournment.
- Aug 6 - Legislature reconvenes from Summer Recess.
- Aug 17 - Last day for fiscal committees to meet and report bills.
- Aug 20-31 - Floor session only.
- Aug 24 - Last day to amend bills on the floor.
- Aug 31 - Last day for legislature to pass bills. Interim Recess begins upon adjournment.
- Sept 30 - Last day for Governor to sign or veto bill.

Background

FGC staff has prepared a list of legislation that may affect FGC's resources and workload (see below); each description includes a brief synopsis and current bill status. This is an opportunity for FGC to provide direction to staff concerning proposed legislation. At any meeting, FGC may direct staff to provide information to or share concerns with bill authors. FGC members also have the option to take positions on bills at the same meeting an update is provided.

A. Federal Legislation

Below is a list of federal bills that FGC has previously shown an interest in, or may be of interest, and the current status as of June 5, 2018.

- *S. 793 Shark Finning – Shark Fin Trade Elimination Act of 2017*: Sen. Cory Booker (D-NJ). Status: Senate - 05/18/2017 Committee on Commerce, Science, and Transportation. Ordered to be reported with an amendment in the nature of a substitute favorably. Summary: This bill makes it illegal to possess, buy, sell, or transport shark fins or any product containing shark fins. A person may possess a shark fin that was lawfully taken consistent with a license or permit under certain circumstances. Penalties are imposed for violations under the Magnuson-Stevens Fishery Conservation and Management Act. The maximum civil penalty for each violation shall be \$100,000, or the fair market value of the shark fins involved, whichever is greater.
- *H.R. 1456 – Shark Fin Sales Elimination Act of 2017*: Rep. Edward Royce (R-CA/39th). Status: Introduced 03/09/2017; Referred to House Committee on Natural Resources; 3/20/17 Referred to the Subcommittee on Water, Power and Oceans. Summary: This bill makes it illegal to possess, buy, or sell shark fins or any product containing shark

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fins. A person may possess a shark fin that was lawfully taken consistent with a license or permit under certain circumstances. Penalties are imposed for violations under the Magnuson Stevens Fishery Conservation and Management Act.

- *H.R. 200 – MSA Reauthorization – Strengthening Fishing Communities and Increasing Flexibility in Fisheries Management Act*: Rep. Don Young (R-AK/At Large). Status: Introduced 01/03/2017; Referred to House Committee on Natural Resources; Referred to the Subcommittee on Water, Power and Oceans; Subcommittee Hearing Held on 9/26/17. 12/13/2017 Ordered to be Reported (Amended) by the Yeas and Nays: 23 – 17. Summary: To amend the Magnuson-Stevens Fishery Conservation and Management Act (MSA) to provide flexibility for fishery managers and stability for fishermen, and for other purposes. This bill revises and reauthorizes MSA through Fiscal Year 2022. Revisions are made to: (1) requirements for fishery management plans for overfished fisheries; and (2) catch limit requirements, including by authorizing regional fishery management councils to consider changes in an ecosystem and the economic needs of the fishing communities when establishing the limits. To distinguish between fish that are depleted due to fishing and those that are depleted for other reasons, the term "depleted" replaces the term "overfished" throughout MSA. Fishery impact statements must analyze the impacts of proposed actions in fishery management plans on the quality of the human environment. The National Oceanic and Atmospheric Administration (NOAA) must publish a plan for implementing the Cooperative Research and Management Program. NOAA must develop a plan to conduct stock assessments for all fish for which a fishery management plan is in effect under this bill. Additionally, NOAA must develop guidelines that will incorporate data from private entities into fishery management plans.

B. State Legislation

- *AB 1337 (Patterson) Fish and Game Commission: meetings and hearings: live broadcast*. Introduced: 2/17/2017 Status: Vetoed by the Governor. Consideration of Governor's veto pending. Summary: Would require the Fish and Game Commission to provide a live video broadcast on its Internet Web site of every commission meeting or hearing that is open and public and every meeting or hearing conducted by the marine resources committee, wildlife resources committee, or tribal committee that is open and public.
- *AB 1884 (Calderon) Food facilities: Single-use plastic straws*. Status: In Senate. Read first time. To Com. on RLS. for assignment. Summary: Requires specified restaurants to provide plastic straws only upon request. Specifically, this bill: 1) Prohibits a food facility, as specified, where food may be consumed on the premises from providing single-use plastic straws to consumers unless requested by the consumer. 2) Specifies that the first and second violation shall result in a warning, and any subsequent violations shall constitute an infraction punishable by a fine of \$25 for each day of the violation, not to exceed \$300 annually. 3) Specifies that no reimbursement is required for costs incurred by a local agency or school district because this bill creates a new crime or infraction.
- *AB 2369 (Fletcher) Fishing: Marine protected areas: violations*. Status: 6/4/2018-From committee chair, with author's amendments: Amend, and re-refer to committee. Read second time, amended, and re-referred to Com. on N.R. & W. Summary: This bill would

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increase the penalty for unlawfully taking a fish for commercial purposes within a marine protected area to the penalties established for the above-described poaching provision for a person who holds a commercial fishing license or a commercial passenger fishing boat license. The bill would also require a person's commercial fishing license or commercial passenger fishing boat license, as applicable, to be revoked if the person is convicted of a 2nd violation of this provision. By changing the penalty for this crime, this bill would impose a state-mandated local program.

- *AB 2805 (Bigalow) Wild pigs.* Status: 5/31/2018-In Senate. Read first time. To Com. on RLS. for assignment. Summary: This bill would revise multiple code provisions applicable to wild pigs to, among other things, change the designation, expand the definition, switch from wild pig tags to a wild pig validation, and eliminate the requirement to obtain a depredation permit and instead add provisions for take pursuant to regulations adopted by FGC. The bill also authorizes California Department of Food and Agriculture to adopt regulations to require marking of swine that meet the new definition of a wild pig. Because a violation of the new provisions would be a crime, this bill would impose a state-mandated local program.
- *SB 187 (Berryhill) Sport fishing licenses: duration.* Introduced: 1/25/2017. 9/1/2017-Failed Deadline pursuant to Rule 61(a)(12). (Last location was APPR. SUSPENSE FILE on 7/19/2017)(May be acted upon Jan 2018). Summary: Would require a resident or a nonresident, 16 years of age or older, upon payment of a specified fee, to be issued a sport fishing license for the period of 12 consecutive months beginning on the date specified on the license, instead of for the period of a calendar year, or the remainder thereof. The bill would require the commission to include, among the costs required to be recovered by an adjustment of the fee amount, transition costs related to the new licensing period.
- *SB 234 (Berryhill) Fishing: local regulation: report.* Status: 9/1/2017-Failed Deadline pursuant to Rule 61(a)(12). (Last location was APPR. SUSPENSE FILE on 7/19/2017)(May be acted upon Jan 2018). Summary: Would require the Fish and Game Commission to undertake a survey and evaluation of local ordinances that regulate fishing and to submit the survey and evaluation to the Legislature in a report by Dec 31, 2018.
- *SB 1017 (Allen) Commercial fishing: drift gill net shark and swordfish fishery (2017-2018) Drift Gillnets:* Status: 5/31/2018-In Assembly. Read first time. Held at Desk. Summary: SB 1017 establishes policies for phasing out the drift gill net shark and swordfish fishery, including a voluntary fishing permit buy-out program, a significant increase in landing fees, and hard caps on take of each species.
- *SB 1309 (McGuire) Fishing: Fisheries omnibus bill of 2018.* Introduced: 2/16/2017. Last Amend: 4/9/2018. Status: 5/31/2018-In Assembly. Read first time. Held at Desk. Summary: Makes Salmon Stamp revisions. Permits taking of anchovies in Humboldt Bay between May 1 and Dec 1 without restrictions on area or use, with a 60-ton limit on the total per year. Would delete provisions regarding inspection and notification of bait operations. Authorizes the director, on an emergency basis, to close D. crab season in any waters due to whale entanglements, or reopen season in those waters if the risk of whale entanglements has abated. Authorizes the commission to consider a request to

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transfer a California halibut trawl vessel permit to another vessel, as provided. Designates two additional areas of ocean waters as California halibut trawl grounds, one in Monterey Bay, and one offshore of Port San Luis. Trawl gear may only be deployed in those areas between sunrise and sunset. Requires the California Department of Fish and Wildlife to implement regulations requiring all traps and buoys to include standardized gear marking and clear identification of ownership.

C. Action on State legislation

Exhibit B identifies concepts contained in SB 1017 regarding the phase-out of drift gill nets in the swordfish fleet. FGC has previously sent letters to the Pacific Fishery Management Council highlighting the support of hard caps, observer coverage and use of deep set buoy gear as an alternative gear type in the California swordfish fishery these are the concepts contained in SB 1017 that are outlined in a draft letter (Exhibit 2) for potential approval in today's meeting.

Significant Public Comments (N/A)**Recommendation**

FGC staff: Approve sending letter to Senator Ben Allen regarding concepts within SB 1017 related to the drift gillnet fishery.

Exhibits

1. DFW legislative update, dated Jun 5, 2018
2. Draft letter to Senator Allen in support of concepts contained in SB 1017

Motion/Direction (N/A)

Moved by _____ and seconded by _____ that the Commission approves the letter regarding SB 1017 concepts be sent to Senator Allen.

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7. STRATEGIC PLANNING**Today's Item****Information** ☐**Action** ☒

This is a standing agenda item for 2018-19 FGC meetings as FGC develops a new strategic plan.

Summary of Previous/Future Actions

- | | |
|--|------------------------------------|
| • First FGC strategic planning meeting | Feb 22, 2018; Sacramento |
| • Discussion held over to Jun meeting | Apr 18-19, 2018; Ventura |
| • Today's discussion of mission, vision, values | Jun 20-21, 2018; Sacramento |

Background

At its Feb 22, 2018 strategic planning kickoff meeting, FGC discussed the overall goals of a new strategic plan and the type of strategic planning process in which to engage. FGC determined that it is seeking a streamlined planning process, given that there is significant information and input on which to build a new strategic plan, including the 2012 "California Fish and Wildlife Strategic Vision: Recommendations for Enhancing the State's Fish and Wildlife Management Agencies."

As part of the current strategic planning process, FGC requested an update on success in addressing the recommendations from the 2012 strategic vision (Exhibit 1). In addition, FGC requested that an outline of the planning process as described during the first planning meeting (Exhibit 2) be shared with stakeholders who participated in the strategic visioning process to solicit feedback on FGC's vision for how to move the planning process forward over the next two years.

FGC is pursuing a three-stage planning process. This meeting marks the first of three that will focus on FGC's mission and vision (Exhibit 3) and a potential statement of values. To help facilitate the values conversation, at today's meeting staff will provide examples of values from other organizations, including both businesses and government agencies.

Significant Public Comments (N/A)**Recommendation (N/A)****Exhibits**

1. "Progress in Addressing the 2012 Fish and Wildlife Strategic Vision Recommendations," dated Apr 12, 2018
2. "Timing and Process for Developing a Strategic Plan," dated Apr 12, 2018
3. FGC mission and vision statements

Motion/Direction

Provide staff with direction on potential changes to the mission and vision statements, as well as drafting a values statement.

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8. ANNUAL WILDLIFE PROSECUTOR OF THE YEAR AWARD**Today's Item****Information** ☒**Action** ☐

Announce Deputy District Attorney Adrian Kamada as recipient of the 2017 Wildlife Prosecutor of the Year Award.

Summary of Previous/Future Actions (N/A)**Background**

In 2016, FGC adopted a formal policy "to honor a courtroom champion of California's fish, wildlife and natural resources, a person who tirelessly prosecutes fish, wildlife, natural resource and environmental crimes in California courts. The Commission will recognize this prosecutor through an annual Wildlife Prosecutor of the Year Award."

Annually, the DFW Law Enforcement Division makes up to four nominations and FGC awards a California district attorney or deputy district attorney with the award, which honors those attorneys who, in the previous three years, went above and beyond to prosecute wildlife crimes. Specifically, the award recognizes a district attorney or deputy district attorney who exhibits one or more of the following:

- (1) exceptional skill and an outstanding commitment to protecting California's fish, wildlife and natural resources;
- (2) superior performance in prosecuting wildlife, natural resource and environmental crimes;
- (3) relentless pursuit of justice for the most egregious violators and keen ability to prosecute complex, controversial or landmark cases; or
- (4) exemplary work promoting and maintaining a collaborative working relationship with wildlife officers in pursuit of conserving our natural resources.

Selection is based upon recommendations from DFW Law Enforcement Division staff that regularly works with the various district attorneys' offices.

For this year's award, FGC honors Deputy District Attorney Adrian Kamada from the Humboldt County District Attorney's office. Exhibit 1 provides details about the ways in which Mr. Kamada went above and beyond to prosecute wildlife crimes in the previous three years.

Significant Public Comments (N/A)**Recommendation (N/A)****Exhibits**

1. Deputy District Attorney Adrian Kamada nomination

Motion/Direction (N/A)

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9. TRIBAL COMMITTEE**Today's Item**Information ☐Action ☒

Receive summary from the Jun 19, 2018 TC meeting and potentially adopt TC recommendations. Receive update on TC work plan and draft timeline. Discuss and potentially approve new topics for TC review.

Summary of Previous/Future Actions

- | | |
|--|------------------------------------|
| • Most recent TC meeting | Jun 19, 2018; Sacramento |
| • Today approve TC recommendations and new topics for TC review | Jun 20-21, 2018; Sacramento |
| • Next TC meeting | Oct 16, 2018; Fresno |

Background

TC works under FGC direction to set and accomplish its current work plan (Exhibit 1).

The agenda for the Jun 19 TC meeting (Exhibit 2) included the following substantive items:

1. Staff updates, including other FGC committee updates, and an introduction to Governor's Tribal Advisor Christina Snider
2. TC operational practices and meeting procedures
3. DFW update
4. New agenda topics and work plan review

During this agenda item, a verbal report will be provided on discussions from the Jun 19 TC meeting and any resulting recommendations.

Significant Public Comments (N/A)**Recommendation**

None to report at the time the meeting binder was prepared; recommendations will be presented verbally.

Exhibits

1. TC workplan, updated Jun 2018
2. Jun 19, 2018 TC meeting agenda

Motion/Direction

Moved by _____ and seconded by _____ that the Commission approves the _____ recommendations from the June 19, 2018 Tribal Committee meeting.

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10. MARINE RESOURCES COMMITTEE**Today's Item****Information** ☐**Action** ☒

Discuss and approve draft agenda topics for the next Marine Resources Committee (MRC) meeting. Consider approving new topics for MRC to address at a future meeting.

Summary of Previous/Future Actions

- | | |
|--|------------------------------------|
| • Most recent MRC meeting | Mar 6, 2018; MRC, Santa Rosa |
| • Today approve draft MRC agenda topics | Jun 20-21, 2018; Sacramento |
| • Next MRC meeting | Jul 17, 2018; MRC, San Clemente |

Background***MRC Work Plan and Draft Timeline***

FGC directs the work of MRC. The updated work plan in Exhibit 1 includes topics and draft timelines for items referred by FGC to MRC. Draft agenda topics proposed for the Jul 2018 MRC meeting, shown in the "Jul" column of the work plan, include the following management plan, regulations, and special project topics for FGC review and consideration today:

- Herring fishery management plan - recommendation
- Aquaculture best management practices (BMPs) – update on developing requirements for BMP plans
- Aquaculture state water bottom lease applications – discuss evaluation approach
- Resilient fishing communities - initial recommendations from coastal meetings
- Box crab – update on experimental fishing permit applications criteria and program

New MRC Topics

DFW has requested to present an overview of a statewide marine protected areas monitoring action plan, which is currently under development and scheduled for FGC consideration at its Aug 2018 meeting.

Significant Public Comments (N/A)**Recommendation**

FGC staff: Approve draft agenda topics for the Jul MRC meeting as proposed by staff and DFW

Exhibits

1. MRC work plan, dated Jun 2018

Motion/Direction

Moved by _____ and seconded by _____ that the Commission approves the draft agenda topics for the July 2018 Marine Resources Committee meeting.

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11. COMMERCIAL NON-CANCER CRAB INCIDENTAL TAKE ALLOWANCES**Today's Item****Information** ☐**Action** ☒

Authorization to publish notice of intent to adopt regulations for the incidental take of crabs not in the genus *Cancer* in commercial trap fisheries.

Summary of Previous/Future Actions

- | | |
|--|------------------------------------|
| • Approved MRC recommendation for rulemaking | Dec 6-7, 2017; San Diego |
| • Today's notice hearing | Jun 20-21, 2018; Sacramento |
| • Adoption hearing | Oct 17-18, 2018; Fresno |

Background

In recent years, DFW has documented increased landings of species of non-Cancer crab, or crabs not in the genus *Cancer* (including brown box crab and California king crab), with an all-time high in 2016. Under current laws, incidental take of non-Cancer crabs is permitted in the target trap fisheries for rock crab, Dungeness crab, and lobster, with no limit on amount. In Apr 2018, DFW determined that the harvest of non-Cancer crabs is an emerging fishery and, under the Marine Life Management Act, DFW must recommend management measures for FGC's consideration to ensure sustainability (Exhibit 1).

Proposed Regulations

Existing regulations in Section 126, governing the commercial harvest of Tanner crab, another non-Cancer crab, would be moved to Section 126.1. New Section 126, would govern the commercial take of non-Cancer crabs in trap gear and would define Cancer crabs, create landing limits for non-Cancer crabs taken incidental to other targeted species in trap gear, and require all crabs be landed prior to use as bait. Possession and landing of species in the Lithodidae family (box and king crabs) would be limited to no more than 25 pounds per species. Sheep crab would be subject to a total allowable catch (TAC) of 95,000 pounds annually. The proposed limits for box and king crab are designed to slow current harvest rates while research is conducted on these species, and to allow development of an experimental gear permit for box crab to investigate the potential for a targeted fishery. The proposed total allowable catch (TAC) for sheep crab is intended to maintain the current harvest level, which has been stable for over 30 years, and prevent potential, future, unsustainable incidental harvest.

Significant Public Comments

San Diego nearshore trap fishermen oppose the landing of sheep crab used as bait (Exhibit 6).

Recommendation

FGC staff: Authorize publication of the notice as recommended by DFW.

DFW: Authorize publication of the notice as detailed in the draft initial statement of reasons (ISOR; Exhibit 3) to limit incidental take of non-Cancer crab.

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Exhibits

1. DFW memo designating non-Cancer crab as emerging fishery, received Apr 6, 2018
2. DFW memo, received Jun 8, 2018
3. Draft ISOR
4. Draft notice of exemption
5. DFW presentation
6. Draft economic and fiscal impact statement with attachment
7. Emails from John E. Law providing a letter from San Diego nearshore trap fishermen regarding the landing of sheep crab used as bait, received Jun 3 and 4, 2018

Motion/Direction

Moved by _____ and seconded by _____ that the Commission authorizes publication of a notice of its intent to amend subsection 125.1(c)(3), amend Section 126, and add Section 126.1 related to incidental take of crabs not in the genus *Cancer* in commercial trap fisheries.

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12. TRIBAL TAKE IN MPAS**Today's Item****Information** ☒**Action** ☐

Discuss proposed changes to marine protected area (MPA) regulations.

Summary of Previous/Future Actions

- | | |
|-------------------------------------|------------------------------------|
| • Discussions of Chumash request | Apr 2015-Apr 2017, TC and FGC |
| • Granted Petition 2017-017 | Feb 7-8, 2018, Sacramento |
| • Notice hearing | Apr 18-19, 2018; Ventura |
| • Today's discussion hearing | Jun 20-21, 2018; Sacramento |
| • Adoption hearing | Aug 22-23, 2018; Fortuna |

Background

See Exhibit 5 for additional background information.

The proposed changes to Section 632 would make boundary changes for two MPAs and add tribal take in four MPAs.

1. **Boundary Changes.** Amend subsections 632(b)(33)(A) and (34)(A), boundaries for Stewarts Point State Marine Conservation Area (SMCA) and Stewarts Point State Marine Reserve (SMR), at the request of the federally recognized Kashia Band of Pomo Indians of the Stewarts Point Rancheria (Kashia Band).

The action would shift the northern boundary of the Stewarts Point SMCA southward by approximately 1.5 miles, and shift the southern boundary of the SMCA southward by approximately 1.0 mile. The proposed boundary shift would align the SMCA with historical tribal lands recently reacquired by the Kashia Band, thus allowing members direct access to culturally significant areas of the shoreline and marine resources for ceremonial, cultural and subsistence purposes.

2. **Authorize Tribal Take.** Amend subsections 632(b)(97), (98), (112) and (117) to authorize tribal take for members of the federally recognized Santa Ynez Band of Chumash Indians at Kashtayit and Naples SMCAs (Santa Barbara County), Point Dume SMCA (Los Angeles County), and Anacapa Island SMCA (Ventura County).

The action would authorize tribal take within four of the SMCAs for ceremonial, cultural and subsistence purposes. The tribe has provided documentation of historic use.

Tribal take is defined in subsection 632(a)(11) to contain six components:

- A "federally recognized tribe" is any tribe on the List of Indian Entities Recognized and Eligible to Receive Services from the United States Bureau of Indian Affairs.
- Members of federally-recognized tribes must have a photo identification issued by a federally recognized tribe as described in the regulation.

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- In order to take living marine resources, a member of a federally recognized tribe authorized to take living marine resources from a specified area shall possess any valid license, report card, tag, stamp, validation, permit, or other entitlement required by Fish and Game Code or other state, federal, or local entities.
- Members taking living marine resources are subject to all current season, bag, possession, gear and size limits in Fish and Game Code statutes and Title 14 regulations, except as otherwise provided for in subsection 632(b).
- No member may be assisted by anyone who does not possess a valid tribal identification card and is not properly licensed to take living marine resources.
- Tribal take does not supersede any state or federal law regarding the take of protected, threatened or endangered species.

Significant Public Comments

1. One request to move only the southern boundary of Stewart's Point SMCA and leave the boundary between the SMCA and the SMR unchanged (Exhibit 3).
2. One comment in support of all proposed changes (Exhibit 4).

Recommendation (N/A)**Exhibits**

1. DFW memo, received Mar 20, 2018
2. Initial statement of reasons
3. Email from Arch Richardson, received May 21, 2018
4. Email from Surfrider Foundation, et al., received Jun 6, 2018
5. Staff summary from Apr 18-19, 2018 meeting, item 10
6. [Initial study/negative declaration](#), dated May 2018 (link to external website)

Motion/Direction (N/A)

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13. ROCKPORT ROCKS SPECIAL CLOSURE**Today's Item****Information** ☒**Action** ☐

Discuss proposed repeal of Rockport Rocks Special Closure regulations.

Summary of Previous/Future Actions

- Notice hearing Apr 18-19, 2018; Ventura
- **Today's discussion hearing Jun 20-21, 2018; Sacramento**
- Adoption hearing Aug 22-23, 2018; Fortuna

Background

The Marine Life Protection Act established a programmatic framework for designating marine protected areas (MPAs) in the form of a statewide network. Through the designation process, relatively small special closures were used as a management tool to protect sea bird rookeries and marine mammal haul-out sites by restricting ocean-based access to these areas seasonally or year-round.

On Jun 6, 2012, FGC adopted changes to Section 632, establishing Rockport Rocks Special Closure, six other special closures, and 15 MPAs along California's north coast. The Rockport Rocks Special Closure seasonally protects more than 2,500 breeding and nesting seabirds from disturbance by prohibiting visitor access closer than 300 feet, from Mar 1 to Aug 31.

In 2015, Mendocino Redwood Company LLC submitted a petition to FGC requesting the repeal of Rockport Rocks Special Closure (subsection 632(b)(17)) from regulation. The petition states that current regulations prohibit the company from accessing its private property, in conflict with a 2008 DFW memorandum stating that MPAs do not affect private property rights.

DFW, in consultation with the California State Lands Commission and the U.S. Bureau of Land Management (BLM), reviewed Mendocino Redwood Company's petition and supporting documents. The review confirmed that, in 1927, BLM patented the area referred to as Rockport Rocks, deeded ownership to an individual and, in 1998, Mendocino Redwood Company LLC obtained ownership of Rockport Rocks.

Significant Public Comments (N/A)**Recommendation (N/A)****Exhibits**

1. DFW memo, received Mar 7, 2018
2. Initial statement of reasons

Motion/Direction (N/A)

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14. OCEAN SALMON AUTO-CONFORMANCE**Today's Item****Information** ☒**Action** ☐

Update on automatic conformance of ocean salmon recreational fishing regulations to federal regulations.

Summary of Previous/Future Actions

- Previous update Dec 6-7, 2017; San Diego
- Previous update Apr 18-19, 2018; Ventura
- **Today's update Jun 20-21, 2018; Sacramento**

Background

At its Aug 16, 2017 meeting, FGC adopted regulations (Section 1.95) that allow a process to automatically conform state ocean salmon and Pacific halibut recreational fishing regulations to federal regulations. The auto-conformance process regulations went into effect on Jan 1, 2018; Exhibit 3 includes a general description of the auto-conformance process.

Pursuant to Section 1.95, this agenda item is to inform the public that the state recreational fishing regulations for ocean salmon for May 2018 through Apr 2019 automatically conformed to federal regulations, effective May 1, 2018.

In the area between the Oregon/California border and Horse Mountain, the season opened Jun 1 and will continue through Sep 3; in the area between Horse Mountain and Pigeon Point, the season opened Jun 17 and will continue through Oct 31; in the area between Pigeon Point and the U.S./Mexico border, the season opened on Apr 7 (via previous automatic conformance) and will continue through Jul 2. The minimum size limit is 20" total length in all areas north of Pigeon Point and 24" in all areas south of Pigeon Point. The daily bag limit is two Chinook salmon per day. Retention of coho salmon (silver salmon) is prohibited in all ocean fisheries off California.

In 2019, the season will open Apr. 6 south of Horse Mountain. The minimum size limit will be 20" total length in the area from Horse Mountain to Point Arena and 24" total length in all areas south of Point Arena. The daily bag limit will be two Chinook salmon per day.

The text of the conformed recreational ocean salmon regulations is provided in exhibits 1 and 2.

If deemed necessary, FGC may adopt ocean salmon and/or Pacific halibut recreational fishing regulations different from federal regulations. At this time, there is no indication that the state may need to consider regulations different from federal regulations for 2018.

Significant Public Comments (N/A)**Recommendation (N/A)**

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Exhibits

1. Conformed recreational ocean salmon regulations for May - Oct 2018
2. Conformed recreational ocean salmon regulations for Apr 2019
3. Staff summary for Aug 16, 2017, Agenda Item 17

Motion/Direction (N/A)

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15. 2019 MEETING DATES AND LOCATIONS**Today's Item****Information** ☒**Action** ☐

Receive and discuss proposed meeting dates and locations for 2019.

Summary of Previous/Future Actions

- **Discuss draft 2019 meeting dates and locations** **Jun 20-21, 2018; Sacramento**
- **Approve 2019 meeting dates and locations** **Aug 22-23, 2018; Fortuna**

Background

FGC conducts its annual business at six two-day meetings (Feb, Apr, Jun, Aug, Oct and Dec). Committees each hold three half- to full-day) meetings per year, either staggered between FGC business meetings (WRC, MRC), or the afternoon before the first day of a 2-day FGC meeting (TC).

Adequate meeting facilities have become more difficult to secure and advanced-planning increases the likelihood of locating suitable and available venues. Thus, in order to ensure that staff has adequate time to identify and secure venue options that meet FGC's requirements related to cost, information technology and security conditions, as well as State-mandated bids, contracting conditions and timelines, it is important for meeting dates and locations to be identified well in advance.

Staff has prepared a list of proposed meeting dates and locations for 2019, for FGC consideration and discussion today, and potential adoption in Aug 2018 (see table). Adopting the 2019 meeting dates and locations in Aug will support staff's ability to identify and pursue facility options in the meeting locations preferred by FGC members.

Staff developed the proposed meeting dates and locations taking into consideration State holidays, other relevant meeting schedules, and regulatory deadlines. Staff recommends avoiding high-cost areas such as San Luis Obispo, Palm Springs and Santa Barbara, where meeting and lodging costs are usually prohibitive relative to approved rates for State business.

Additionally, staff recommends eliminating the teleconferences traditionally held in Mar and Apr each year, since state recreational salmon fishing regulations may now automatically conform to federal rules. Teleconferences can be added to the meeting schedule as necessary.

In 2019, wildlife and inland fisheries items are recommended to be heard on the first day and marine items are recommended for the second day of FGC meetings.

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Proposed 2019 FGC and Committee Meeting Dates and Locations

Proposed Dates	Meeting Type	Proposed Location
Jan 10	WRC	Riverside
Feb 5	TC	Fresno/Bakersfield
Feb 6-7	FGC	Fresno/Bakersfield
Mar 19	MRC	Monterey/Marina
Apr 17-18	FGC	Redding
May 16	WRC	Sacramento
Jun 11	TC	Tahoe/Truckee/Sacramento
Jun 12-13	FGC	Tahoe/Truckee/Sacramento
Jul 11	MRC	Ventura
Aug 7-8	FGC	Mammoth/Bishop
Sep 5	WRC	Santa Rosa
Oct 8	TC	Los Angeles
Oct 9-10	FGC	Los Angeles
Nov 5	MRC	Sacramento
Dec 11-12	FGC	San Diego

Other Relevant 2019 Meetings

- Association of Fish and Wildlife Agencies – Dates unknown at this time
- Pacific Fishery Management Council – Mar 5-12, Apr 9-16, Jun 18-25, Sep 11-18, and Nov 13-20
- Pacific Flyway Council – Dates unknown at this time
- Western Association of Fish and Wildlife Agencies – Jan 2-6 and Jul 11-16
- Wildlife Conservation Board – Dates unknown at this time

Significant Public Comments (N/A)**Recommendation*****FGC staff:***

- Confirm intent to schedule FGC meetings on Wednesdays and Thursdays, TC and MRC meetings on Tuesdays, and WRC meetings on Thursdays.
- Provide direction on proposed 2019 dates and locations, including possible adjustments.

Exhibits

1. FGC meeting locations, 2014-2019

Motion/Direction (N/A)

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16. MARINE LIFE MANAGEMENT ACT MASTER PLAN**Today's Item****Information** ☐**Action** ☒

Consider adopting the “2018 Master Plan for Fisheries: A Guide for Implementation of the Marine Life Management Act.”

Summary of Previous/Future Actions

- | | |
|---|------------------------------------|
| • MRC vetted master plan amendment process | Nov 2015 – Jul 2017; MRC |
| • MRC recommendation on initial draft master plan | Nov 9, 2017; MRC, Marina |
| • Received draft 2018 master plan | Feb 7-8, 2018; Sacramento |
| • Discussed draft 2018 master plan | Apr 18-19, 2018; Ventura |
| • Today potentially adopt 2018 Master Plan | Jun 20-21, 2018; Sacramento |

Background

The Marine Life Management Act (MLMA) of 1998 added Section 7073 to the Fish and Game Code. Section 7073 directs DFW to submit to FGC for approval a master plan that specifies the process and resources needed to prepare, adopt, and implement fishery management plans (FMPs) for sport and commercial marine fisheries managed by the State, with input from fisheries participants, marine conservationists, scientists, and other interested parties.

In 2001, FGC adopted *The Master Plan: A Guide for the Development of Fishery Management Plans* (Master Plan), developed by DFW with stakeholder input, pursuant to the MLMA. Since late 2015, a DFW effort to amend the Master Plan has been underway, in close collaboration with partners, Tribes and tribal communities, stakeholders, and interested members of the public, with the goal of enhancing the sustainability of state-managed fisheries and ecosystems through a more efficient, flexible, and transparent management approach that considers advancements in science, technology, and stakeholder priorities. The Master Plan amendment process has followed a three-phased approach of (1) information-gathering (late 2015 to early 2017); (2) drafting the amended Master Plan with stakeholder and tribal input (late 2016 through 2017); and (3) review and possible adoption by FGC, including a public review process (2018). For more background, see Exhibit 1.

Following input and recommendation from MRC in Dec 2017, DFW delivered a draft 2018 Master Plan to FGC in Feb 2018; this initiated a three-meeting public review phase. FGC requested that public comments be submitted by the Apr 2018 FGC meeting for DFW to have time to review comments for potential revisions before FGC consideration of a final draft Master Plan (this meeting). DFW has incorporated feedback from public comments received through the Apr meeting, and has delivered a final draft 2018 Master Plan for possible adoption today (exhibits 2 and 3).

A summary of all comments received during the public comment period, and DFW responses to these comments, is provided in Exhibit 4. Today's meeting will include a presentation by DFW (Exhibit 5) on the public comments received during the review process and associated changes made to the draft document. FGC may adopt the plan, or reject it entirely or in part (Section 7073(c), Fish and Game Code). DFW has committed to identifying highest priority

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fisheries and implementation steps once the 2018 Master Plan is adopted, pursuant to the MLMA.

Significant Public Comments

Comments on draft Master Plan: Six comment letters and five verbal testimonies were received during the public review process, containing 83 unique comments from Tribes and stakeholders. Comments spanned topics of prioritization, management strategy evaluation, data-limited toolkit, ecological risk assessment, enhanced status reports, partnerships, climate change, and more. There were also expressions of support for ideas and approaches within the 2018 Master Plan, and appreciation of DFW's efforts to address stakeholders' priorities, concerns, and recommendations in iterative versions.

Request to FGC: Request that FGC replace the term "should" with "shall" in describing the outline of "what should be included" in scaled management documents (enhanced status reports, focused rulemaking, and scaled FMPs) since the majority are requirements of MLMA, to help ensure that full application of key MLMA management guidance is the norm.

Implementation: Request that FGC consider adopting and implementing the Master Plan as a whole process, as each step affects the effectiveness and success of the whole; a request that earlier comments DFW identified as more appropriate for the implementation stage still be considered at that time. Request that FGC encourage DFW to use external partnerships for Master Plan implementation and leverage the capacity of third parties such as universities, non-governmental organizations, and industry groups.

Recommendation

FGC staff: Adopt the draft final 2018 Master Plan as presented and recommended by DFW today. Request that DFW provide an implementation planning update at a future FGC meeting.

DFW: Adopt the revised draft 2018 Master Plan as presented.

Exhibits

1. Staff summary from Feb 2018 FGC meeting (for background information only)
2. DFW transmittal memo, received Jun 11, 2018
3. Draft final 2018 Master Plan, revised Jun 2018
4. Table of public comments and DFW responses, received Jun 11, 2018
5. DFW presentation

Motion/Direction

Moved by _____ and seconded by _____ that the Commission adopts the "2018 Master Plan for Fisheries: A Guide for Implementation of the Marine Life Management Act" as presented today and pursuant to Section 7073 of the Fish and Game Code.

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17. OCEAN LITTER PREVENTION STRATEGY**Today's Item****Information** ☐**Action** ☒

Receive and consider endorsing the California Ocean Protection Council's (OPC) "California Ocean Litter Prevention Strategy: Addressing Marine Debris from Source to Sea."

Summary of Previous/Future Actions

- Update on draft strategy Mar 6, 2018; MRC, Santa Rosa
- **Today receive and consider endorsing strategy Jun 20-21, 2018; Sacramento**

Background

Ocean litter is recognized as a pervasive problem at local, regional, and global scales, with a wide range of consequences to human and marine species health, the environment, and the economy. In 2008, OPC adopted "An Implementation Strategy for the OPC Resolution to Reduce and Prevent Ocean Litter." The 2008 strategy served as a powerful and effective document to promote collaborative agency action on addressing ocean litter. Since 2008, many actions described in the document have either been accomplished or are in progress.

Given that understanding of the ocean litter issue has changed considerably in the last decade, in 2017-2018 OPC and the National Oceanic and Atmospheric Administration's (NOAA) Marine Debris Program partnered to update the 2008 strategy through a multi-agency and stakeholder process. The 2018 update expands the previous strategy to include projects at a variety of scales and scopes for collaborative efforts by government agencies, industry, academia, nonprofits, and tribes to reduce ocean litter in California. Notably, in contrast to 2008, the 2018 strategy recognizes fisheries and aquaculture as potential sources of debris, and identifies DFW and FGC as collaborative partners with industry practitioners in the action plan.

The 2018 strategy provides structure and guidance for OPC and California stakeholders to address ocean litter over the next six years. OPC adopted the 2018 strategy, titled "California Ocean Litter Prevention Strategy: Addressing Marine Debris from Source to Sea," at its April 2018 meeting (exhibits 1 and 2). Today OPC staff will present the updated 2018 strategy to FGC for possible endorsement.

Significant Public Comments (N/A)**Recommendation**

FGC Staff: Endorse OPC's updated 2018 strategy.

Exhibits

1. Proposed final draft ocean litter prevention strategy, dated Apr 13, 2018
2. OPC staff report on the 2018 ocean litter prevention strategy, dated Apr 24, 2018

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Motion/Direction

Moved by _____ and seconded by _____, that the Commission endorses the Ocean Protection Council's "California Ocean Litter Prevention Strategy: Addressing Marine Debris from Source to Sea."

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18. TIJUANA RIVER AND TIJUANA ESTUARY**Today's Item****Information** ☒**Action** ☐

Receive an informational presentation from the California State Coastal Conservancy regarding cross-border pollution challenges and actions in the Tijuana River and Tijuana Estuary.

Summary of Previous/Future Actions

- Originally-scheduled presentation Apr 18-19, 2018; Ventura
- **Today's rescheduled presentation Jun 20-21, 2018; Sacramento**

Background

The Tijuana River is fed by a large binational watershed of approximately 1,750 square miles that lies across the California - Mexico border. Approximately 75% of the watershed is within Mexico and encompasses the densely urbanized city of Tijuana, Mexico. The watershed drains into what is casually known as the Tijuana Estuary in the United States, where the land makes up a somewhat complex map of cooperating land management agencies, and ultimately drains into the Pacific Ocean in the city of Imperial Beach.

Sewage infrastructure inadequacies have created recurring sewage pollution problems in the Tijuana River and the Tijuana Estuary. Government organizations on both sides of the border are working collaboratively on multiple fronts to prevent sewage spills from crossing the border and to address underlying sewage infrastructure problems. The International Boundary and Water Commission (IBWC) is the lead binational agency responsible for implementing water treaty rights and obligations between the U.S. and Mexico, including those related to sewage and associated water quality problems. Efforts on both sides of the border have led to the construction and ongoing operation of diversion structures, pump stations and treatment plants to reduce the frequency, volume, and pollutant levels of transboundary sewage flows.

In late 2017, FGC requested a presentation regarding water quality issues in the Tijuana River and Tijuana Estuary. Today, staff from the California State Coastal Conservancy will provide a presentation regarding cross-border pollution challenges and actions.

Significant Public Comments (N/A)**Recommendation (N/A)****Exhibits (N/A)****Motion/Direction (N/A)**

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19. MARINE PETITIONS FOR REGULATION CHANGE**Today's Item****Information** ☐**Action** ☒

This is a standing agenda item for FGC to act on regulation petitions from the public that are marine in nature. For this meeting:

- (A) Action on the petition for regulation change received at the Apr 2018 meeting
- (B) Pending regulation petitions referred to FGC staff and DFW for review (None scheduled)

Summary of Previous/Future Actions

(A)

- Receipt of new petitions Apr 18-19, 2018; Ventura
- **Today's action on petition Jun 20-21, 2018; Sacramento**

(B) N/A

Background

As of Oct 1, 2015, any request for FGC to adopt, amend, or repeal a regulation must be submitted on form FGC 1, "Petition to the California Fish and Game Commission for Regulation Change" (Section 662, Title 14). Petitions received at an FGC meeting are scheduled for consideration at the next business meeting, unless the petition is rejected under 10-day staff review as prescribed in subsection 662(b).

A petition scheduled for consideration today under (A) was received at the Apr 2018 meeting; it was submitted by the comment deadline and published in the meeting binder.

- (A) **Petition for regulation change.** Exhibit A1 summarizes the one non-marine regulation petition from Apr 2018 scheduled for action today and provides a staff recommendation:
 - I. *Petition #2018-004: Consider authorizing an experimental, small-scale, commercial squid fishery and harvest quota north of Point Arena for a five-year period* (Exhibit A2).
- (B) **Pending regulation petitions.** This item is an opportunity for staff to provide a recommendation on marine petitions previously referred by FGC to staff or DFW for review.

No pending marine petitions are scheduled for action at this meeting.

Significant Public Comments

- Eight comments expressed support for forwarding Petition #2018-004 to DFW for further review and evaluation. Comments come from a range of north coast fishing industry representatives (Noyo Harbor District, commercial fishing association, marine supply company, north coast fish processor, and three commercial north coast fishermen) and one fisheries socioeconomics researcher/professor (Humboldt State University). Points raised include:

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- Consider the proposal's merits including biological, socioeconomic, and fishery management benefits/impacts; proposal has potential for "modest but impactful" socioeconomic benefits and diversification for small-scale fishermen (Exhibit A3).
- An emphasis on the need for entry-level fisheries and open access opportunities for small boat operators (see example in Exhibit A4).
- Use the experimental fishery to examine if squid fishing on the north coast is environmentally sustainable and economically feasible as some research has shown that north coast fishing ports are vulnerable due to over-reliance on a few fisheries (i.e., Dungeness crab) and need diversification (Exhibit A5).

Recommendation

- (A) Adopt the staff recommendation to (1) deny, (2) grant, or (3) refer the petition to committee, staff or DFW for further evaluation or information-gathering. See Exhibit A1 for staff recommendation.
- (B) N/A

Exhibits

- A1. FGC table of non-marine petitions for regulation change received through Apr 19, 2018, for action in Jun 2018
- A2. Petition #2018-004: Consider authorizing an experimental, small-scale, commercial squid fishery and harvest quota north of Point Arena for a five-year period.
- A3. Email from Noah Oppenheim, Pacific Coast Federation of Fishermens Associations, received Jun 4, 2018
- A4. Email from George Bradshaw, north coast commercial fisherman, received Jun 2, 2018
- A5. Email from Laurie Richmond, researcher/professor at Humboldt State University, received May 11, 2018

Motion/Direction

- (A) Moved by _____ and seconded by _____ that the Commission adopts the staff recommendation for action on petition for regulation change #2018-004.

OR

Moved by _____ and seconded by _____ that the Commission adopts the following action for petition for regulation change #2018-004: _____.

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20. MARINE NON-REGULATORY REQUESTS**Today's Item****Information** ☒**Action** ☐

This is a standing agenda item for FGC to act on non-regulatory requests from the public that are marine in nature. *No requests are scheduled for action today.*

Summary of Previous/Future Actions (N/A)**Background**

FGC provides direction regarding requests from the public received by mail and email and during public forum at the previous FGC meeting. Public requests for non-regulatory action follow a two-meeting cycle to ensure proper review and consideration.

No items are scheduled for action today.

Significant Public Comments (N/A)**Recommendation (N/A)****Exhibits (N/A)****Motion/Direction (N/A)**

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21. DEPARTMENT INFORMATIONAL ITEMS (MARINE)**Today's Item****Information** ☒**Action** ☐

This is a standing agenda item to receive and discuss informational updates from DFW that are marine in nature:

- (A) Director's report
- (B) Law Enforcement Division
- (C) Marine Region

Summary of Previous/Future Actions (N/A)**Background**

Verbal reports are expected at the meeting for items (A) through (C).

(B) DFW's Law Enforcement Division produces a wildlife officers quarterly report; the Jan through Mar 2018 report is included as Exhibit B1.

(C) The Marine Region report will include several updates:

- I. DFW's Marine Region recently released its 2017 year in review. The spiny lobster fishery management plan adopted in 2016 requires an annual review of the status of the fishery and resource. See exhibits C1-C3.
- II. DFW staff will provide an update at the meeting on red abalone FMP timing and the fishery closure sunset date.
- III. DFW partnered with the Sportfishing Association of California to develop a sheephead fillet length study in cooperation with the commercial passenger fishing vessel fleet and commercial trap fishers. See Exhibit C4.

Significant Public Comments (N/A)**Recommendation (N/A)****Exhibits**

- B1. DFW LED first quarter report (Jan–Mar 2018), received May 31, 2018
- C1. DFW Marine Region presentation
- C2. DFW report, "Marine Region 2017 Year in Review," dated May 18, 2018
- C3. DFW report, "Spiny Lobster Fishery Management Plan Harvest Control Rule Annual Review for 2016-17," dated Apr 9, 2018
- C4. DFW Marine Region and Sportfishing Association of California presentation on California sheephead fillet length study

Motion/Direction (N/A)

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22. PUBLIC COMMENT (DAY 2)**Today's Item****Information** ☒**Action** ☐

Receive public comments, petitions for regulation change, and requests for non-regulatory action.

Summary of Previous/Future Actions

- **Today's receipt of requests and comments** **Jun 20-21, 2018; Sacramento**
- Direction to grant, deny or refer **Aug 22-23, 2018; Fortuna**

Background

This agenda item is primarily to provide the public an opportunity to address FGC on topics not on the agenda. Staff also includes written materials and comments received prior to the meeting as exhibits in the meeting binder (if received by written comment deadline), or as late comments at the meeting (if received by late comment deadline), for official FGC "receipt."

Action on regulation change petitions and non-regulatory requests received at previous meetings is scheduled under separate agenda items titled "Petitions for regulation change" and "Non-regulatory requests".

Significant Public Comments

All written comments were summarized and provided as exhibits under Day 1 Public Forum.

Recommendation

Consider whether any new, future agenda items are needed to address issues that are raised during public comment and are within FGC's authority.

Exhibits

See exhibits for Agenda Item 2.

Motion/Direction (N/A)

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23. DUCK STAMP (CONSENT)**Today's Item**Information ☐Action ☒

Approve projects for State Duck Stamp Account funds in Fiscal Year (FY) 2018-19.

Summary of Previous/Future Actions (N/A)**Background**

Pursuant to Fish and Game Code Section 3702, FGC must approve any projects for State Duck Stamp Account expenditures; funds deposited in the account shall be used for projects or endowments to protect, preserve, restore, enhance, and develop migratory waterfowl breeding and wintering habitat, evaluate habitat projects, and conduct waterfowl resource assessments and other waterfowl related research.

DFW annually requests and reviews proposals for projects that meet the statutory goals of this dedicated account, which are reviewed by the Duck Stamp Advisory Committee and then submitted to FGC as a list of recommended projects. Exhibit 1 contains a summary of the proposed projects for consideration and approval for funding with State Duck Stamp Account funds in FY 2018-19.

For FY 2018-19, spending authority for expenditures from this fund is \$1,500,000. A total of 15 projects are proposed, in addition to the mandatory allocation to Canada for the purposes of the North American Waterfowl Management Plan, pursuant to Fish and Game Code Section 3704.

Significant Public Comments (N/A)**Recommendation**

FGC staff: Under a motion to adopt the consent calendar, approve DFW's recommendations.

DFW: Approve the projects identified in Exhibit 1 for funding from the State Duck Stamp Account in FY 2018-19.

Exhibits

1. DFW memo and summary of recommended 2018-19 duck stamp projects, received May 14, 2018

Motion/Direction

Moved by _____ and seconded by _____ that the Commission adopts the consent calendar, items 23-28.

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24. INITIAL PLM HARVEST PROGRAMS (CONSENT)**Today's Item****Information** ☐**Action** ☒

Approve the initial Private Lands Wildlife Habitat Enhancement and Management (PLM) Area license for 2018-2023, and wildlife management plan with seasons, harvests and habitat improvements for 2018-2019, for one property.

Summary of Previous/Future Actions (N/A)**Background**

Fish and Game Code sections 3400-3409, and Title 14 Section 601 prescribe conditions for a PLM program that provides incentives for landholders to manage their property for the benefit of fish and wildlife in exchange for access to increased recreational opportunities, such as hunting tags or extended seasons ("harvest program"). In return for a harvest program, the landholder must prepare a biologically-sound wildlife management plan and complete specific wildlife habitat improvements on the PLM property.

There are three types of actions associated with the PLM program: an initial five-year PLM license; an annual list of PLM seasons, harvests, and habitat improvements; and a five-year PLM license renewal, with conditions unique to each participant's property.

The proposed annual seasons, harvests, and habitat improvements for one PLM property have been reviewed by DFW and found to be in compliance with FGC regulations and policies for PLMs; the applicant has identified the location where records will be kept and made available for inspection (Exhibit 1).

Significant Public Comments (N/A)**Recommendation**

FGC staff: Approve the DFW recommendation, under a motion to adopt the consent calendar.

DFW: Approve the initial PLM license for 2018-2023, and the wildlife management plan with annual seasons, harvests and habitat improvements for 2018-2019, on one property, under the conditions specified in Exhibit 2.

Exhibits

1. DFW memo, received May 31, 2018
2. Proposed initial management plan details

Motion/Direction

Moved by _____ and seconded by _____ that the Commission adopts the consent calendar, items 23-28.

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25. FIVE-YEAR PLM HARVEST PROGRAMS (CONSENT)**Today's Item****Information** ☐**Action** ☒

Approve the five-year renewal of Private Lands Wildlife Habitat Enhancement and Management (PLM) Area licenses for 2018-2023, and wildlife management plans with seasons, harvests and habitat improvements for 2018-2019, on eleven properties.

Summary of Previous/Future Actions (N/A)**Background**

Fish and Game Code sections 3400-3409, and Title 14 Section 601 prescribe conditions for a PLM program that provides incentives for landholders to manage their property for the benefit of fish and wildlife in exchange for access to increased recreational opportunities, such as hunting tags or extended seasons ("harvest program"). In return for a harvest program, the landholder must prepare a biologically-sound wildlife management plan and complete specific wildlife habitat improvements on the PLM property.

There are three types of actions associated with the PLM program: an initial five-year PLM license; an annual list of PLM seasons, harvests, and habitat improvements; and a five-year PLM license renewal, with conditions unique to each participant's property.

Proposed wildlife management plans and annual seasons, harvests, and habitat improvements for the eleven properties have been reviewed by DFW and found to be in compliance with FGC regulations and policies for PLMs; applicants have identified the locations where records will be kept and made available for inspection (see Exhibit 1 for Agenda Item 24).

Significant Public Comments (N/A)**Recommendation**

FGC staff: Approve the DFW recommendation, under a motion to adopt the consent calendar.

DFW: Approve the five-year PLM license renewals for 2018-2023, and the wildlife management plans with seasons, harvests and habitat improvements for 2018-2019, for eleven properties, under the conditions specified in Exhibit 1.

Exhibits

1. Proposed five-year management plan details
2. Alphabetical listing of eleven properties

Motion/Direction

Moved by _____ and seconded by _____ that the Commission adopts the consent calendar, items 23-28.

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26. ANNUAL PLM HARVEST PROGRAMS (CONSENT)**Today's Item**Information ☐Action ☒

Approve the annual Private Lands Wildlife Habitat Enhancement and Management (PLM) Area seasons, harvests and habitat improvements for 2018-2019 on 41 properties.

Summary of Previous/Future Actions (N/A)**Background**

Fish and Game Code sections 3400-3409, and Title 14 Section 601 prescribes conditions for a PLM program that provides incentives for landholders to manage their property for the benefit of fish and wildlife in exchange for access to increased recreational opportunities, such as hunting tags or extended seasons ("harvest program"). In return for a harvest program, the landholder must prepare a biologically-sound wildlife management plan and complete specific wildlife habitat improvements on the PLM property.

There are three types of actions associated with the PLM program: an initial five-year PLM license; an annual list of PLM seasons, harvests, and habitat improvements; and a five-year PLM license renewal, with conditions unique to each participant's property.

Proposed annual seasons, harvests, and habitat improvements for the 41 PLM properties have been reviewed by DFW and found to be in compliance with FGC regulations and policies for PLMs; applicants have identified the locations where records will be kept and made available for inspection (see Exhibit 1 for Agenda Item 24).

Significant Public Comments (N/A)**Recommendation**

FGC staff: Approve the DFW recommendation, under a motion to adopt the consent calendar.

DFW: Approve annual seasons, harvests and habitat improvements for 2018-2019 for 41 properties, under the conditions specified in Exhibit 1.

Exhibits

1. Proposed annual harvest program details for 2018-19
2. Alphabetical listing of 41 properties

Motion/Direction

Moved by _____ and seconded by _____ that the Commission adopts the consent calendar, items 23-28.

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27. FOOTHILL YELLOW-LEGGED FROG (CONSENT)**Today's Item****Information** ☐**Action** ☒

DFW requests an extension of six months to allow further analysis and evaluation of the available science, completion of the status review, and a peer review process for the petition to list foothill yellow-legged frog (*Rana boylei*) as a threatened species under California Endangered Species Act (CESA).

Summary of Previous/Future Actions

- | | |
|---|------------------------------------|
| • Received petition | Dec 14, 2016 |
| • FGC transmits petition to DFW | Dec 22, 2016 |
| • Publish notice of receipt of petition | Jan 20, 2017 |
| • Received evaluation and recommendation | Apr 26-27, 2017; Van Nuys |
| • FGC determined listing may be warranted | Jun 21-22, 2017; Smith River |
| • Today act on DFW's request for 6-month extension | Jun 20-21, 2018; Sacramento |
| • Receive DFW's status review report | Feb 2019; TBD |
| • Determine if listing is warranted | Apr 2019; TBD |

Background

On Dec 14, 2016, FGC received a petition from the Center for Biological Diversity to list foothill yellow-legged frog as a threatened species under CESA. On Jun 21, 2017, FGC voted to accept the petition for further evaluation and to initiate a 12-month review of the status of foothill yellow-legged frog in California. In May 2018, DFW requested that FGC grant a six-month extension of time to complete its review. If the extension is approved, FGC will consider the petition, DFW's evaluation and other information submitted to determine if listing is warranted at its Apr 2019 meeting.

Significant Public Comments (N/A)**Recommendation**

FGC staff: Approve DFW's request for a six-month extension

Exhibits

1. DFW memo, received May 22, 2017

Motion/Direction

Moved by _____ and seconded by _____ that the Commission adopts the consent calendar, items 23-28.

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28. HUMBOLDT MARTEN (CONSENT)**Today's Item****Information** ☒**Action** ☐

Receive DFW's status review report on the petition from the Environmental Protection Information Center (EPIC) and the Center for Biological Diversity (CBD) to list Humboldt marten (*Martes caurina humboldtensis*) as an endangered species under the California Endangered Species Act (CESA).

Summary of Previous/Future Actions

- | | |
|---|------------------------------------|
| • Received petition | Jun 8, 2015 |
| • FGC transmits petition to DFW | Jun 18, 2015 |
| • Publish notice of receipt of petition | Jul 24, 2015 |
| • Approved DFW request for 30-day extension | Oct 7-8, 2015; Los Angeles |
| • Received evaluation and recommendation | Dec 9-10, 2015; San Diego |
| • FGC determined listing may be warranted | Feb 10-11, 2016; Sacramento |
| • Act on DFW request for 6-month extension | Feb 8-9, 2017; Rohnert Park |
| • Today receive DFW's status review report | Jun 20-21, 2018; Sacramento |
| • Determine if listing is warranted | Aug 22-23, 2018; Fortuna |

Background

In Jun 2015, FGC received a petition from EPIC and CBD to list Humboldt marten as an endangered species under CESA. FGC designated Humboldt marten as a candidate species at its Feb 11, 2016 meeting. Final consideration is scheduled for Aug 22-23, 2018.

The status review report represents DFW's final written review of Humboldt marten and is based upon the best scientific information available to DFW. DFW will hand-deliver the status review report at the Jun 20-21, 2018 meeting.

Significant Public Comments (N/A)**Recommendation (N/A)****Exhibits (N/A)****Motion/Direction**

Moved by _____ and seconded by _____ that the Commission adopts the consent calendar, items 23-28.

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29. WILDLIFE RESOURCES COMMITTEE**Today's Item****Information** ☒**Action** ☐

Review tasks referred to the Wildlife Resources Committee (WRC), review potential agenda topics for Sep 20, 2018 WRC meeting, and consider new potential topics for WRC review.

Summary of Previous/Future Actions

- | | |
|--|--|
| • Most recent WRC meeting | Jan 11, 2018; WRC, Santa Rosa |
| • Today discuss Sept WRC topics | June 20-21, 2018; FGC, Sacramento |
| • Next WRC meeting | Sep 20, 2018; WRC, Sacramento |

Background***WRC Work Plan and Draft Timeline***

FGC directs committee work. Current topics already referred to WRC are shown in the work plan in Exhibit 1. As the May 2018 WRC meeting was cancelled; draft agenda topics identified for that meeting will be carried over to the Sep 2018 meeting, with the exception of annual sport fish and the lead ban implementation as the timing is no longer relevant.

Topics identified for Sep include:

- | | |
|--|---|
| <ul style="list-style-type: none"> • Annual rulemakings <ul style="list-style-type: none"> – Mammal hunting – Waterfowl hunting – Central Valley sportfish – Klamath River Basin salmon sportfish – Upland game birds | <ul style="list-style-type: none"> • Proposals for rulemaking <ul style="list-style-type: none"> – Falconry – Coastal streams low-flow – Archery equipment and crossbow regulations – Deer and elk tag verification • Special projects updates <ul style="list-style-type: none"> – Bullfrogs and non-native turtles |
|--|---|

The FGC wildlife advisor position, which staffs WRC meetings, was filled at the end of May by Ari Cornman.

Discuss and Approve New WRC Topics

No new agenda topics are proposed at this time.

Significant Public Comments (N/A)**Recommendation (N/A)****Exhibits**

1. WRC work plan, updated Jun 2018

Motion/Direction (N/A)

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30. SAGE GROUSE PREFERENCE POINTS**Today's Item****Information** ☒**Action** ☐

Discuss proposed sage grouse preference points and draw regulations.

Summary of Previous/Future Actions

- | | |
|-------------------------------------|------------------------------------|
| • WRC vetting | Jan 11, 2018; Santa Rosa |
| • Notice hearing | Apr 18-19, 2018; Ventura |
| • Today's discussion hearing | Jun 20-21, 2018; Sacramento |
| • Adoption hearing | Aug 22-23, 2018; Fortuna |

Background

Obtaining a sage grouse hunting permit is a rare privilege due to strict oversight in upland game bird management. In Apr 2018, DFW proposed, and FGC elected to go to notice, to establish an electronic random drawing for sage grouse permits that will include a preference point system similar to the big game preference point process. Due to the very limited number of sage grouse hunting permits made available annually, the chances of being successfully drawn have been and continue to be very low in a purely random draw.

A petition was filed with FGC (Petition #2016-010) requesting to establish a preference point component to increase the probability of drawing success for hunters who have previously (often over many years) applied but not been successfully drawn. The addition of preference points for past participants is necessary to fairly credit prior effort and to encourage continued drawing participation for this unique hunting experience. The new process will be conducted through the DFW Automated License Data System (ALDS).

The timing of this proposal would align implementation to the 2019-2020 upland game bird season.

Proposed Regulation

- Section 300 will be amended, deleting the current draw described in subsection 300(a)(1)(D)5 and a reference will be made to the provisions of the new Section 716 Sage Grouse Permit Application and Drawing Process.
- Subsection 300(a)(2)(D)6 Falconry Only Permits will be moved to the new subsection 716(b)(6).
- Section 716 will be added, setting forth the draw requirements and the addition of preference points for past participants.
- When the final agenda for this meeting was released, it was anticipated that Section 702 (Hunting Applications, Tags, Seals, Permits, Reservations and Fees) may have to be amended; further analysis shows no change is necessary.

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Significant Public Comments

No comments have been received since the opening of the comment period on May 11, 2018.

Recommendation (N/A)

Exhibits

1. Initial statement of reasons
2. DFW memo, received Apr 6, 2018
3. Economic and fiscal impact statement (Std. 399)

Motion/Direction (N/A)

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31. UPLAND (RESIDENT) GAME BIRD (SAGE GROUSE)**Today's Item****Information** ☐**Action** ☒

Consider adopting proposed changes to upland game bird regulations regarding sage grouse.

Summary of Previous/Future Actions

- | | |
|-----------------------------------|------------------------------------|
| • WRC vetting | Jan 11, 2018; Santa Rosa |
| • Notice hearing | Feb 7-8, 2018; Sacramento |
| • Discussion hearing | Apr 18-19, 2018; Ventura |
| • Today's adoption hearing | Jun 20-21, 2018; Sacramento |

Background

FGC annually considers the recommendations of DFW in establishing upland game bird regulations. Section 300 provides definitions, hunting zone descriptions, season opening and closing dates, and daily bag and possession limits for resident and migratory upland game birds.

For the 2018-2019 season, DFW is presenting a recommendation solely for sage grouse permits based on the spring 2018 lek counts. A lek is a communal area in which two or more male greater sage grouse perform courtship displays to mate with females. DFW performs multiple counts of all known leks in California, including leks within hunt zones and in non-hunted areas. The lek counts are used to estimate population size, and a population model expands the count of males to predict the fall population.

Both the low and high fall population projections for 2018 are considered conservative. The number of permits proposed will not exceed 5% of the projected fall population size, which is among the most conservative scientific recommendations for allowable harvest. In addition to population size, population trajectory is considered in DFW's recommendation, and no permits will be recommended for populations that are in decline and below the long-term average for a hunt zone.

DFW has not recommended issuing permits in either of the Lassen hunt zones since 2012, the South Mono Hunt Zone since 2014, or the North Mono Hunt Zone in 2017, because of concerns about downward population trajectories, and to allow these populations time to recover from the effects of wildfire and drought. The conservative approach to estimating spring populations and projecting fall populations is designed to avoid any errors that could lead to an overestimation of the population size. The low population projection, assuming no reproduction, is not a likely scenario except for the most extreme possible conditions.

The number of permits ultimately recommended for each hunt zone are based on three criteria:

1. Size and trend of the spring breeding population in each hunt zone based on lek counts conducted in Mar and Apr 2018.
2. The allowable harvest level will not exceed 5% of the predicted fall population.

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3. If the allowable harvest in any zone is five or fewer permits, no permits will be recommended for that zone.

Proposed Regulation

Based on the results of spring lek counts and population projections for the fall of 2018, DFW is recommending no change to current regulations, maintaining that zero permits be issued for all four of the sage grouse hunting zones in the 2018-2019 season.

DFW's recommendation proposes a no change alternative and, if adopted by FGC, would result in a decision not to proceed. Additionally, if the recommendation is accepted, no action would be required pursuant to CEQA. CEQA does not apply to projects that a public agency rejects or disapproves pursuant to California Public Resources Code subdivision 21080(b)(5).

Significant Public Comments

No comments have been received since the opening of the comment period on Feb 20, 2018.

Recommendation

FGC staff: Do not proceed with the noticed amendment consistent with DFW's recommendation.

DFW: No change to the current regulations, which would maintain that zero permits be issued for any of the sage grouse hunting zones in 2018-2019 season.

Exhibits

1. Pre-adoption statement of reasons, received Jun 8, 2018

Motion/Direction

Moved by _____ and seconded by _____ that the Commission not proceed with the noticed amendment to subsection 300(a)(1)(D)4. regarding upland (resident) game bird (sage grouse) regulations for the 2018-19 season. The Commission further authorizes staff to file a notice of this decision with the Office of Administrative Law.

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32. CHRONIC WASTING DISEASE**Today's Item****Information** ☒**Action** ☐

Receive an update regarding chronic wasting disease (CWD) from DFW. This update is meant to serve as a public education opportunity, as well as to educate FGC about possible future actions it may need to consider in order to control the disease.

Summary of Previous/Future Actions

- FGC prohibition on importation of cervid carcasses Aug 30, 2002; Oakland
- **Today receive presentation on CWD** **June 21, 2018; Sacramento**

Background

In 2002, FGC enacted regulations (Exhibit 1) to prohibit the importation of hunter harvested animal carcasses in the family cervidae, except for boned meat or processed cuts of meat, hides, and heads that have no part of the spinal column or brain attached to reduce the threat of CWD in California. Today, DFW will provide a presentation (Exhibit 2) on this deadly virus and how Californians can remain vigilant to prevent it from spreading.

CWD is a fatal neurologic disease of cervids (deer, elk, moose, reindeer) caused by a misfolded form of a normal protein. CWD belongs to a group of human and animal diseases called transmissible spongiform encephalopathies (TSE). Examples of TSEs in animals include bovine spongiform encephalopathy in cattle, also known as "mad cow disease," and scrapie in sheep and goats. Creutzfeldt-Jakob disease and a variant are examples of TSEs in humans.

An infectious disease of major concern for cervids, CWD may negatively impact these prey populations where it occurs. CWD can be spread through direct contact with infected individuals or through an environment contaminated with infectious material; carcasses and tissues of infected animals can spread the disease if left out on the landscape. The misfolded proteins are very stable and difficult to disinfect once in the environment.

While it has been detected in 24 states, 2 Canadian provinces, South Korea and Norway, neither California nor any neighboring states has had a case of CWD. Through legislation and geography, California is at relatively low risk for CWD; however, it has the potential to spread to California's deer and elk populations, and surveillance for the disease remains a priority for DFW. Legislation enacted and regulatory actions taken by California since the 1990s help keep the risk of importing the disease to a minimum, including regulating the importation of captive deer and elk (and other cervids), limiting what hunters can bring in from out-of-state hunts (no skull, no backbone), and banning the feeding of wildlife to prevent artificially congregating susceptible animals.

There have been no documented cases of a human infected with CWD. However, DFW and the Centers for Disease Control and Prevention (CDC) recommend that hunters do not eat meat from deer that test positive for CWD or otherwise appear sick, wear latex or nitrile gloves when field-dressing and processing animals, and wash their hands and disinfect tools after processing.

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CWD has continued to spread throughout North America (Exhibit 3), and states that are currently CWD-negative, such as California, must increase their surveillance, increase public awareness that this is a serious issue, and not wait until the virus is present to respond. With the number of California hunters that travel to CWD-positive states, California has the potential for CWD-positive animals to be brought into the state. Research involving human susceptibility may elevate the concern of consuming CWD-positive game, which requires us to increase public awareness of the risk.

Significant Public Comments (N/A)**Recommendation (N/A)****Exhibits**

1. Regulatory text: Section 712. Restriction of Importation of Hunter-Harvested Deer and Elk Carcasses.
2. DFW presentation
3. Map with current distribution of CWD in North America, dated Apr 2018

Motion/Direction (N/A)

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33. WILDLIFE AND INLAND FISHERIES PETITIONS FOR REGULATION CHANGE**Today's Item****Information** ☐**Action** ☒

This is a standing agenda item for FGC to act on regulation petitions from the public that are related to wildlife or inland fisheries issues. For this meeting:

- (A) Action on petitions for regulation change received at the Apr 2018 meeting.
- (B) Update on pending regulation petitions referred to staff or DFW for review.

Summary of Previous/Future Actions

(A)

- Receipt of new petitions Apr 18-19, 2018; Ventura
- **Today's action on petitions Jun 20-21, 2018; Sacramento**

(B)

- **Today's update and action on referrals Jun 20-21, 2018; Sacramento**

Background

Pursuant to Section 662, Title 14, any request for FGC to adopt, amend, or repeal a regulation must be submitted on form FGC 1, "Petition to the California Fish and Game Commission for Regulation Change." Petitions received at an FGC meeting are scheduled for consideration at the next business meeting, unless the petition is rejected under 10-day staff review as prescribed in subsection 662(b).

Petitions scheduled for consideration today under (A) were received at the Apr 2018 meeting in one of three ways: (1) submitted by the comment deadline and published as tables in the meeting binder, (2) submitted by the late comment deadline and delivered at the meeting, or (3) received during public forum. Petitions considered under (B) were scheduled for action at a previous meeting and were referred by FGC to DFW or FGC staff for further evaluation prior to action.

- (A) ***Petitions for regulation change.*** Exhibit A1 summarizes the regulation petitions scheduled for action today and provides staff recommendations for each. Today, there are two wildlife or inland fisheries regulation petitions from Apr 2018 that are scheduled for FGC action at this meeting. (See summary table in Exhibit A1).
 - I. *Petition #2018-002: Require DFW to use preference points on elk type, eliminate "either-sex" designation, and require tags based on gender* (Exhibit A2).
 - II. *Petition #2018-003: Include Big Sandy Wildlife Area as an area for training hunting dogs* (Exhibit A3).
- (B) ***Pending regulation petitions.*** This item is an opportunity for staff to provide a recommendation on wildlife petitions previously referred by FGC to staff or DFW for review. FGC may act on any staff recommendations made today. Two pending wildlife petitions referred to FGC staff or DFW are scheduled for action at this meeting.
 - I. *Petition #2015-008 (repeal hunting of American badger and gray fox):* In Apr 2016, FGC referred this petition (Exhibit B1), requesting the repeal of hunting of

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American badger and gray fox, to the WRC Predator Policy Workgroup (PPWG) for evaluation and recommendation. Upon recommendation by PPWG, FGC later approved an evaluation to be conducted by DFW for both badger and gray fox. DFW has completed its review and recommends that the petition be denied; see DFW's memo for rationale (Exhibit B2).

- II. *Petition #2017-012 (striped bass)*: In Feb 2017, FGC referred this petition (Exhibit B5) to DFW for review. The petition requests to increase the daily bag limit to three and reduce minimum size to twelve inches in anadromous coastal rivers and ocean waters south of the Golden Gate Bridge. DFW has completed its review and recommends that the petition be denied because: (1) striped bass are not present in many watersheds in the area, (2) the risk of steelhead bycatch outweighs benefits from potential striped bass take, (3) the current size and bag limit are set as conservation measures, and (4) inconsistent standards across different areas of the state would create an enforcement issue.

Significant Public Comments

- (A) N/A
- (B) Petition #2015-008. Susan Kirks (petitioner) submitted comments questioning the analysis by DFW (Exhibit B3).

Received four additional comments in support of Petition #2015-008 (example provided in Exhibit B4).

Recommendation

- (A) **FGC staff**: Adopt the staff recommendation for each regulation petition to (1) deny, (2) grant, or (3) refer to committee, staff or DFW for further evaluation or information-gathering. See Exhibit A1 for staff recommendations.
- (B) **FGC staff**: Adopt the DFW recommendations for Petition #2015-008 and Petition #2017-012.

Exhibits

- A1. Summary table of wildlife and inland fisheries regulatory petitions received through Apr 19, 2018
- A2. Petition #2018-002: Elk gender points, received Feb 7, 2018
- A3. Petition #2018-003: Allow dog training at Big Sandy Wildlife Area, received Mar 6, 2018
- B1. Petition #2015-008: Repeal hunting of American badger and gray fox, received Dec 2, 2015.
- B2. DFW memo regarding Petition #2015-008, to repeal hunting of American badger and gray fox, received Mar 30, 2018
- B3: Email from Susan Kirks related to Petition #2015-008, received Jun 7, 2018
- B4: Email from Keli Hendricks in support of petition #2015-008, received Jun 6, 2018
- B5: Petition #2017-012: Striped bass, received Nov 2, 2017

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Motion/Direction

- (A) Moved by _____ and seconded by _____ that the Commission adopts the staff recommendations for actions on April 2018 regulation petitions.

AND

- (B) Moved by _____ and seconded by _____ that the Commission *adopts* the staff recommendations for action on pending Petition #2015-008 and Petition #2017-012 for regulation change.

OR

Moved by _____ and seconded by _____ that the Commission *does not adopt* the staff recommendation for action on pending Petition #2015-008 and Petition #2017-012 for regulation change and instead the action is _____.

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34. WILDLIFE AND INLAND FISHERIES NON-REGULATORY REQUESTS**Today's Item****Information** ☐**Action** ☒

This is a standing agenda item for FGC to act on non-regulatory requests from the public that are wildlife or inland fisheries in nature.

Summary of Previous/Future Actions

(A)

- FGC receipt of requests Apr 18-19, 2018; Ventura
- **Today's action on requests Jun 20-21, 2018; Sacramento**

(B)

N/A

Background

FGC provides direction regarding requests from the public received by mail and email and during public forum at the previous FGC meeting. Public requests for non-regulatory action follow a two-meeting cycle to ensure proper review and consideration.

- (A) **Non-regulatory requests.** Non-regulatory requests scheduled for consideration today were received at the Apr 2018 meeting in one of three ways: (1) submitted by the comment deadline and published as tables in the meeting binder, (2) submitted by the late comment deadline and delivered at the meeting, or (3) received during public forum.

Five non-regulatory requests received in Apr 2018 are scheduled for action. Exhibit A1 summarizes the requests and contains staff recommendations for each request.

- (B) **Pending non-regulatory requests.** This item is an opportunity for staff to provide a recommendation on non-regulatory requests that were scheduled for action at a previous meeting and referred by FGC to DFW or FGC staff for further review. FGC may act on any staff recommendations made today.

There are no pending wildlife non-regulatory petitions scheduled for action today.

Significant Public Comments (N/A)**Recommendation**

- (A) Adopt the staff recommendation for each regulation petition to (1) deny, (2) grant, or (3) refer to committee, staff or DFW for further evaluation or information-gathering. See Exhibit A1 for staff recommendations.

Exhibits

- A1. Summary of non-regulatory requests and staff recommendations

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Motion/Direction

- (A) Moved by _____ and seconded by _____ that the Commission adopts the staff recommendations for actions on April 2018 non-regulation petitions.

OR

Moved by _____ and seconded by _____ that the Commission adopts the staff recommendation for action on non-regulatory petitions for change except for _____, for which the action is _____.

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35. DEPARTMENT INFORMATIONAL ITEMS (WILDLIFE AND INLAND FISHERIES)**Today's Item****Information** ☒**Action** ☐

This is a standing agenda item to receive and discuss informational updates from DFW that are wildlife and inland fisheries in nature:

- (A) Director's Report
- (B) Wildlife and Fisheries Division, and Ecosystem Conservation Division

Summary of Previous/Future Actions (N/A)**Background**

Verbal reports are expected at the meeting for items (A) and (B).

- (A) At FGC's Apr 19-20, 2018 meeting, DFW Director Bonham committed to providing regular updates on tricolored blackbird population estimates and progress in developing safe harbor agreements.
- (B) At FGC's Apr 19-20, 2018 meeting, DFW Deputy Director Stafford Lehr provided an introduction to nutria eradication efforts; today he will provide an update on those efforts. Details about the invasive nutria (e.g., impacts, identification, history, what you can do) are at <https://www.wildlife.ca.gov/Conservation/Invasives/Species/Nutria/Infestation>.

Significant Public Comments (N/A)**Recommendation (N/A)****Exhibits (N/A)****Motion/Direction (N/A)**

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36A. ADMINISTRATIVE ITEMS – NEXT MEETING**Today's Item**Information ☐Action ☒

This is a standing item to review logistics and approve draft agenda items for the next FGC meeting.

Summary of Previous/Future Actions (N/A)**Background**

The next FGC meeting is scheduled for Aug 22-23, 2018 in Fortuna. Staff does not anticipate any special logistics for this meeting.

Potential agenda items for the Aug meeting are provided in Exhibit 1 for consideration and potential approval.

Significant Public Comments (N/A)**Recommendation**

FGC staff: Approve draft agenda topics for Aug 2018 FGC meeting.

Exhibits

1. Potential agenda items for Aug 2018 meeting

Motion/Direction

Moved by _____ and seconded by _____ that the Commission approves the draft agenda items for the August 22-23, 2018 Commission meeting, as amended.

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36B. ADMINISTRATIVE ITEMS – RULEMAKING TIMETABLE**Today's Item**Information ☐Action ☒

Review and approve requested changes to the perpetual timetable for anticipated regulatory actions.

Summary of Previous/Future Actions

- FGC approved changes to rulemaking timetable Apr 18-19, 2018; Ventura
- **Today approve proposed rulemaking timetable Jun 20-21, 2018; Sacramento**

Background

FGC maintains a perpetual timetable for anticipated regulatory actions. At each FGC meeting, staff provides the latest approved timetable along with requests for changes from FGC staff and DFW highlighted in bolded and underlined blue text (Exhibit 1).

For this meeting, FGC staff has made the following changes:

- *Commercial non-cancer crab incidental take rulemaking*: Amend the list of Title 14 section numbers;
- *Lassics lupine, tricolored blackbird and coast yellow leptosiphon*: Add to the “schedule to be determined” list while awaiting draft findings.

DFW has submitted a request for several changes to the rulemaking timetable (Exhibit 2):

- *Recreational take of red abalone*: Move up rulemaking from “schedule to be determined” to be noticed at the Aug 2018 meeting, discussed at the Oct 2018 meeting, and adopted at the Dec 2018 meeting. DFW made this request anticipating a proposal to extend the existing closure in the absence of data supporting reopening the fishery or an adopted fishery management plan; the closure currently sunsets on Apr 1, 2019.
- *State logbook requirement for federal fisheries*: Add a rulemaking to amend sections 107, 174 and 176 to repeal or revise requirements, to be noticed at the Aug 2018 meeting, and discussed/adopted at the Dec 2018 meeting. This rulemaking was identified by DFW’s Marine Region as a priority as it will remove redundant logbook regulations, enable efficient logbook processing at the federal level, and result in annual cost savings to DFW.
- *Commercial ridgeback prawn incidental take regulations*: Delay the rulemaking to consider changes to subsection 120(e) and move to the “schedule to be determined” section of the timetable. DFW’s Law Enforcement Division has identified an issue with the regulatory language that must be resolved prior to notice.

Significant Public Comments (N/A)**Recommendation**

FGC staff: Adopt the proposed changes to the timetable for anticipated regulatory actions and provide direction on the scheduling of any rulemaking changes identified during the meeting.

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Exhibits

1. Proposed timetable for anticipated regulatory actions, dated Jun 6, 2018
2. DFW memo requesting changes to the FGC timetable, received Jun 8, 2018

Motion/Direction

Moved by _____ and seconded by _____ that the Commission approves the proposed changes to the rulemaking timetable.

STAFF SUMMARY FOR JUNE 20-21, 2018

36C. ADMINISTRATIVE ITEMS - NEW BUSINESS**Today's Item****Information** ☒**Action** ☐

This is a standing agenda item to allow Commissioners to bring new items of business to FGC.

Summary of Previous/Future Actions (N/A)**Background (N/A)****Significant Public Comments (N/A)****Recommendation (N/A)****Exhibits (N/A)****Motion/Direction (N/A)**

CALIFORNIA FISH AND GAME COMMISSION
RECEIPT LIST FOR REGULATION CHANGE PETITIONS: RECEIVED BY 5 PM ON JUN 7, 2018
 Revised 6-7-2018

FGC - California Fish and Game Commission **DFW** - California Department of Fish and Wildlife **WRC** - Wildlife Resources Committee **MRC** - Marine Resources Committee

Tracking No.	Date Received	Accept or Reject	Name of Petitioner	Subject of Request	Code or Title 14 Section Number	Short Description	FGC Decision
2018-005	5/8/2018	A	Douglas P. Simms	Bikes in the Napa-Sonoma Marshes Wildlife Area	551(j), T14	Allow bicycle riding on the levee trails surrounding Pond 8 and adjacent to Milton Road in the Napa-Sonoma Marshes Wildlife Area	Receipt: 6/20-21/2018 Action scheduled: 8/22-23/2018
2018-008	6/5/2018	A	Don Morton on behalf of Mono County Fish and Wildlife Commission	Rush Creek (Mono County) fishing	7.50(b)(153), T14	Add section of Rush Creek (Mono County) to fishing regulations	Receipt: 6/20-21/2018 Action scheduled: 8/22-23/2018

From: Hlusak, Heather@Wildlife
Sent: Monday, May 07, 2018 3:22 PM
To: FGC
Subject: DFG Change Form: Bicycle Riding Near Pond 8
Attachments: Milton Rd Bicycle DFG Change Form.pdf

From: Doug Simms
Sent: Saturday, May 05, 2018 9:52 AM
To: Hlusak, Heather@Wildlife <Heather.Hlusak@wildlife.ca.gov>
Cc: Terry Abblett
Subject: DFG Change Form: Bicycle Riding Near Pond 8

Hi Heather,
Terry Abblett spoke with you about the neighborhood request to ride our bicycles on the levees around Pond 8 Next to Milton Rd. in Napa. She asked me to send our change request form to you. I have filled out the form and added pictures and some signature pages from the residents on Milton Rd. The form is attached as a PDF. I can mail you the original document if it is required. Please send me the appropriate address if you require the original.
Thank you for your consideration on this matter.

Fair winds and calm seas.

Salty Doug Simms

KJ6FZW



Tracking Number: 2018-005

To request a change to regulations under the authority of the California Fish and Game Commission (Commission), you are required to submit this completed form to: California Fish and Game Commission, 1416 Ninth Street, Suite 1320, Sacramento, CA 95814 or via email to FGC@fgc.ca.gov. Note: This form is not intended for listing petitions for threatened or endangered species (see Section 670.1 of Title 14).

Incomplete forms will not be accepted. A petition is incomplete if it is not submitted on this form or fails to contain necessary information in each of the required categories listed on this form (Section I). A petition will be rejected if it does not pertain to issues under the Commission's authority. A petition may be denied if any petition requesting a functionally equivalent regulation change was considered within the previous 12 months and no information or data is being submitted beyond what was previously submitted. If you need help with this form, please contact Commission staff at (916) 653-4899 or FGC@fgc.ca.gov.

SECTION I: Required Information.

Please be succinct. Responses for Section I should not exceed five pages

1. Person or organization requesting the change (Required)

Name of primary contact person: *Douglas P. Simms*

Address:

Telephone number:

Email address:

2. Rulemaking Authority (Required) - Reference to the statutory or constitutional authority of the Commission to take the action requested: *California Fish and Game Commission Visitor Use Regulations on Department Lands Designated as Wildlife Areas Title 14, Section 551 (j).*

3. Overview (Required) - Summarize the proposed changes to regulations: *Allow bicycle riding on the levee trails surrounding Pond 8 and adjacent to Milton Road in the Napa-Sonoma Marshes Wildlife Area by adding this area to the exception list in Title 14, Section 550 (j).*

4. Rationale (Required) - Describe the problem and the reason for the proposed change: *We the undersigned residents of Milton Rd. have been riding our bicycles on the levee surrounding Pond 8 for decades. We would like to continue using the area for bicycling. The "No Bicycle Riding" signs were posted in the last 3 months. This area is posted "closed to hunting" as it is too close to the houses on Milton Rd so, there is no safety issue with walking or riding bicycles. Milton Rd has no shoulder or bike lanes so these levees provide a safe riding environment for the residents and children. The levees around Pond 8 were recently rebuilt and the newly finished trails are ADA compliant.*



SECTION II: Optional Information

5. **Date of Petition:** *April 31, 2018.*

6. **Category of Proposed Change**

☐ Sport Fishing

☐ Commercial Fishing

☐ Hunting

☒ Other, please specify: *Visitor Use of Wildlife Area.*

7. **The proposal is to:** *(To determine section number(s), see current year regulation booklet or <https://govt.westlaw.com/calregs>)*

☒ Amend Title 14 Section(s): *Add the area “Levee Trails Surrounding Pond 8 Adjacent to Milton Road in the Napa-Sonoma Marshes Wildlife Area” as item 10 in the exceptions list of Section 550 (j).*

(10)	Napa-Sonoma Marshes Wildlife Area	Allowed only on Levee Trails Surrounding Pond 8 and adjacent to Milton Rd.
------	-----------------------------------	--

☐ Add New Title 14 Section(s): *Click here to enter text.*

☐ Repeal Title 14 Section(s): *Click here to enter text.*

8. **If the proposal is related to a previously submitted petition that was rejected, specify the tracking number of the previously submitted petition** *Click here to enter text.*

Or ☐ Not applicable.

9. **Effective date:** If applicable, identify the desired effective date of the regulation. If the proposed change requires immediate implementation, explain the nature of the emergency: *Click here to enter text.*

10. **Supporting documentation:** Identify and attach to the petition any information supporting the proposal including data, reports and other documents: *Arial View of Pond 8. Photos of signs. Signature pages.*

11. **Economic or Fiscal Impacts:** Identify any known impacts of the proposed regulation change on revenues to the California Department of Fish and Wildlife, individuals, businesses, jobs, other state agencies, local agencies, schools, or housing: *Replace No Bicycling signs.*

12. **Forms:** If applicable, list any forms to be created, amended or repealed:

Click here to enter text.

SECTION 3: FGC Staff Only

Date received:

RECEIVED
CALIFORNIA
FISH AND GAME
COMMISSION

2018 MAY -8 AM 8:30



FGC staff action:

- ☒ Accept - complete
- ☐ Reject - incomplete
- ☐ Reject - outside scope of FGC authority

Tracking Number 2018-005

Date petitioner was notified of receipt of petition and pending action: May 11, 2018

Meeting date for FGC consideration: August 22-23, 2018

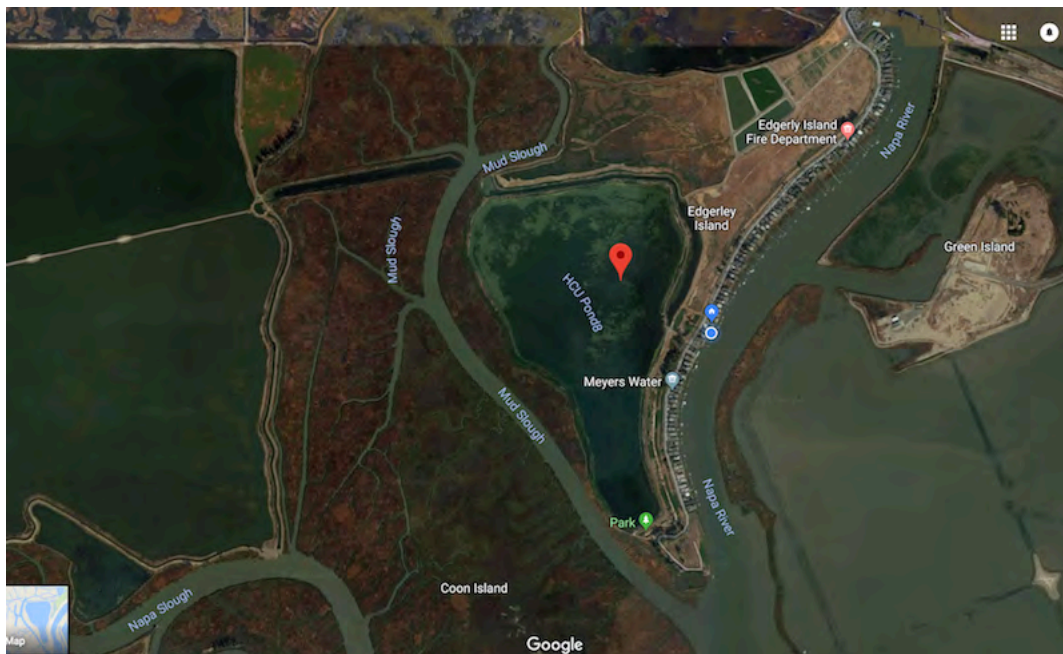
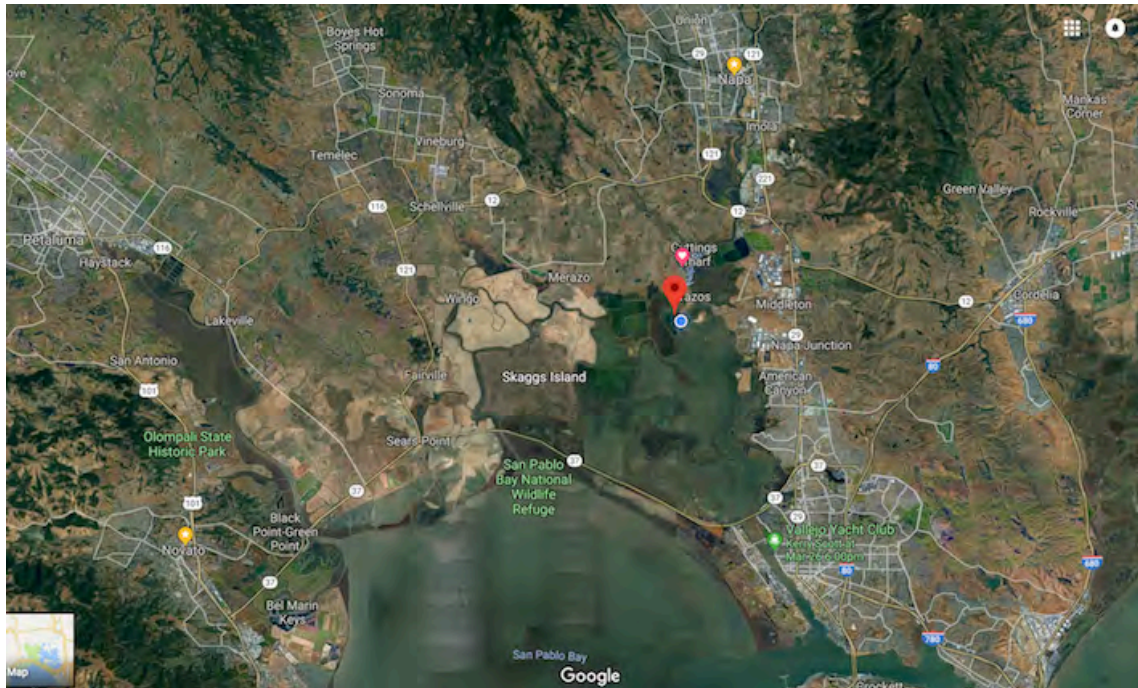
FGC action:

- ☐ Denied by FGC
- ☐ Denied - same as petition _____

Tracking Number

- ☐ Granted for consideration of regulation change

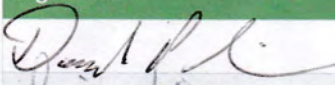
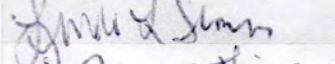
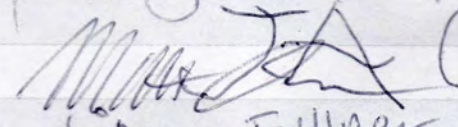
Pond 8 Arial Views



Sign Pictures



Signature Page

Signature	Address	Date
		4/11/18
		4/12/18
Mary Finnegan		4/12/18
Kelly Heath		4/13/18
Blk Newman		4/13/18
Rug Doorman		4/14/18
John M. Pauls		4/14/18
John Pauls		4-14-18
Christopher Pauls		4/14/18
Jersey Abbott		4/14/18
Betty Shannon		4/14/18
Marsha L. Linn		4-14-18
Will Selmer		04-14-2018
		4/14/18
Simon Fullner		4-14-18
Pamela Simonson		4/14/18
Carole Simonson		4/15/18
Barb Jeremias		4/15/18
Linda Newman		4/17/18
Matt Br...		4-18-18
Nicole McIntosh		4-18-18
Michael Clay		4/18/2018
L. Jackie Wilder		4-18-18
Michael Wilson		4-18-18

Signature	Address	Date
Ralph Lovelass		4-18-18
Dame Rahal		4-18-18
François Neema		4/18/18
Deema Dallman		4/18/18
David Myers		4/18/18
by Gard		4/18/18
Henry W. H.		4/18/18
for Lipp		4-18-18
Amelia Milman		4-19-18
D. L. Parren Milman		4/20/18
Nancy J. Hutchins		4/20/18
Nancy J. Hutchins		4/20/18
Cynthia O'Neil		4/22/18

Date _____

Signature Page

[illegible]



Tracking Number: 2018-008

To request a change to regulations under the authority of the California Fish and Game Commission (Commission), you are required to submit this completed form to: California Fish and Game Commission, 1416 Ninth Street, Suite 1320, Sacramento, CA 95814 or via email to FGC@fgc.ca.gov. Note: This form is not intended for listing petitions for threatened or endangered species (see Section 670.1 of Title 14).

Incomplete forms will not be accepted. A petition is incomplete if it is not submitted on this form or fails to contain necessary information in each of the required categories listed on this form (Section I). A petition will be rejected if it does not pertain to issues under the Commission's authority. A petition may be denied if any petition requesting a functionally equivalent regulation change was considered within the previous 12 months and no information or data is being submitted beyond what was previously submitted. If you need help with this form, please contact Commission staff at (916) 653-4899 or FGC@fgc.ca.gov.

SECTION I: Required Information.

Please be succinct. Responses for Section I should not exceed five pages

- 1. Person or organization requesting the change (Required)**
Name of primary contact person: Mono County Fish & Wildlife Commission, c/o Don Morton
Address: P. O. Box 603, Mammoth Lakes, CA 93546
Telephone number: 760-914-2594
Email address: Don@junelakeaccommodations.com
- 2. Rulemaking Authority (Required)** - Reference to the statutory or constitutional authority of the Commission to take the action requested: FGC 200, 202, 205, 215, 220, 240, and 316
- 3. Overview (Required)** - Summarize the proposed changes to regulations: Amend Title 14 Section 7.50 to add subsection 153(B) Rush Creek (Mono County) from the outlet of Silver Lake downstream to Grant Lake restricting fishing to Catch & Release, zero limit, barbless hooks using artificial baits each year from September 31st to the end of general trout season.
- 4. Rationale (Required)** - Describe the problem and the reason for the proposed change: Large spawning trout are being caught out of Rush Creek between Silver Lake and Grant Lake during the various spawning periods of wild German Browns, rainbow trout and LCT. These fish are being specifically targeted by anglers. Brown Trout were introduced to the lakes of the June Lake Loop as early as 1919. They quickly became the dominant fish in the system due to spawning capabilities. The stocking records show Brown Trout have not been stocked into Silver or Grant Lakes since 2001 and 2003 respectively and very erratically from 1942 to 2001. These spawning fish should be considered "wild" and should be managed as such. This should include protecting them during the spawning season. Grant Lake, Silver Lake and Rush Creek are three very different fisheries but rely on the health of each system to succeed. Protecting the fish in Rush Creek allows the wild fish to thrive in Rush Creek, Grant Lake and Silver Lake by encouraging recruitment of wild fish. It would also protect and enhance fishing opportunities in all three bodies of water for the foreseeable future. Anglers who fish one or all of the fisheries for brown trout and cutthroat trout, the Mono County Fish and Wildlife Commission and local residents are aware of and support the CDFW's "Strategic Plan for Trout Management" and recent policies established by Senate Bill 1148 favoring "Sustainable Fishing" and



wild trout. (FGC 1725-1730) Recent practices involving stocking “triploid” fish for the protection of native fish species (hybridization) and wild trout populations within Silver and Grant Lakes has had mixed results. Long term stocking plans appear to be moving towards the stocking of diploid trout into streams and lakes of the Owens River and Mono Lake drainages by the CDF&W. All private stocking must be sterile, triploid trout. These drainages were historically devoid of trout species and according to FGC 1729(e) meet the exception of “fish planted to supplement waters that the Department has determined to be genetically isolated from native fish populations”. Protecting the established “wild” trout of the June Lake Loop drainage is a good fit for the future of fishing within the area. Finally, the addition of this section of Rush Creek to a catch and release regulation helps simplify the regulations throughout Mono Lake drainage by remaining consistent with regulations along lower Rush Creek, Parker, Walker and Lee Vining Creeks.

SECTION II: Optional Information

5. Date of Petition: 1-1-2018

6. Category of Proposed Change

- ☒ Sport Fishing
☐ Commercial Fishing
☐ Hunting
☐ Other, please specify: [Click here to enter text.](#)

7. The proposal is to: *(To determine section number(s), see current year regulation booklet or <https://govt.westlaw.com/calregs>)*

- ☒ Amend Title 14 Section(s): Amend Section 7.50 to add subsection 153(B) Zero limit, catch & Release, barbless hooks, artificial baits only, from the out let at Silver Lake downstream to Grant Lake from September 31st to end of general trout season every year.
☐ Add New Title 14 Section(s): [Click here to enter text.](#)
☐ Repeal Title 14 Section(s): [Click here to enter text.](#)

8. If the proposal is related to a previously submitted petition that was rejected, specify the tracking number of the previously submitted petition [Click here to enter text.](#)

Or ☒ Not applicable.

9. Effective date: If applicable, identify the desired effective date of the regulation.

If the proposed change requires immediate implementation, explain the nature of the emergency: Beginning October 1 of the 2018 general Trout season, or as soon as possible in order to protect wild spawning trout.

10. Supporting documentation: Identify and attach to the petition any information supporting the proposal including data, reports and other documents: A recent study by Trout Unlimited during 2016 and 2017 have shown wild fish populations moving into Rush Creek at key spawning times. Studies conducted by Trout Unlimited found wild spawning fish in Rush Creek the dates of 5/10/2016, 11/18/2016, 9/12/2017, 11/14/2017 and 11/29/2017. During the Surveys, numerous spawning fish >400mm were found in Rush Creek above Grant Lake. These fish were either in the process of spawning or post spawn. The fish spawning in the half mile stretch of river above Grant Lake were very



exposed to angling pressure and easy to spot because of the lack of cover or structure. This is because the half mile of creek above the reservoir is in a stretch of dried up lake bed. During the surveys before the closure of Rush Creek and after general trout season ends, there were numerous anglers that were observed taking fish from the creek. Numerous fish skeletons were observed on the banks of Rush Creek that were a direct result of angling pressure. (We have attached the Trout Unlimited report of Rush Creek with this document (June Lake Loop Draft) that support the above statements. Past studies and documentation of wild trout in Rush Creek have been compiled and attached in the Rush Creek Fish Historical Data word document. Biologist Elden Vestal, a Rush Creek expert and advocate, compiled documentation and conducted studies that state the stocking records of Rush Creek. Vestal reported brown trout stocking as early as 1919 before the Grant Lake Dam was constructed and he reported the brown trout to have “flourished” (Vestal, 1947) (Vestal, 1951). Further reports from Elden Vestal’s records from the trapping station on Rush Creek above Grant Lake showed brown trout, which grew to large sizes in the lake, and moved up the creek to spawn in the Fall. Vestal reported brown trout ranging from 17-27 inches (400mm-700 mm) inches in Rush Creek (Taylor 2014). Anglers were observed catching wild brown trout in the Rush creek system in 1947 and 1949 (Vestal, 1951). In 1999-2009, the Fisheries Monitoring Report For Rush Creek noted that brown trout were being caught out of Rush creek up to two pounds (Shepherd et al. 2009). Further 1999 fish surveys in Rush Creek found a population of brook trout and rainbow trout that were mostly rainbow and golden trout hybrids. Brown trout recruitment was low due to elevated spring/summer flows from the upstream reservoir. No YOY of either species were found in summer, indicating that high springtime flows scour incubating eggs from the substrate. (Sada, 2000)

- 11. Economic or Fiscal Impacts:** Identify any known impacts of the proposed regulation change on revenues to the California Department of Fish and Wildlife, individuals, businesses, jobs, other state agencies, local agencies, schools, or housing: There should be little or no political or fiscal implications that arise due to the addition of catch and release regulations. The high use season in the June Lake Loop occurs between Memorial Day and labor Day holidays. Any objections should be limited to only those who specifically target large wild spawning trout. There should be no need to change stocking allotments for this section of Rush Creek. Warden availability and patrol routes may need to be adjusted slightly to ensure adequate coverage and safety of anglers. This regulation change is working towards a more self sustaining fish population between Grant and Silver Lake. It will also help reduce the decline in the fishery for wild brown trout. The regulation change would not impact stocking programs for Silver Lake or Grant Lake. Protecting these fish and the fishing opportunity that exists in Rush Creek and should encourage anglers who practice “catch and release” to frequent this stretch of the river. Protecting the German Brown spawning fish could also, at the same time, increase the financial benefit to Mono County. With this regulation change, educational signage will be posted to promote the new regulations and trash clean ups will be conducted to increase visibility, public knowledge, and financial gains from the influx of people attending the cleanups. The trash clean ups will in turn protect the experience of fishing the Eastern Sierra trout streams which will keep people coming back to Rush Creek in large numbers. Coordinating stocked fish, native fish, and self-sustaining trout populations is essential to an overall healthy fishery for visitors and residents.

- 12. Forms:** If applicable, list any forms to be created, amended or repealed:

[Click here to enter text.](#)

SECTION 3: FGC Staff Only

Date received:

RECEIVED
CALIFORNIA
FISH AND GAME
COMMISSION

2010 JUN -5 AM 10: 00



State of California – Fish and Game Commission

PETITION TO THE CALIFORNIA FISH AND GAME COMMISSION FOR REGULATION CHANGE

FGC 1 (NEW 10/23/14) Page 4 of 4

FGC staff action:

- ☐ Accept - complete
- ☐ Reject - incomplete
- ☐ Reject - outside scope of FGC authority

Tracking Number

Date petitioner was notified of receipt of petition and pending action: _____

Meeting date for FGC consideration: _____

FGC action:

- ☐ Denied by FGC
- ☐ Denied - same as petition _____
- ☐ Granted for consideration of regulation change

Tracking Number

1987 Rush Creek Summary Report

	Tot. Anglers	Tot. Hrs.	BN Caught	RT Caught	BN Kept	RT Kept
<u>Sat 4-25-87</u>						
SEC. I	66	121.50	7	112	7	82
SEC. II	34	78.75	5	46	5	43
SEC. III	24	46.25	4	32	4	20
<u>Sub</u>	<u>124</u>	<u>246.50</u>	<u>16</u>	<u>190</u>	<u>16</u>	<u>145</u>

Sun 4-26-87

SEC. I	40	63	2	5	2	11
SEC. II	27	42	6	15	5	12
SEC. III	16	36.5	3	11	2	10
	<u>83</u>	<u>141.50</u>	<u>11</u>	<u>31</u>	<u>9</u>	<u>33</u>

Two day

Total = 207 388 27 219 25 178

Sat. Trout c/H = .8

Trout / Angler = 1.6

Sun. Trout c/H = .25

Trout / Angler = .6

Pressure Count Rush Creek 1987 opener

	Section 1	Section 2	Section 3	Period Totals	Water Temp Time
7-25-87					
Period 1	91	37	19	= 147	4:55 - 5:30
Period 2	71	26	18	= 115	4:55 - 10:00
Period 3	<u>34</u>	<u>15</u>	<u>5</u>	= <u>54</u>	
Section Totals	196	78	42	= 316	

4-26-87

Period 1	19	14	10	= 43
Period 2	23	22	5	= 50
Period 3	<u>12</u>	<u>5</u>	<u>5</u>	= <u>25</u>
Section Totals	59	39	20	= 118

Water Temp 4-25-87

	Section 1	Section 2
Period 1	47°F - 0900	48°F - 1030
Period 2	53°F - 1430	54°F - 1530
Period 3	52°F - 1815	52°F - 1900

Water Temp 4-26-87

Period 1	45°F - 0800	46°F - 0915
Period 2	51°F - 1215	53°F - 1345
Period 3	52°F - 1630	52°F - 1730

Water Rush Creek

Checker Wayne Lagan

Date 11-25-87 Census Period 11-25-87 to 11-25-87

Page 1 of 1

Ang No	Co Res	Sec	Hours Fished			Ang Meth	#	Trout Kept			Trout Released																		Camping	Comm
			To	From	Tot			RTC	Spec	Lengths	Spec	<6	6-7	8-9	10-11	12-13	14-15	16-17	18-19	20										
1	56	1	0530	0630	1	B	2																					1		
2	56	1	0530	0635	1	B																						1		
3	19	1	0600	0640	1.75	B																						3		
4	19	1	0600	0645	1.75	B			BN	356	350																	1		
5						B	2																					1		
5	19	1	0630	0700	1.5	B																						1		
6	37	1	0575	0700	1.75	B																						2		
7	37	1	0575	0700	1.75	B																						2		
8	19	1	0630	0700	1.5	B																						2		
9	19	1	0630	0700	1.5	B																						2		
10	19	1	0600	0720	1	B	4																					3		
11	19	1	0530	0715	1.75	B	5																					2		
12	19	1	0530	0715	1.75	B	3																					2		
13	19	1	0575	0715	2	B	4																					1		
14	19	1	0530	0715	1.75	B	9																					1		
15	37	1	0600	0715	1.25	B																						3		
16	30	1	0530	0730	2	B	3																					2		
17	19	1	0530	0730	2	B	6																					2		
18	19	1	0530	0730	2	B																						2		
19	12	1	0535	0730	2.25	L					RTC	3																1		
20	19	1	0615	0745	1.50	B	2					RTC	3															2		
21	56	1	0700	0745	1.75	F																						2		
22	30	1	0715	0745	1.50	B																						2		
23	19	1	0530	0800	2.5	B			RT	262																		3		
24	19	1	0530	0800	2.5	B	2				BN	284																3		
25	19	1	0530	0815	2.75	L	3																					3		
26	56	1	0530	0815	2.75	B					BN	344																3		
27	36	1	0530	0830	3	L	4				BN	336																3		
28	19	1	0600	0845	2.75	B	7																					2		
29	56	1	0530	0830	1	B					BN	256																3		
30	56	2	0630	0845	2.25	B	5																					3		
31	19	2	0615	0900	2.25	B	1																					5		
32	19	2	0530	0900	3.5	B	4																					2		
33	19	2	0600	0930	1.5	B	2																					2		
34	56	2	0800	0915	1.25	B	1				BN	258																2		
35	56	2	0530	0730	2																							2		
36	19	2	0815	0915	1																							2		
37	19	2	0600	0930	3.50		4																					2		
38	36	2	0530	0945	4.25	B					BN	290																2		
39	36	2	0530	0945	4.25	B	3																					2		
40	19	2	0830	1000	1.5	B	1																					3		
41	19	2	0900	1000	1	L	6																					2		

Time 11:00 Section 1 2 3 X Clear Y Cloudy Y Calm Y Windy Y Rain Y Affect on Angler Use none Water Temp 47.1

Water

Wayne A. Izzi

Date 4/25/87

Census Period

to

Page 2 of 1

[illegible][illegible]

Water Rush Creek

Checker Wayne Isen

Date 4-25-87 Census Period _____ to _____

Page 4 of 1

[illegible]

Time	Section				Clear	Cloudy	Calm	Windy	Rain	Affect on Angler Use	Water Temp
	1	2	3	4							
6:15 90°	✓	✓	✗	✗	✓		PTWD			none	52
					✓		✓			none	52

Water Rush Creek

Checker Wayne C. Gert

Date 4-26-87 Census Per 18d to

Page 1 of 2

Ang No	Co Res	Sec	Hours Fished			Ang Meth	#	Trout Kent		Trout Released													Catching			
			To	From	Tot			RTC	Spec	Lengths	Spec	<6	6-7	8-9	10-11	12-13	14-15	16-17	18-19	≥20						
1	19	1	600	630	1.5	B		BN	310																	1
2	19	1	530	530	1	B																				1
3	19	1	530	630	1	B																				1
4	30	1	530	645	1.25	B	2																			3
5	30	1	530	645	1.25	B	1																			3
6	30	1	630	700	.5	B					RTC	1														2
7	30	1	630	700	.5	B																				2
8	30	1	615	715	1	L																				1
9	30	1	615	715	1	L																				1
10	19	1	530	730	2	L																				2
11	19	1	530	730	2	L																				2
12	19	1	600	730	2.5	L																				3
13	19	1	600	730	2.5	B																				3
14	19	2	630	800	1.5	L					BN		1													2
15	19	2	730	815	1.25	B	1				RTC	2														1
16	19	2	735	815	1	B	1																			1
17	19	2	730	830	1	B	1																			3
18	19	2	530	830	3	B																				2
19	15	2	700	845	1.75	B	1																			2
20	19	3	700	915	2.25	B	1		BN	276																2
21	19	3	530	915	3.75	B	1		BN	275																3
22	19	3	530	930	4	B					BN		1													3
23	19	3	530	1000	4.5	B					RTC			1												3
24	30	3	715	1015	3	B																				2
25	30	3	715	1015	3	B	2																			2
26	30	3	715	1030	1.25	B	4																			2
27	30	3	830	1045	2.25	B																				2
28	60	1	1000	1100	1	B																				1
29	60	1	1000	1100	1	B																				1
30	19	1	1000	1115	1.25	B																				1
31	30	1	1000	1115	1.25	B	2																			2
32	19	1	1100	1130	.5	B																				3
33	19	1	1100	1130	.5	B																				2
34	50	1	900	1145	2.75	B					BN															2
35	30	1	930	1145	2.25	L					RTC															2
36	19	1	1100	1200	1	B	1																			3
37	19	1	730	1200	4.5	B	1																			2
38	19	1	730	1200	4.5	B																				2
39	19	1	800	1030	2.5	B	1																			2
40	19	2	1030	1215	1.75	B	4																			2
41	19	1	800	1030	2.5	B	1																			2
42	19	2	1030	1215	1.75	B	1																			2

Time	Section			Clear	Cloudy	Calm	Windy	Rain	Affect on Angler Use		Water Temp
7:55	1	2	3								43.0
7:15	✓								none		46.0
7:15	✓								none		51.0

OFFICE MEMO
STD. 100 (REV. 11-75)DATE
4/21/87

TO:

Phyllis & Darrell
Egg

ROOM NUMBER

FROM:

John

PHONE NUMBER

SUBJECT:

Ruck Ck Census

I mentioned to Darrell that we just completed the Ruck Ck census summaries. He said he'd like to see the results. It appears there is a high return rate on the stocked rainbows. I do not, at this time, see a wild trout program taking the place of the existing program.

Rush Creek Fish Survey Historical Data

Beginning of this report has a testimony by Elden Vestal

<https://www.monobasinresearch.org/images/legal/ctexhibitvol2of2.pdf>

Elden Vestal report from 1947-1951 Rush Creek Experiment

http://ia802605.us.archive.org/34/items/californiafishga40_2cali/californiafishga40_2cali.pdf

2005-2009 Radio Telemetry study of brown trout movement in Rush Creek

https://www.researchgate.net/profile/Ross_Taylor4/publication/265626133_Radio_Telemetry-Movement_Study_of_Brown_Trout_in_Rush_Creek_Prepared_for_Los_Angeles_Department_of_Water_and_Power/links/575d87b908ae414b8e4f4bad/Radio-Telemetry-Movement-Study-of-Brown-Trout-in-Rush-Creek-Prepared-for-Los-Angeles-Department-of-Water-and-Power.pdf

Executive summary of a 1999 Fisheries Monitoring Report for Mono basin (including Rush, Lee Vining, Walker, and Parker Creek)

<https://www.monobasinresearch.org/onlinereports/fish.php>

Findings from 10 year study of Mono Basin fisheries, 1999-2009

https://www.waterboards.ca.gov/waterrights/water_issues/programs/mono_lake/docs/effectstrout2009may.pdf

This link is also part of this study- (part way through in 2006) but has excellent figures of fish population gathered from electro fishing Rush Creek

<http://www.monobasinresearch.org/images/ladwp073fisheries.pdf>

“Previously unpublished; from one of the largest Sierran trout datasets ever compiled

<https://www.monobasinresearch.org/images/sadadw.pdf>

Follow this link, then scroll down to “Mono Basin Compliance Reporting to SWRCB by LADWP” and there is a link to the “Fisheries” section of the report for each year.

"This report presents the results of fish population monitoring for Rush, Lee Vining, Parker, and Walker creeks pursuant to State Water Resources Control Board (SWRCB) Decision #1631"

<http://www.monobasinresearch.org/online reports/#LEGAL>

The Brown Trout Fisheries of Rush Creek, June Lake Loop and Mono County, California.

By Ross N. Taylor, Lead Fisheries Scientist, State Water Resources Control Board, Mono Basin Monitoring Program. Mr. Taylor is also a Fisheries Consultant with Ross Taylor and Associates.

<https://www.junelakeaccommodations.com/brown-trout-fishery-june-lake-loop-whitepaper.htm>

From: afa@mcn.org
Sent: Saturday, April 28, 2018 5:52 PM
To: Office of the Secretary CNRA; Wildlife DIRECTOR; FGC
Subject: ARKANSAS - COMMERCIAL TURTLE TAKE

Saturday

Dept. of Natural Resources
Dept. of Fish & Wildlife
Dept. of Fish & Game

See link below.

Can California be far behind?

Regards,
Eric Mills, coordinator
ACTION FOR ANIMALS
Oakland

https://www.biologicaldiversity.org/news/press_releases/2018/arkansas-turtles-04-25-2018.php

RECEIVED
CALIFORNIA
FISH AND GAME
COMMISSION

2018 MAY -3 AM 10:00

California Fish and Game Commission
1416 Ninth Street
Suite 1320
Sacramento, Ca 95814

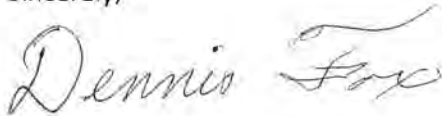
Subject: Apex Predators

Mister Chairman, Commission Members and Staff:

I have previously discussed not only mountain lions lowering deer numbers to where lack of browse becomes a factor in megafires resulting in loss of water and habitat, but also their reduction of "middle management" predators and a resultant bloom of rodents.

The attached article discusses what happens when one aspect of the apex triad depopulates the "middle management of predators" and, by extension, this triad of human, mountain lion, and now, wolf must be managed, both individually and as a unit with their prey, to maintain a healthy biota.

Sincerely,



Dennis Fox

CC Ca. Farm Bureau Federation
Gaines and Associates
Kern County Cattleman's Assn
Kern County Fire Dept

The Great Kern County Mouse War

Kennedy P. Maize

Once upon a time some 75 years ago, the good people of Kern County, California had an idea. They thought they were very smart. They would rid themselves of all the evil predators that killed their domestic animals, frightened their children and made life unpleasant.

So in the early years of this century, the good citizens of Kern County oiled the shotguns, cleaned their traps and brewed batches of strychnine. For 20 years they killed the evil predators – the skunk, the fox, the badger, the weasel, the snake, the owl, the hawk. Killed them all, every one they could find. The good folk of Kern County were very pleased.

In 1924, the good sheepmen of Kern County concocted a final solution to the "coyote problem." They hired a US Biological Survey team (then part of the Department of Agriculture) to exterminate the entire coyote population. Soon there were no more coyotes in Kern County.

The good folk of Kern County were filled with satisfaction by what they had accomplished. They supposed they had created a pleasant paradise where their chickens would have no natural enemies, their children would never be frightened by talon of fang and their dogs would never return stinking of skunk. Providence, they were sure, would bless their work with healthy animals, happy children and bountiful harvests.

Most of the good people of Kern County were either farmers or townsmen in Taft, Tupman, McKittrick, Ford City and other small villages. There was one city, Bakersfield, a market center with a population of under 10,000 people. Most of the good people of Kern County rarely got to Bakersfield. Despite oil derricks that dotted the landscape, Kern County in the 1920's was agricultural.

Farming in Kern County was risky. Every year farmers planted grain in the fertile 25,000 acres of dry bed of Buena Vista Lake. Three years out of every four the lakebed flooded in the fall, destroying the crop. But the fourth year – what a harvest for the good people of Kern County!

Such a year was 1926. There was kaffir corn and barley in such bounty that all California took notice of Kern County's good fortune. The good merchants of Kern County rubbed their hands together as they thought about the dresses and cars and fencing and paint and other things the good farmers would buy with their grain receipts. So the good farmers reaped their grain, leaving behind 25,000 acres of stubble and scattered seed. The farmers took their grain to market and felt secure in their good fortune.

By October the good people of Kern County had begun to notice a minor annoyance. A farmer came to town on a Saturday to buy supplies and a new shotgun, and he told the other farmers and the merchants about his little problem. "I killed nearly 500 mice in my barn last evening," he said. "You'd better sell me some poison, George."

And there were mice. Everywhere the good people of Kern County looked there were mice. The mice had bred in the Buena Vista Lake, unmolested by predators and well fed on residue from the harvest, until there were many millions of them. So many, in fact, that the food supply began to run out. Most were still in the dry lakebed, which looked as if it had just been cultivated, the result of mice burrowing in to the ground. Mice were feeding on the grain residue and continuing to breed.

A few mice, maybe a hundred thousand or so, had ventured out of the lakebed by November. The foraging vanguard increased in December. They were invading barns, granaries, and houses looking for food. In some places, near the lake the mice were ankle-deep. People killed them by the thousands. "The way we're slaughtering mice," one farmer said, "they'll soon be as scarce as coyotes. Now, if you excuse me I have to shoot some owls I found in my silo."

If the farmer was wrong about the effect of killing thousands of mice, he can be excused his error. So far the good citizens of Kern County had fought only skirmishes in what would quickly become the Great Kern County Mouse War. But the good people of

Kern County thought they had taken heroic measures and that they had won. After all, the West Side Businessmen's Club in Taft donated \$50 for poisoned wheat after the county's deputy horticultural commissioner C.H. Bowen described the problem. Taft Mayor Clarence Williams said he would hand out the poison to the good farmers. That ought to do the trick.

The effort seemed to work. By Christmas of 1926 Commissioner Bowen, whom the press was calling "General" for his leadership of the war against mice, told reporters, "By the first of the week I expect our work to be finished." The *Los Angeles Times* of December 29th reported, "Field mouse infestations at Taft and Tupman have been brought under control through the use of poisoned grain, the horticultural commissioner's office said today."

But Kern County didn't understand the dimensions of its mouse problem. All the few hundred pounds of poisoned grain had accomplished was to delay hordes of mice that were marching out of the lake toward new food supplies. A cold snap at Christmas did as much to cause the delay as the poisoned grain.

The new year of 1927

opened cold and clear, and the good people of Kern County faced the future with confidence. The mice seemed under control and there would be prosperity ahead if they continued their eternal vigilance against the hawks, owls, coyotes and other varmints.

Those good people who subscribed to the *Los Angeles Times* may have noticed a small feature article on New Year's Day. A park naturalist pointed out that the hated coyote is a very good mouser. But, of course, the article didn't mean much to the good people of Kern County. There were no coyotes in Kern County.

The cold snap broke on January 6th, and the mice emerged from the lakebed in a squirming, furry wave, driven by starvation. The mice had consumed every edible item in the lakebed. Scrambling up the barren, 100-foot Buena Vista Hills, the mice headed for Ford City, McKittrick and

Taft. Millions of mice were on the march toward food. U.S. Highway 399, which ran along the lakebed, became slippery with squashed mice, and cars slid into the ditches. Warning signs reading, "Slow: Slippery Conditions" were posted.

Superintendent Bob Maguire of the Honolulu Oil Company put men from the derricks on mouse detail. They dug trenches and spread poisoned barley. Maguire's mouse-control crew killed 50,000 mice in one day on one small piece of company property.

By January 16th the U.S. Biological Survey was calling the affair in Kern County the greatest rodent infestation in U.S. history. The only other comparable incident was a mouse migration in 1908 in Nevada. But the Biological Survey said the Nevada episode was minuscule compared with the problem in Kern County. Observers reported a "moving landscape" as mice poured over the earth in ankle-deep waves.

One January morning during the mouse invasion, a teacher at Conley School, near the lake, opened her desk for the day's lesson plan. A dozen mice leaped out and she leaped out the school door, shrieking. Mice were in every wastebasket. Mice occupied the principal's office. Mice darted from classroom to classroom. Mice were *everywhere*.

On January 15th a headline appeared in the *Los Angeles Times*: "Army of Field Mice Kill and Eat Sheep at Taft." The article reported, "A skirmishing force of the second army of field mice reported to be invading Taft attacked, killed and ate a sheep at the San Emidio Ranch." The unlucky ewe was kept in a small pen at the head of a canyon and was unable to escape. The article concluded dryly, "The mice have become a distinct annoyance to golfers on the Petroleum Club links on Maricopa Road."

By January 19th, the mouse war was the *Times*' lead story on the front page. The headlines said:

Pied Pipers Lure Mice

Poison Stemming Vast Hegira

Thousands of Rodents Prey of Own Appetites During Kern County Trek

Gen Bowen Thinks peril to Centers of Population Has Been Overstated

The story was a full description of what was occurring in Kern County, telling of "roads carpeted with mice" and concluding with the apt

observation, "The plague has been aggravated by the fact that for many years past an unceasing warfare has been waged on the natural enemies of the invaders such as coyotes, hawks, wildcats, and other predatory beasts and birds." The reference to the Pied Piper was a headline writer's fancy.

Folds around the country offered various ways to redress the natural balance. The northern California town of Merced offered hundreds of hungry cats to the good citizens of Kern County. But cats, it turned out, weren't much of a solution. There were just too many mice. A cat, after killing and eating a dozen or so mice, becomes sated and bored.

Lewis Gingery of Rushville, Missouri, told the good folks of Kern County that a couple of hundred skunks could take care of the problem he was surprised that local skunks hadn't prevented the problem in the first place.

But the good citizens of Kern County had killed all the skunks and they still didn't understand what they had done. Mice surging up the lakebed attracted flocks of hawks, owls, ravens, crows, vultures, and even a couple thousand seagulls, which flew in from the coast. As the birds swooped down on the mice, the good people of Kern County shotgunned them. They hung the carcasses on fenceposts to deter other feathered predators.

The good citizens of Kern County were losing the war against the invaders. The mice had multiplied freely over the years. The bumper crop of 1936 had produced a bumper crop of mice. The population spurted until the food ran out. Then tens of millions of mice found they had to migrate or starve. The mice moved inexorably. By mid-January they occupied a sector twelve by eight miles.

Then the war escalated. On January 19th, it was announced that the chief poison specialist and exterminator for the U.S. Biological Survey – the man who had conquered the Nevada migration – was being sent from Washington, D.C. The headline writer for the *Times* had been prescient – Stanley E. Piper was the exterminator's reassuring name.

Piper arrived in Kern County on Sunday, January 22nd to examine the area and map his battle plan. On Monday, he announced his intentions. Working with a full-time crew of 25 men, Piper would stage a counterattack at Buena Vista Lake.

Federal forces set up camp on a high spot in the middle of the dry lake, a place called Pelican Island. The crew then attempted to determine the size of the enemy forces. They dug up an acre of lake bottom and counted the mouse burrows. They counted 4,000 burrows and were stunned. They were facing an army of 100 million mice.

Piper quickly hauled in 40 tons of chopped alfalfa generously laced with strychnine. Piper asked the oil companies to work harder at controlling the spread of the mice outward and he concentrated on the lakebed.

By the end of February, Piper had won. But it had been a costly war. The good farmers of Kern County had lost more than a half-million dollars in damaged crops, buildings, and fences. The good townsfolk had lost a similar amount in property damage and unrealized business revenue. Piper's efforts cost \$5,000 for grain and supplies, paid for by the good citizens of Kern County. The Great Kern County Mouse War lasted over three months and mouse deaths amounted to unknown millions. The sweet prosperity of 1926 had turned sour.

If one pair of adult mice produces offspring, who in turn produce offspring, and so on for one year, the result will be over 1 million mice – unless there are predators. It is a lesson that the good people of Kern County should have learned well. It is a lesson that we all should learn well.

Build a better mousetrap, the old saying has it, and the world will beat a path to your door. The Great Kern County Mouse War proves that no one builds better mousetraps than nature. Let us beat a path to her door.

From: patricia mc pherson
Sent: Thursday, May 03, 2018 5:40 PM
To: Willis, Andrew@Coastal; Haage, Lisa@Coastal; FGC; Termini, Valerie@FGC; Wilson, Erinn@Wildlife; Wilson, Jayme; Wildlife DIRECTOR; Henry, Teresa@Coastal; Medak, Christine; FourthDistrict@bos.lacounty.gov; Sheila; firstdistrict@bos.lacounty.gov; Lucchesi, Jennifer@SLC; Weber, Mark; Lauren Pizer Mains, Jeanette Vosburg; Todd Cardiff
Cc:
Subject: Fwd: Ghost guns and the Ballona Wetlands

FYI- Ballona Wetlands

Subject: Ghost guns and the Ballona Wetlands
Date: May 3, 2018 at 12:42:44 PM PDT

Argonaut article

<https://argonautnews.com/the-arsenal-next-door/>

From: afa@mcn.org
Sent: Friday, May 04, 2018 3:05 PM
To: secretary@resources.org; Wildlife DIRECTOR; FGC
Subject: BULLFROGS - RELIGIOUS CEREMONY RELEASES - SINGAPORE

AMERICAN BULLFROGS

This just in from Singapore....

It's not just California where these illegal releases are a problem. No mention here of the chytrid fungus, but it's likely implicated.

x
Eric Mills, coordinator
ACTION FOR ANIMALS
Oakland

----- Original Message -----
Subject: BULLFROGS - RELIGIOUS CEREMONY RELEASE
From: afa@mcn.org
Date: Fri, May 4, 2018 1:39 pm
To: afa@mcn.org

<https://mothership.sg/2018/05/american-bullfrogs-dead-tampines-quarry/>

From: Brooks Taylor
Sent: Tuesday, May 08, 2018 11:51 AM
To: FGC
Subject: Re: big game tag allocation

Yah, I know this is a subject that comes up often and is at least being pushed by other groups. My email was more a "voice my opinion" piece to the commissioners.
Please forward my original email to the group

Brooks Taylor

Sent from my iPhone

On May 8, 2018, at 11:31 AM, FGC <FGC@fgc.ca.gov> wrote:

Dear Mr. Taylor,

Thank you for submitting a request for regulation change to the California Fish and Game Commission (Commission). As of October 1, 2015, all requests for regulation changes must be submitted on the form Petition to the California Fish and Game Commission for Regulation Change (FGC 1).

In order for us to consider your request, please complete and submit Form FGC 1, which is available on the Commission's website at <http://www.fgc.ca.gov/public/information/petitionforregulatorychange.aspx>.

If you have any questions or concerns, please feel free to contact us at (916) 653-4899 or fgc@fgc.ca.gov.

Sherrie F.
Commission staff

From: brooks taylor
Sent: Tuesday, May 08, 2018 8:33 AM
To: FGC <FGC@fgc.ca.gov>
Subject: big game tag allocation

Good morning everyone.

Well it is that time of year again when I fill out tag applications. And again I look through the Elk, Sheep and Antelope tags and realize that because i was not in the state when this point system started, and because my son only recently started hunting, that we will NEVER be in contention for these coveted tags. Sure there is an extremely small potential to get the one random tag but lets be real. Most of those tags are unobtainable unless you are one of the few thousand people who happened to be alive and applying for tags 16 years ago. I know much of our point system was modeled after Colorado's system. We need to also adopt their system they use for the far more rare tags such as sheep, moose and goat. For those species the maximum number of

points is a very small number. The way the system is now in California there will never be a turnover of max point applicants. It is a silly prospect at best. So I will go to Colorado and Nevada this year. I have likely given up on any chance in California. Not sure why i buy that application.

This system needs to change so our kids have a chance at these tags.

Brooks Taylor

From: afa@mcn.org
Sent: Thursday, May 10, 2018 6:53 PM
To: Office of the Secretary CNRA; Wildlife DIRECTOR; FGC
Subject: CHYTRID FUNGUS ORIGINS - TODAY'S WASHINGTON POST - 5/10/18

Thursday, May 10, 2018

DEPT. OF RESOURCES
DEPT. OF FISH AND WILDLIFE
FISH & GAME COMMISSION
VARIOUS LEGISLATORS

CHYTRID FUNGUS ORIGINS - This article ran in today's WASHINGTON POST, and dozens of similar articles in various newspapers around the country.

Will anyone in Sacramento EVER do the obvious, and end this brutal, unhealthful and environmentally-destructive commerce? Now's the time.

Note the opportunity for comments.

With baited (sic) breath,

Eric Mills, coordinator
ACTION FOR ANIMALS
Oakland

https://www.washingtonpost.com/news/speaking-of-science/wp/2018/05/10/exotic-pet-trade-linked-to-invasive-fungus-thats-killing-frogs-globally/?utm_term=.d0a4009f2ab5

Ocean West Senior Village
Homeowners Association Board of Directors
1090 Murray Road, Space 133
McKinleyville CA 95519

RECEIVED
CALIFORNIA
FISH AND GAME
COMMISSION

2018 MAY 14 PM 1:30

May 10, 2018

Mr. Richard Dreiling, Chairman/CEO
Dollar General
100 Mission Ridge
Goodlettsville, TN 37072

RE: Proposed Dollar General Store
Corner of Murray Rd & McKinleyville Ave
McKinleyville CA 95519
Assessor Parcel Number 510-171-059-000
Permit Application Number 46126

Dear Mr. Dreiling:

First of all, let me make clear to you that the majority of residents in McKinleyville, Californian, are opposed to a Dollar General store being built on Murray Road and McKinleyville Avenue across from McKinleyville High School. Residents of Ocean West Senior Village right next door to the proposed Dollar General store strongly oppose this Dollar General store for several reasons:

- There will be increased vehicle traffic on the already very busy Murray Road. We have a single exit from our community, and it's onto Murray Road. There will also be an increase in large delivery truck traffic, emissions and noise on Murray Road.
- These stores are known to generate excessive litter in the immediate neighborhood.
- Paving over the now vacant grass-covered lots will increase water runoff and debris into Widow White Creek, creating unacceptable environmental impacts.
- These stores are magnets for crime, vagrancy and vandalism; with the stores requiring 24-hour security lighting causing night-sky light pollution.
- While a Dollar General store brings a few minimum wage jobs to the area, these "corporate" stores hurt established local competitors and create blight when existing stores go out of business and leave behind vacant buildings. A large portion of Dollar General's revenue goes to their out-of-state corporate headquarters. We strive to keep our local dollars local whenever possible.
- Immediately and long-term, Dollar General stores typically depress property values in the area.
- A major concern is this store's proposed location is directly across from McKinleyville High School, which will create an additional safety hazard for the children crossing mid-street between the school and the store in an already high-traffic area.
- Another major concern is the store selling alcohol right across the street from the High School.

It's not too late for you to seriously reconsider the location of this proposed Dollar General store. If you're determined to try to come to this area there are several other commercial properties available in McKinleyville,

In the meantime, we are marshaling our resources to oppose this store at all levels: neighborhood, Humboldt County, the State of California and Federal agencies. As such, we are initiating a local petition to express our "incompatibility" concerns directly to our Humboldt County District 5 Supervisor, the Humboldt County Permitting Office, Humboldt County Division of Environmental Health, Humboldt County Public Works, Humboldt County Planning Division, California Department of Fish and Game, California Department of Alcoholic Beverage Control, and the US Fish and Wildlife Service.

Sincerely,



Antonia Dobrec, President
Ocean West Homeowners Board of Director

ec: Jonathon Browning, Tectonics Design Group (jon@tdg-inc.com)

McKinleyville Community Services Board of Directors (mcsd@mckinleyvillecsd.com)

Humboldt County

Ryan Sundberg, Humboldt County Board of Supervisors (RSundberg@co.humboldt.ca.us)

Chad Pasquini (cpasquini1@co.humboldt.ca.us)

Delilah Moxon, Permit Supervisor (dmoxon@co.humboldt.ca.us)

Karen Meynell, Executive Director, Headwaters Fund Board (KMeynell@co.humboldt.ca.us)

State of California

Alcohol Beverage Control (cust.serv@abc.ca.gov)

pc: **Humboldt County**

825 5th Street, Room 111

Eureka, CA 95501

Thomas Mattson, Public Works Director

John Ford, Planning Director

State of California

California Fish and Game Commission

P.O. Box 944209

Sacramento, CA 94244-2090

Casey Kelly, Chief Executive Officer

Follett Investment Properties, Inc.

11211 Gold Country Blvd.

Gold River, CA 95670

From: Joshua Russo
Sent: Monday, May 28, 2018 9:42 PM
To: Wildlife DIRECTOR; Catton, Cynthia@Wildlife; Shuman, Craig@Wildlife; FGC; Eric Sklar; Ashcraft, Susan@FGC; Puccinelli, Robert@Wildlife; Jones, James@Wildlife; Hendricks, Joel@Wildlife; Mastrup, Sonke@Wildlife
Subject: Watermens Alliance Recreational Urchin Removal Event May 26 and 27 Report

I want to report to the Commission and the Department that we had a very successful event. There were some chaotic calls in the days leading up to the event so I also want to assure you that this was a collection event and there was no crushing in the water. We had a good turnout even though the forecast went from mediocre to bad during the week. Saturday morning the swells were about 4 feet but the wind was already picking up at 9am. It got a little sporty in the afternoon but these divers were hardcore.

We took down the divers name and GO ID number as they entered the water and assigned them a diver number 1-100. As the diver filled his bag he gave it to a kayaker that shuttled it to shore and informed the shore support which diver supplied the bag. Some bags were taken by Cynthia and her crew to sample, the rest were put in a bucket with the divers number on it and crushed. The number of inches the crushed urchin were in the bucket was recorded next to their diver number to ensure that no diver went over their limit. A 5 gallon bucket is 14 inches tall so using the formula 4×14 each divers limit is 56 inches. As Cynthia finished sampling the bags they returned them to the assembly line for the same process.

We had 86 registered divers on Saturday.

We pulled 1,400 gallons of urchin from the ocean which when crushed were 280 gallons of compost.

Cynthia estimates the number at 36,000 urchin and 4,600 pounds.

On Sunday we had 39 divers in the water. 14 that did not dive the day before which makes 100 divers over the weekend.

We pulled another 800 gallons of urchin from the ocean which we crushed into 160 gallons of compost.

Using Cynthia's numbers from the day before I estimate another 20,000 urchin were harvested and another 2,500 pounds.

Our estimated totals are:

2,200 gallons of urchin removed from the ocean which equals 56,000 urchin and 7,100 pounds.

It would take my commercial divers 14 days to do this much.

We also raised \$13,600 to fund the commercial dive effort in Sonoma.

100% of those that participated said that they would do this again. They also said that it didn't matter if the location was in Sonoma or Mendocino. Everyone felt that they had made a difference and that continued effort was important. As a group we decided to do these events every other month. I've already begun scheduling the next event for July 29 and 30 at Albion.

I hope that that you agree that this was a huge success and that what we are doing corresponds with your intent when you raised the recreational limits. I also hope to work with Cynthia and Craig to come up with suggestions for a more permanent regulation when this emergency action expires. It would help a great deal if we could use something similar to boat limits so we don't have to keep close track of how many urchin each diver pulls. We could just multiply the limit times the number of divers so that as we're crushing we don't have to keep track of which urchin belong to which diver. I'll talk with Cynthia and come up with some suggestions to bring to Craig.

Thank you for allowing us to make a difference and do something about this. I'd still like to talk with the commissioners so please call me at your convenience,

Joshua Russo

P.S. The record for one day on SCUBA was 11 gallons crushed which would have been 55 gallons uncrushed. Freediving the record for one day was 10 gallons crushed which would have been 50 gallons uncrushed. Also, there should be some positive press for you in the Press Democrat and the Mendocino Beacon about the event.

Santa Barbara Sea Ranch, Inc.

RECEIVED
CALIFORNIA
FISH AND GAME
COMMISSION

2018 JUN -5 PM 1:30

1829 Loma St., Santa Barbara, CA 93103 | (805) | dwillett@santabarbarasearanch.com

May 31, 2018

Valerie Termini

Executive Director

California Fish and Game Commission

1416 Ninth Street, Suite 1320, Sacramento, CA 95814

Dear Valerie Termini:

Please find enclosed two copies Santa Barbara Sea Ranch's application for lease of State water bottoms and a check for the \$500 application fee.

Thank you for your consideration of our application! I look forward to hearing from you.

Sincerely,



David T. Willett

President & CEO

Santa Barbara Sea Ranch, Inc.

SANTA BARBARA SEA RANCH, INC.
[REDACTED]

1001

16-24/1220 4416

DATE

5/31/18

PAY
TO THE
ORDER OFCALIFORNIA DEPARTMENT OF FISH AND WILDLIFE
Commission \$ 500.00

FIVE HUNDRED

DOLLARS

WELLS
FARGOWells Fargo Bank, N.A.
California
wellsfargo.comFOR STATE WATER BOTTOMS LEASE APP.
[REDACTED]

JUN 06 2018 000818

HEAT SENSITIVE

Agency Source Code for this initial lease application payment is 121500.48

The Index/PCA was: **9990 / 82013**

JUN 06 2018 000818

~~\$~~ 500 —

FORM A

**State of California Fish and Game Commission Application for Lease of
State Water Bottoms for Aquaculture**

Applicant Name: Santa Barbara Sea Ranch, Inc.

Phone: (

Address:

Aquaculture Registration Number: TBD

Exp. Date: TBD

(Note: Aquaculture registration application will be made when appropriate)

Species of plant or animals to be cultured:

Mytilus galloprovincialis (Mediterranean mussels)

Application is hereby made to the Fish and Game Commission of the State of California for a lease of State water bottoms in the area described in the attached exhibit entitled "Exhibit A - Legal Description," and as shown on the map attached hereto as "Exhibit B." Each exhibit bears the name of this applicant. Such lease will be for the purpose of aquaculture involving the species designated above. In support of this application, the applicant hereby submits the following explanation of the type of operation and cultural practices to be employed:

- A. Purpose of operation – research and development or production
- B. Plan of development and proposed production schedule – 5 year plan
- C. Type of cultural method(s) to be employed: bottom, longline, buoyed habitats, etc.
- D. Department of Health Services growing water classification: approved, conditionally approved, prohibited, restricted or unclassified

(Please see additional sheets for detailed explanation)

Date: 5/31/16

Santa Barbara Sea Ranch, Inc.

By:

D. T. Willett PRESIDENT & CEO

David T. Willett – President & CEO

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1. BACKGROUND

A. APPLICANT

Santa Barbara Sea Ranch, Inc. (SANTA BARBARA SEA RANCH), a California corporation, was formed in May 2018 for the express purpose of creating a Santa Barbara based mussel farming operation that provides a locally cultivated, sustainably raised food source that creates economic opportunities for the community and serves to advance state and national goals and objectives for increased domestic aquaculture and secure food supply.

SANTA BARBARA SEA RANCH founder, David Willett, has held senior operations and engineering leadership positions with companies in the wave, tidal, and wind renewable energy sectors. He holds a BS – Electrical Engineering from UCSB, an MS – Electrical Engineering from the University of Wisconsin, and an MBA from Pepperdine University. His experience establishing and leading a wind turbine manufacturing operation with a global supply chain, as well as his ocean engineering experience in tidal and wave energy systems development, gives him the right tools and qualifications to help ensure the success of SANTA BARBARA SEA RANCH's efforts to become a model aquaculture farming operation.

SANTA BARBARA SEA RANCH is working to create a Board of Advisors to help guide the company to successful establishment and commercial operation. Currently, Dr. Michael Chambers, Aquaculture Specialist and Research Scientist at the University of New Hampshire (UNH), is on the SANTA BARBARA SEA RANCH Board of Advisors. Dr. Chambers provides the company with guidance related to best management practices, operations, cultural practices, and technical design. SANTA BARBARA SEA RANCH will work cooperatively with UNH, the University of California – Santa Barbara Bren School of Environmental Science and Management, regulatory agencies, and others to advance scientific knowledge and state-of-the-art aquaculture practices through research and innovation.

B. PROJECT SUMMARY

SANTA BARBARA SEA RANCH will establish a commercial offshore bivalve aquaculture operation based from Santa Barbara Harbor. The project will consist of 176 acres in state waters of the Santa Barbara Channel over a sandy bottom area located approximately five miles west of Santa Barbara Harbor and within one mile of the shore. The site will be used for growing of the Mediterranean mussel (*Mytilus galloprovincialis*) via submerged longlines. The mussels will be grown and harvested by SANTA BARBARA SEA RANCH and landed at Santa Barbara Harbor.

Initial plantings of juvenile seed mussels, commonly referred to as spat, will be purchased from onshore hatcheries certified by the California Department of Fish and Wildlife (CDFW). If approved by the appropriate regulatory agencies, including CDFW and the California Coastal Commission, subsequent plantings may include wild collected spat.

Growing mussels adhere to special ropes that promote mussel attachment and growth. These ropes will be suspended by submerged longlines and buoys that are anchored to the sandy ocean bottom. When harvested, the mussels will be hauled onboard the harvesting vessel

where they will be separated from the growing ropes, declumped, cleaned, graded, and bagged for transportation to Santa Barbara Harbor for offloading, sale, and distribution.

2. OPERATION AND CULTURAL PRACTICES TO BE EMPLOYED

A. PURPOSE OF OPERATION

SANTA BARBARA SEA RANCH's purpose of operation is to grow, harvest, and sell Mediterranean mussels (*Mytilus galloprovincialis*) and, by doing so, to provide a locally cultivated, sustainably raised food source that creates economic opportunities for the community and serves to advance state and national goals and objectives for increased domestic aquaculture and secure food supply.

B. PLAN OF DEVELOPMENT AND PROPOSED PRODUCTION SCHEDULE

i. SITE SELECTION AND LOCATION

The proposed site (please see Exhibit A and Exhibit B) is approximately 176 acres, is in state waters, is not in the Halibut Trawl Grounds, is in a Kelp Administrative Bed Boundary with proper zoning for a bottom lease, and does not conflict with aquaculture activity on state leased parcels.

The proposed site is near to state water bottom lease #M-653-02, issued by the California Fish and Game Commission (FGC) and held by the Santa Barbara Mariculture Company (SBMC). SBMC has been successfully farming Mediterranean mussels in this lease location for more than 10 years. Due to its proximity to lease #M-653-02, SANTA BARBARA SEA RANCH believes that the permitting process should be more streamlined, and that growing conditions should be virtually identical. It is anticipated that cooperation between SBMC and SANTA BARBARA SEA RANCH will lead to improved operational efficiencies, improved best management practices, and economies of scale with regard to logistics and supplies, which will benefit both companies and the industry as a whole. There will also be minimal impact to vessel traffic since the proposed site is in line with the SBMC lease, parallel to the shoreline, and inside of the Halibut Trawl Grounds.

Environmental conditions, including depth, wave, current, temperature, and nutrients have all been proven to be satisfactory for successful mussel cultivation. Duck predation has been a problem in the area and will be addressed with new methods recently developed and tested by UNH.

SBMC has requested a modification to its lease location. SANTA BARBARA SEA RANCH's proposed location does not conflict with SBMC's existing, or proposed, locations. SBMC's proposed location is indicated by points SBMC 1, SBMC 2, SBMC 3, and SBMC a' in the map below (**Figure 1**). SBMC's existing lease is shown as the large kelp-shaded rectangle. SANTA BARBARA SEA RANCH's proposed site is indicated by points SR-NW, SR-SW, SR-NE, and SR-SE.

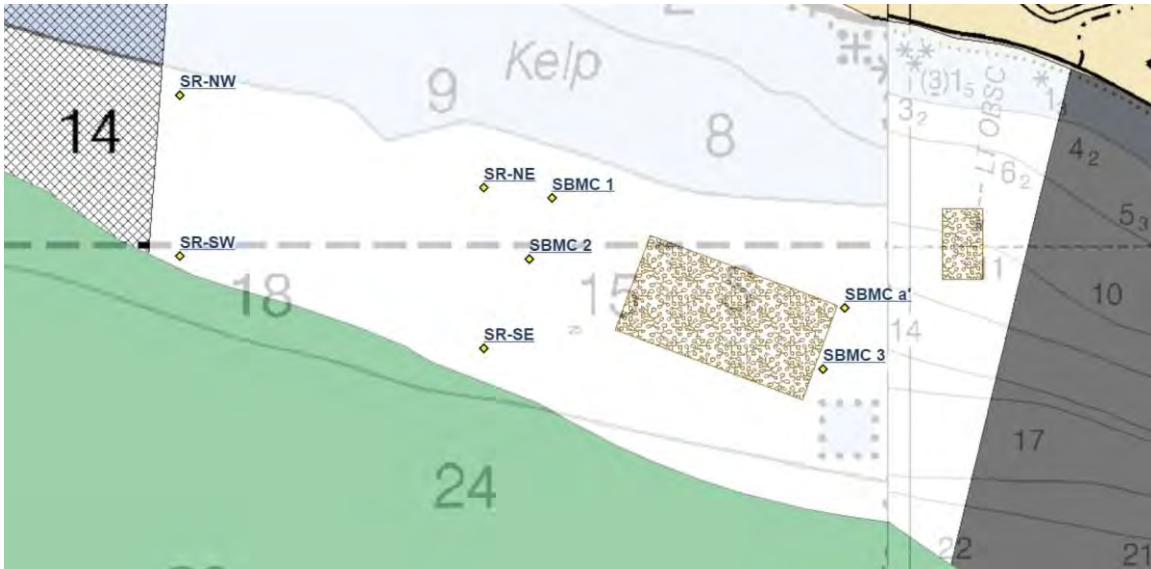


Figure 1: Map Showing the SANTA BARBARA SEA RANCH Proposed Site and the Santa Barbara Mariculture Company's Existing and Proposed Sites

SANTA BARBARA SEA RANCH has surveyed the proposed site for depth and bottom conditions. Sonar was used to take depth measurements at each corner of the site, midway between the corners of the site, and at multiple locations within the site:

Latitude	Longitude	Position	Depth (ft.)
34.40149287	-119.7803543	SR-NW	70
34.39600692	-119.7803543	SR-SW	101
34.39833926	-119.7677058	SR-NE	74
34.3928533	-119.7677058	SR-SE	111

Interior depth measurements in the proposed site were between 70-111 ft., and indicated that the entire site has a smooth sloping bottom.

Bottom conditions were estimated with sonar, and by bouncing a heavy weight on the bottom to feel for impact. All measurements taken indicated a sandy bottom with no growth or structure.

ii. PLAN OF DEVELOPMENT

The proposed site will occupy a 176 acre footprint and hold 100 longlines. Longlines will be arranged in 20 rows of five longlines each, spaced 100 feet apart, and parallel to the shoreline.

We plan to deploy 30 longlines in year one, 35 longlines in year two, and the final 35 longlines in year three. Production per foot of longline will continue to increase gradually after all the longlines are installed, as growout ropes are lengthened, and as production technique is refined.

We will use a modified second-hand fishing vessel for farm operation during the first three years, until cash flow from the farm will support the construction of a dedicated, custom-built vessel. The vessel will require minor modifications to accommodate handling of longlines, and the installation on deck of stripping, declumping, grading, and socking machinery. We plan to construct a new, purpose-built vessel in year three, and begin operating this vessel in year four (around the time the farm is at full scale).

The proposed site will be well marked and monitored. If necessary, warning devices can be installed to warn whales of the site location. Adaptive management and contingency steps will be taken if marine wildlife entanglements are observed or reported at the proposed site.

SANTA BARBARA SEA RANCH will work closely with stakeholders to adopt and adhere to all appropriate best management practices.

iii. PROPOSED PRODUCTION SCHEDULE

SANTA BARBARA SEA RANCH plans ramp-up operations according to the following schedule:

Production Schedule	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
New Lines Installed	30	35	35			
Total Lines Operating	30	65	100	100	100	100
Lines Socked	30	50	50	50	50	50
Lines Harvested		20	40	50	50	50
Tons/line		12	13	14	15	16
Tons Harvested		240	520	700	750	800

C. TYPE OF CULTURAL METHODS TO BE EMPLOYED

Mussels will be grown on ropes suspended vertically from longline harness sets in open water at the proposed site. Each harness set will consist of a 400 foot horizontal longline held in place about 20 feet below the surface by submerged flotation buoys, and anchored to the bottom (see **Figure 2** below). Dimensions in Figure 2 are not to scale and, along with specific component selection, will be adjusted and optimized to site specific conditions through disciplined engineering analysis. About 200 culture ropes will be suspended from each longline to a depth of 15-20 feet above the seafloor.

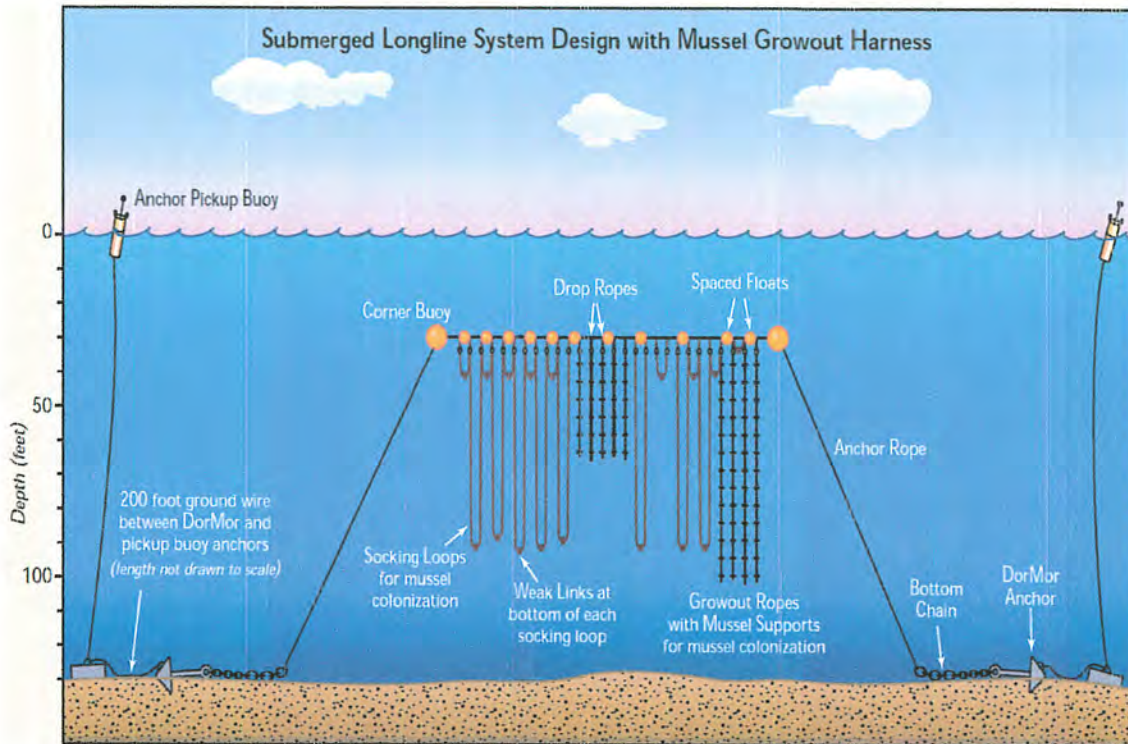


Figure 2 – Drawing of an Open-Ocean Mussel Longline Growout Harness

Longlines are assembled on shore and deployed by a vessel capable of handling the anchors (about 4,500 lbs each). Use of sand screw anchors will also be evaluated in place of gravity and embedment anchor solutions. The expected useful life of the longlines, with partial upgrades and regular maintenance, is 10 years. Deployment operations will require reasonable weather. Once the longlines are in place, production operations go through the following cycle:

- **Mussel spat socking:** Spat, purchased from onshore hatcheries certified by CDFW, are socked in June, July, September, and October. In this operation, juvenile mussels (around 20 mm in size) are graded according to size and “socked” in a biodegradable mesh surrounding the growout rope. This sausage-like “sock” of mussels is then suspended in loops from the longline. The mussels attach to the growout rope and the socking material disintegrates. The entire process is mechanized and performed onboard the vessel to minimize the mussels’ time out of the water.
- **Longline maintenance:** Longlines are maintained over the growout cycle until harvest. This includes the occasional removal of fouling and the addition of floatation as the mussels grow and become heavier. Properly scheduled de-fouling will help mussels grow better, preserve the gear, and save money on boat time.
- **Mussel Harvesting:** Mussel harvest begins 9-12 months after socking. Harvesting is staged so that a constant supply of mussels is harvested each month. The longlines remain in place after harvest for the next deployment of socked spat.

D. CALIFORNIA DEPARTMENT OF PUBLIC HEALTH GROWING WATER CLASSIFICATION

The California Department of Public Health (CDPH) has classified the area of the proposed site as "Conditionally Approved" as a shellfish growing area (please see **Figure 3** below).

California Commercial Shellfish Growing Areas

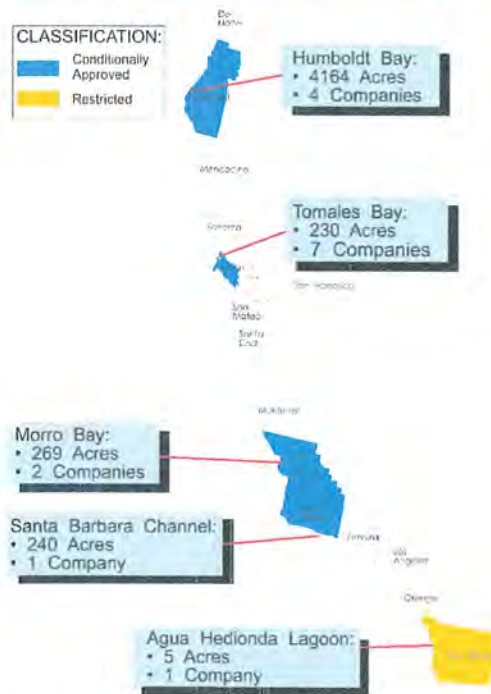


Figure 3 – California Commercial Shellfish Growing Areas

CDPH has also confirmed that the proposed SANTA BARBARA SEA RANCH site is not in a Waste Water Treatment Plant (WWTP) Closure Zone (please see **Figure 4** below).

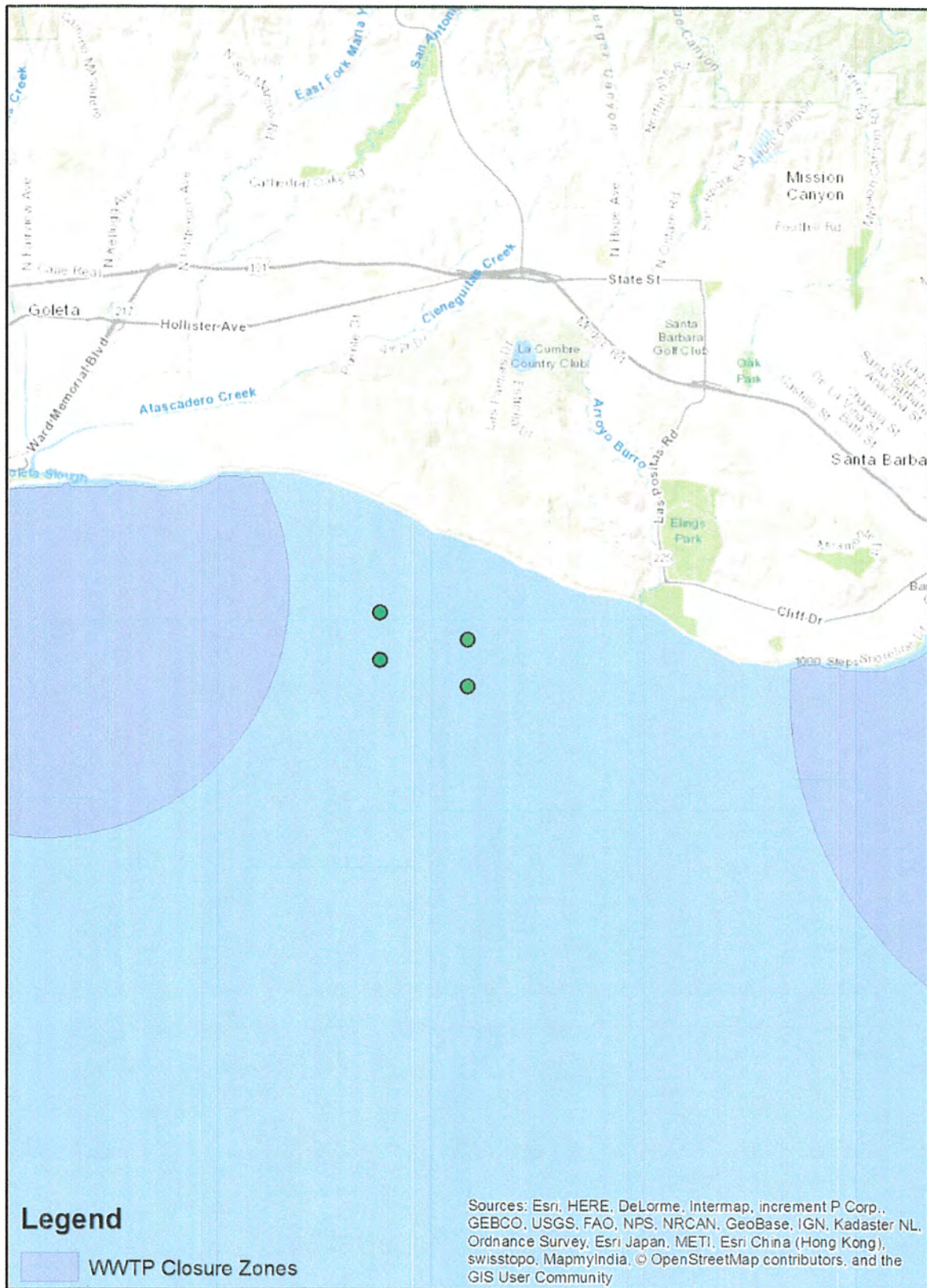


Figure 4 – SANTA BARBARA SEA RANCH Proposed Site Location (green dots) and Local WWTP Closure Zones

EXHIBIT A

Legal description of the proposed water bottom lease for cultivation of Mediterranean mussels (*Mytilus galloprovincialis*) by Santa Barbara Sea Ranch, Inc.

LOCATION

All that area lying offshore of Santa Barbara, California defined by a four-sided polygon formed by lines connecting the following waypoints (shown in decimal degrees):

Latitude	Longitude	Position
34.40149287	-119.7803543	SBSR-NW
34.39600692	-119.7803543	SBSR-SW
34.39833926	-119.7677058	SBSR-NE
34.3928533	-119.7677058	SBSR-SE

Area: 176 acres, more or less.

EXHIBIT B

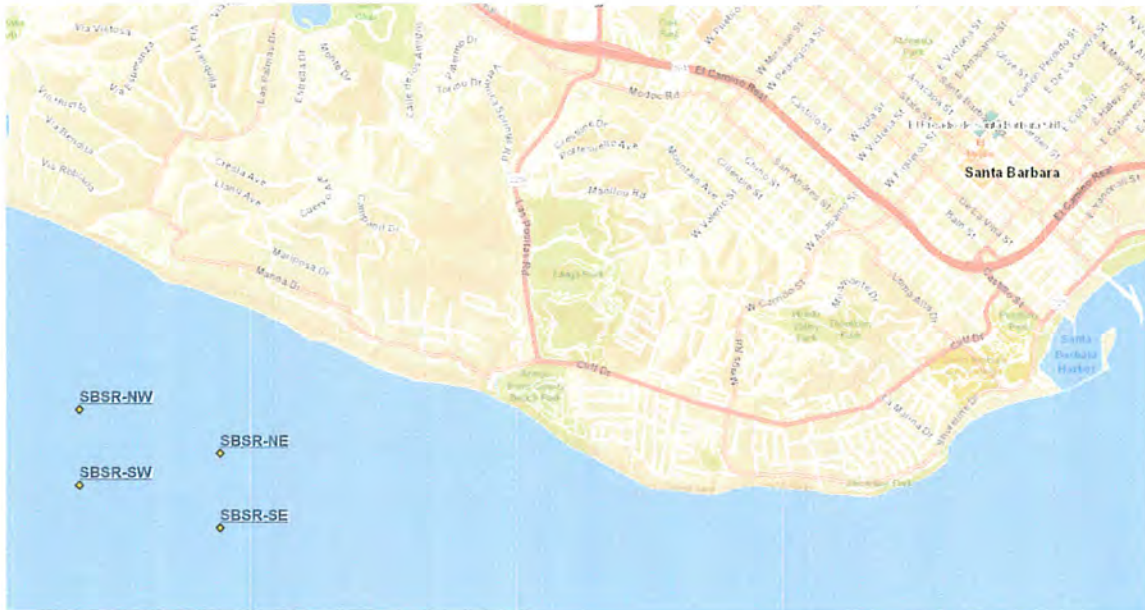
Map of the proposed water bottom lease for cultivation of Mediterranean mussels (*Mytilus galloprovincialis*) by Santa Barbara Sea Ranch, Inc.

MAP OF THE PROPOSED LOCATION

All that area lying offshore of Santa Barbara, California defined by a four-sided polygon formed by lines connecting the following waypoints (shown in decimal degrees):

Latitude	Longitude	Position
34.40149287	-119.7803543	SBSR-NW
34.39600692	-119.7803543	SBSR-SW
34.39833926	-119.7677058	SBSR-NE
34.3928533	-119.7677058	SBSR-SE

The nearest public access point is the Navy Pier in the Santa Barbara Harbor, approximately five miles from the proposed location.



- Area 176 acres, more or less.
- Distance between SBSR-NW and SBSR-SW = 2,000 ft., more or less.
- Distance between SBSR-NE and SBSR-SE = 2,000 ft., more or less.
- Distance between SBSR-NW and SBSR-NE = 4,000 ft., more or less.
- Distance between SBSR-SW and SBSR-SE = 4,000 ft., more or less.

Memorandum

2018 MAY 22 PM 1:30

Date: May 22, 2018

To: Valerie Termini
Executive Director
Fish and Game Commission

From: Charlton H. Bonham
Director



Subject: **Consent Item for the June 20-21, 2018 Fish and Game Commission Meeting**
Re: White Seabass Fishery Management Plan 2016-2017 Annual Review Report

Attached please find the report: "White Seabass Fishery Management Plan 2016-2017 Annual Review".

The Department of Fish and Wildlife (Department) met with the White Seabass Scientific and Constituent Advisory Panel (WSSCAP) in April 2018 to review fishery information and to consider if current management measures were providing adequate protection for the White Seabass resource. The WSSCAP reviewed the Points of Concern established in the White Seabass Fishery Management Plan, including criteria-based evaluation of the White Seabass population, to determine if an overfished condition exists.

Commercial and recreational landings of White Seabass have steadily declined in recent years; however, the last two seasons have shown increases in total catch. For the 2016-2017 season, commercial landings declined slightly from the prior season while recreational landings increased substantially. For the 2016-2017 season, an overfished condition did not exist and none of the other Points of Concern was met. Thus, the Department recommends no changes to the current management of the commercial and recreational White Seabass fisheries.

If you have any questions or need additional information, please contact Dr. Craig Shuman, Marine Regional Manager at (916) 445-6459.

Attachment

cc: Stafford Lehr, Deputy Director
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Valerie Termini, Executive Director
Fish and Game Commission
May 22, 2018
Page 2

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Chuck Valle, Senior Environmental
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Chuck.Valle@wildlife.ca.gov

White Seabass Fishery Management Plan 2016-2017 Annual Review



Prepared by
Department of Fish and Wildlife
Marine Region
April 2018



White Seabass Fishery Management Plan 2016-2017 Annual Review

Executive Summary

The California Fish and Game Commission (Commission) adopted the White Seabass Fishery Management Plan (WSFMP) in June 2002. The WSFMP includes a provision for annual monitoring and assessment of the White Seabass (WSB) fisheries. The White Seabass Scientific and Constituent Advisory Panel (WSSCAP) was established to assist the Department of Fish and Wildlife (Department) and the Commission with the review of the fishery assessments, management proposals, and plan amendments. The annual review includes fishery-dependent data (e.g., commercial and recreational landings and length frequencies) and, if available, fishery-independent data (e.g., recruitment information) as well as documented changes within the social and economic structure of the recreational and commercial industries that utilize the WSB resource within California. The review also includes information on the harvest of White Seabass from Mexican waters and other relevant data. Based on the results of the annual review, in cooperation with the WSSCAP, the Department will provide management recommendations, if needed, to the Commission.

The Commission adopted points of concern criteria in the WSFMP framework to help determine when management measures are needed to address resource issues. The points of concern are:

1. catch is expected to exceed the current harvest guideline or quota;
2. any adverse or significant change in the biological characteristics of White Seabass (age composition, size composition, age at maturity or recruitment) is discovered;
3. an overfishing condition exists or is imminent;
4. any adverse or significant change in the availability of White Seabass forage or in the status of a dependent species is discovered;
5. new information on the status of White Seabass is discovered;
6. an error in data or stock assessment is detected that significantly changes estimates of impacts due to current management.

The Department and WSSCAP met on April 13, 2018 to review the 2016-2017 fishery season (September 1 to August 31), and together agreed that none of the points of concern were met. Additional social and economic information along with the catch information from Mexico support this conclusion. As a result, the Department does not recommend any changes to the management of WSB or to the WSFMP at this time.

Background

The WSSCAP annually reviews current information to evaluate the status of the WSB resource based on points of concern adopted to implement the WSFMP, and to consider whether current management measures provide adequate protection for the resource. If a resource conservation issue is found the WSSCAP will provide its recommendation, rationale, and analysis to the Department. The Department will evaluate the recommendation from the WSSCAP and all available information and will recommend to the Commission management measure(s) to address the issue(s).

Results

Analysis of the points of concern (Table 1) showed that none of the criteria were met in 2016-2017.

Table 1. Analysis of the points of concern.		
Criteria	Analysis	Result
Catch is expected to exceed the current harvest guideline or quota.	2016-2017 total catch = 395,497 pounds; Optimum Yield = 1.2 million pounds*. Total catch is below optimum yield.	No action necessary
Any adverse or significant change in the biological characteristics of WSB (age composition, size composition, age at maturity or recruitment) is discovered.	Recreational and commercial fishery length-frequencies showed no significant change that would indicate a problem in the fishery. No new information on age composition, age at maturity, or age at recruitment.	No action necessary
An overfishing condition exists or is imminent.	See analysis in Table 2. No overall overfishing condition noted.	No action necessary
Any adverse or significant change in the availability of WSB forage or in the status of a dependent species is discovered.	Most forage species decreased in the 2016-2017 season. However, WSB are opportunistic feeders and the Department and WSSCAP feel that there are other prey items for WSB to feed on.	No action necessary
New information on the status of WSB is discovered.	The Department is currently collecting samples to investigate age/length at maturity.	No action necessary
An error in data or stock assessment is detected that significantly changes estimates of impacts due to current management.	Stock assessment was completed in May 2016.	No action necessary

*California Department of Fish and Game. 2002. Final White Seabass Fishery Management Plan, 219 pp.

Point of Concern: Expectation of optimum yield being exceeded.

The Commission established a fishing season of September 1 through August 31 of the following year. The Commission also adopted an optimum yield based on a maximum sustainable yield proxy of the unfished biomass, and it is currently set at 1.2 million pounds. In the 2016-2017 season, the total recreational and commercial harvest was 395,497 pounds, 33 percent of the allowable catch (Appendix A, Table 1).

Point of Concern: Changes in the biological characteristics of White Seabass.

The commercial fishery continues to harvest WSB across a wide size range (Appendix A, Figure 1). In 2016-2017, 281 fish were sampled from the commercial fishery. One hundred percent of the fish sampled were larger than the minimum size limit of 28 inches and approximately three fourths of the fish sampled were larger than 45 inches. Based on previous age-at-length information from reading otoliths and from a previously calculated weight/length relationship, those fish larger than 45 inches are likely more than 11 years old and weigh more than 30 pounds.

Sampled length frequency data for the recreational fishery are presented in Appendix A, Figure 2. Before the start of the 2009-2010 season the Department prepared and distributed a brochure targeting recreational anglers to improve compliance with the recreational minimum size limit for WSB. In the seasons since this brochure was distributed, less than 10 percent of the fish measured were smaller than the minimum size limit of 28 inches. This is a significant improvement from the previous seasons, in which 17-19 percent of all fish measured were less than minimum legal size. This season 93 legal-sized fish were measured from the recreational fishery. Of the legal-sized fish measured from the recreational fishery approximately one half of the fish measured were larger than 40 inches total length. Based on the previously calculated weight/length relationship, those fish larger than 40 inches are likely more than 9 years old and weigh more than 24 pounds.

Point of Concern: An overfishing condition exists or is imminent.

Three criteria (Table 2), all of which must be met to establish a point of concern, determine if an overfishing condition exists or is imminent. For the commercial fishery, there must be a 20 percent decline in landings in each of two consecutive seasons compared to the prior 5-season running average. Commercial landings of WSB (Appendix A, Table 2) totaled 217,915 pounds in the 2016-2017 season; this is a 24 percent decrease when compared to the prior 5-season running average (285,687 pounds). In the 2015-2016 season, commercial landings totaled 247,195 pounds; this is a 27 percent decrease compared to the prior 5-season running average (340,369 pounds). The WSSCAP and the Department agreed that the overfishing criterion for the commercial fishery was met. However, all three criteria must be met to establish a point of concern so no action is recommended at this time.

For the recreational fishery, the overfishing criterion is defined as a 20 percent decline in each of two consecutive seasons for both the number of fish and the average weight (Appendix A, Table 3). In the recreational fishery, the number of fish caught in the 2016-2017 season increased 50 percent when compared to the previous season. The average weight of fish caught in the 2016-2017 season decreased 1 percent when compared to the previous season. The WSSCAP and the Department agreed that the overfishing criterion for the recreational fishery was not met.

The final criterion for determining if an overfishing condition exists is a 30 percent decline in the recruitment index for juvenile WSB compared to the prior 5-season running average of recruitment. The Ocean Resources Enhancement and Hatchery Program (OREHP) had routinely conducted standardized field studies four times a year (August, October, April and June) for juvenile recruitment. However, reductions in funding curtailed survey effort. The Southern California Sport Fishing Enhancement Stamp fund was insufficient to cover all of the OREHP activities as well as the gill net recruitment surveys, and consequently there was no gill net sampling between 2009 and 2011.

In October 2012, gill net sampling similar to previous surveys was reinstated. The objective of the current sampling design seeks to resume the prior gill net sampling regime but in a reduced capacity with fewer locations surveyed and a reduction in the number of nets deployed at each site.

We used number of fish caught per set across the entire sampling year as an index to evaluate juvenile WSB recruitment. There was an increasing trend in number of juvenile WSB caught per set from 2012 to 2015. However, this trend decreased during the 2016 survey and again in 2017 (Appendix A, Figure 3). The number of fish caught per gill net set was averaged from the years 2012 to 2016, and was compared to the current year, 2017. The CPUE for juvenile WSB recruits for 2017 decreased by 17 percent from the previous 5-year average (Appendix A, Table 4).

Based on the analysis of all three overfishing criteria, the WSSCAP and the Department agreed that the overall overfishing point of concern for the fishery was not met.

Table 2. Analysis to determine if the White Seabass resource is overfished (Criteria taken from Section 51.01 (b), Title 14, California Code of Regulations).

Criteria	Analysis	Result
A 20 percent decline in the total annual commercial landings of WSB for the past two consecutive seasons compared to the prior 5-season running average of landings, based on landing receipt data.	<p>2016-2017 217,915 pounds = 24% decrease 5-season average = 285,687 pounds</p> <p>2015-2016 247,195 pounds = 27% decrease 5-season average = 340,369 pounds</p>	Criterion was met
A 20 percent decline in both the number of fish and the average weight of WSB caught in the recreational fishery for the same two consecutive seasons, as determined by the best available data.	<p>2016-2017 5,675 fish = 50% increase 22.9 pound average = 1% decrease</p> <p>2015-2016 3,793 fish = 21% increase 23.1 pound average = 22% increase</p>	Criterion not met
A 30 percent decline in recruitment indices for juvenile WSB compared to prior 5-season running average of recruitment, as determined by the best available data.	<p>2016-2017 0.88 fish/set = 17% decrease 5-season average = 1.06 fish/set</p>	Criterion not met

Point of Concern: Any adverse or significant change in the availability of White Seabass forage or in the status of a dependent species is discovered.

Prey species (Northern Anchovy, Jack Mackerel, Market Squid, Pacific Mackerel, and Pacific Sardine) are highly mobile and their distributions are affected by oceanographic conditions. A review of WSB forage species (Appendix A, Figures 4, 5, and 6) revealed some changes in availability.

Both Pacific Mackerel and Pacific Sardine have stock assessments conducted by the National Marine Fisheries Service and these stock assessments include biomass estimates. Since 2008, Pacific Mackerel biomass estimates have been conducted every two years. Pacific Sardine biomass estimates are conducted every year. The biomass estimates for Pacific Mackerel for the 2017/2018 season showed a slight increase from their last assessment. The 2014-2015 Pacific Sardine fishery closed two months early in April, and was closed for the 2015-2016 and 2016-2017 seasons.

Since there are currently no biomass estimates or stock assessments for Northern Anchovy, Jack Mackerel, and Market Squid, commercial fishery landings were used as a proxy for their availability. Northern Anchovy, Jack Mackerel, and Market Squid availability decreased and Market Squid increased slightly from the previous year.

Based on the analysis of all of the prey species, the WSSCAP and the Department agreed that this point of concern was not met because of the opportunistic nature of WSB foraging.

Other Points of Concern:

The remaining two points of concern (Table 1) consider any new information on the status of WSB, and if any errors in data or stock assessment were found.

Currently the Department is collecting WSB samples to assess length/age at maturity.

No errors in the current stock assessment have been found.

Additional Information

The Department evaluated basic socio-economic information to characterize the commercial fishery and provided those summaries to the WSSCAP (Appendix A, Table 5). The number of vessels fishing for WSB decreased by 32 percent (60 vessels) from the 2015/16 to 2016/17 seasons. This decrease in the number of vessels occurred mostly in the hook-and-line fishery. The ex-vessel price per pound has shown a steady trend over time and is presently at \$4.00 per pound for all gears combined. Limited socio-economic data are available for the recreational fleet.

Information about the take of WSB in Mexican waters was considered by the WSSCAP. California commercial fishermen are prohibited by Mexican law to fish in the territorial seas of Mexico, and no landings of WSB from Mexico by California commercial fishermen were reported in 2016-2017. Recreational anglers may fish in Mexico under the authority of a Mexican sport fishing license. During the 2016-2017 season, Commercial Passenger Fishing Vessel logbook data reported 33 WSB taken in Mexico, a decrease of 112 fish from the reported 145 taken in the prior season. No additional information about either the recreational or commercial catch of WSB in Mexico is available.

Appendix A – Data Analyses

Table 1. Total catch (pounds) of White Seabass, 2007/08 - 2016/17			
Season	Recreational	Commercial	Total
2007/08	150,988	653,264	804,252
2008/09	152,799	414,459	567,258
2009/10	215,071	502,021	717,092
2010/11	306,491	520,605	827,096
2011/12	259,028	406,746	665,774
2012/13	265,816	315,533	581,349
2013/14	219,116	262,441	481,557
2014/15	63,125	196,521	259,646
2015/16	96,244	247,195	343,439
2016/17	177,582	217,915	395,497

Source: California Recreational Fisheries Survey extracted from the RecFIN database at <http://www.recfin.org>, California Department of Fish and Wildlife Commercial Fisheries Information System (commercial landing receipts), and Marine Log System (MLS).

Table 2. Commercial White Seabass landings in pounds, 2007/08 - 2016/17			
Season	Pounds Landed	Prior 5-season average	Percent change from previous 5-season average
2007/08	653,264	377,896	73
2008/09	414,459	411,867	1
2009/10	502,021	433,621	16
2010/11	520,605	476,487	9
2011/12	406,746	502,347	-19
2012/13	315,533	499,419	-37
2013/14	262,441	431,873	-39
2014/15	196,521	401,469	-51
2015/16	247,195	340,369	-27
2016/17	217,915	285,687	-24

Source: California Department of Fish and Wildlife Commercial Fisheries Information System (includes commercial landing receipt data).

Table 3. Recreational White Seabass catch, 2007/08 - 2016/17				
Season	Total number of fish caught	Percent change in number of fish from prior season	Average weight in pounds	Percent change in weight from prior season
2007/08	7,593	5	19.3	4
2008/09	6,751	-11	19.8	3
2009/10	8,788	30	24.3	23
2010/11	12,672	44	29.1	20
2011/12	9,876	-22	26.9	-8
2012/13	10,634	8	19.3	-28
2013/14	9,567	-10	22.4	16
2014/15	3,136	-67	18.9	-15
2015/16	3,793	21	23.1	22
2016/17	5,675	50	22.9	-1

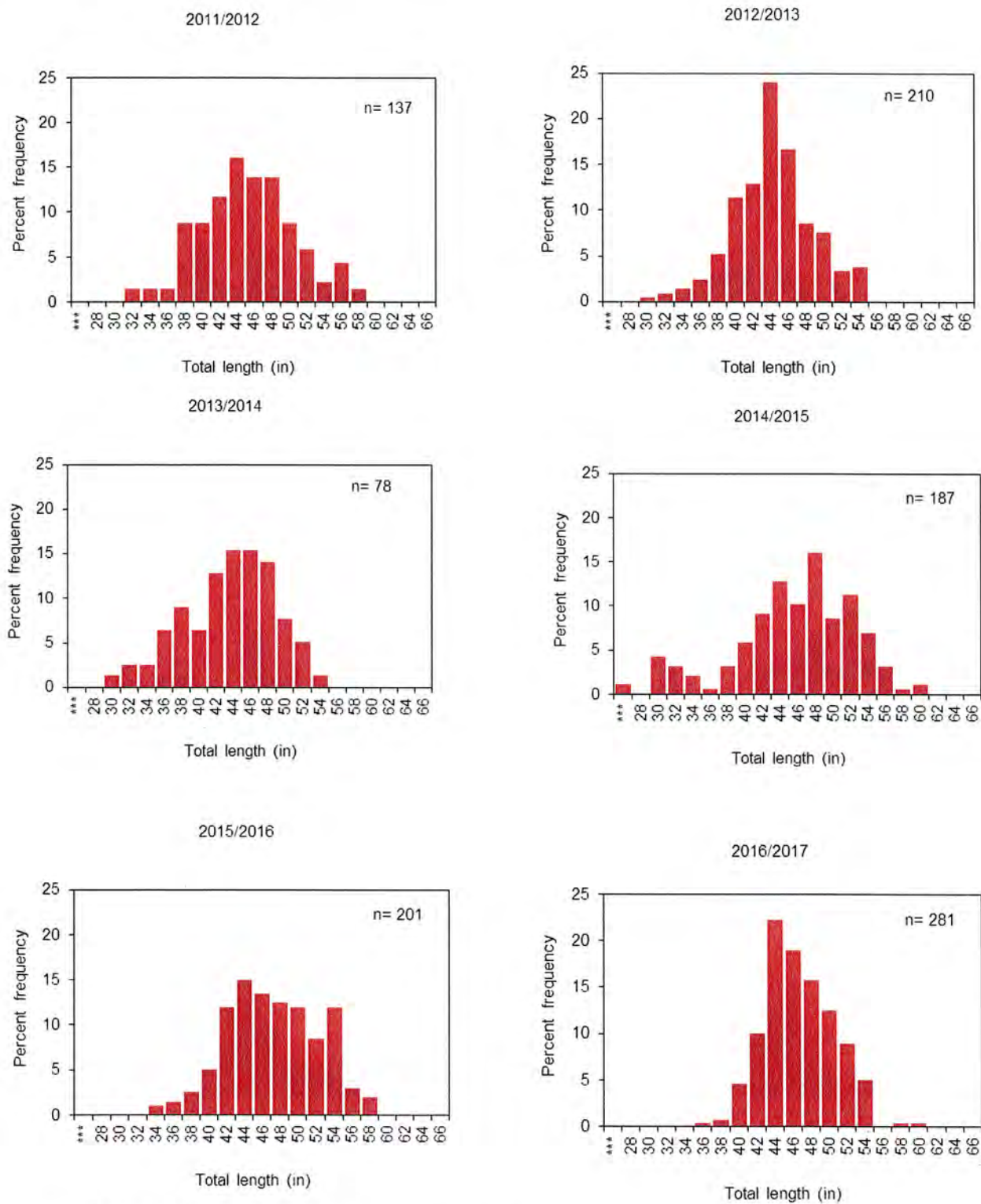
Source: California Recreational Fisheries Survey extracted from the RecFIN database at <http://www.recfin.org>, and Marine Log System (MLS).

Table 4. Number of juvenile fish (<711 mm) caught per gill net set, 2012-2017			
Season	Fish per set	Prior 5-year average	Percent change from previous 5-year average
2012	0.67		
2013	0.97		
2014	1.19		
2015	1.46		
2016	1.02		
2017	0.88	1.06	-17

Source: White Seabass Gill Net Survey Database. Hubbs-SeaWorld Research Institute and San Diego State University.

Table 5. Sociological and Economic Factors, 2005/06-2016/17		
Season	Total number of vessels landing White Seabass	Most common ex-vessel price per pound
2005/06	95	\$3.00
2006/07	97	\$3.00
2007/08	96	\$3.50
2008/09	93	\$3.50
2009/10	183	\$3.50
2010/11	254	\$4.00
2011/12	276	\$4.00
2012/13	257	\$5.00
2013/14	238	\$5.50
2014/15	177	\$4.00
2015/16	190	\$4.00
2016/17	130	\$4.00

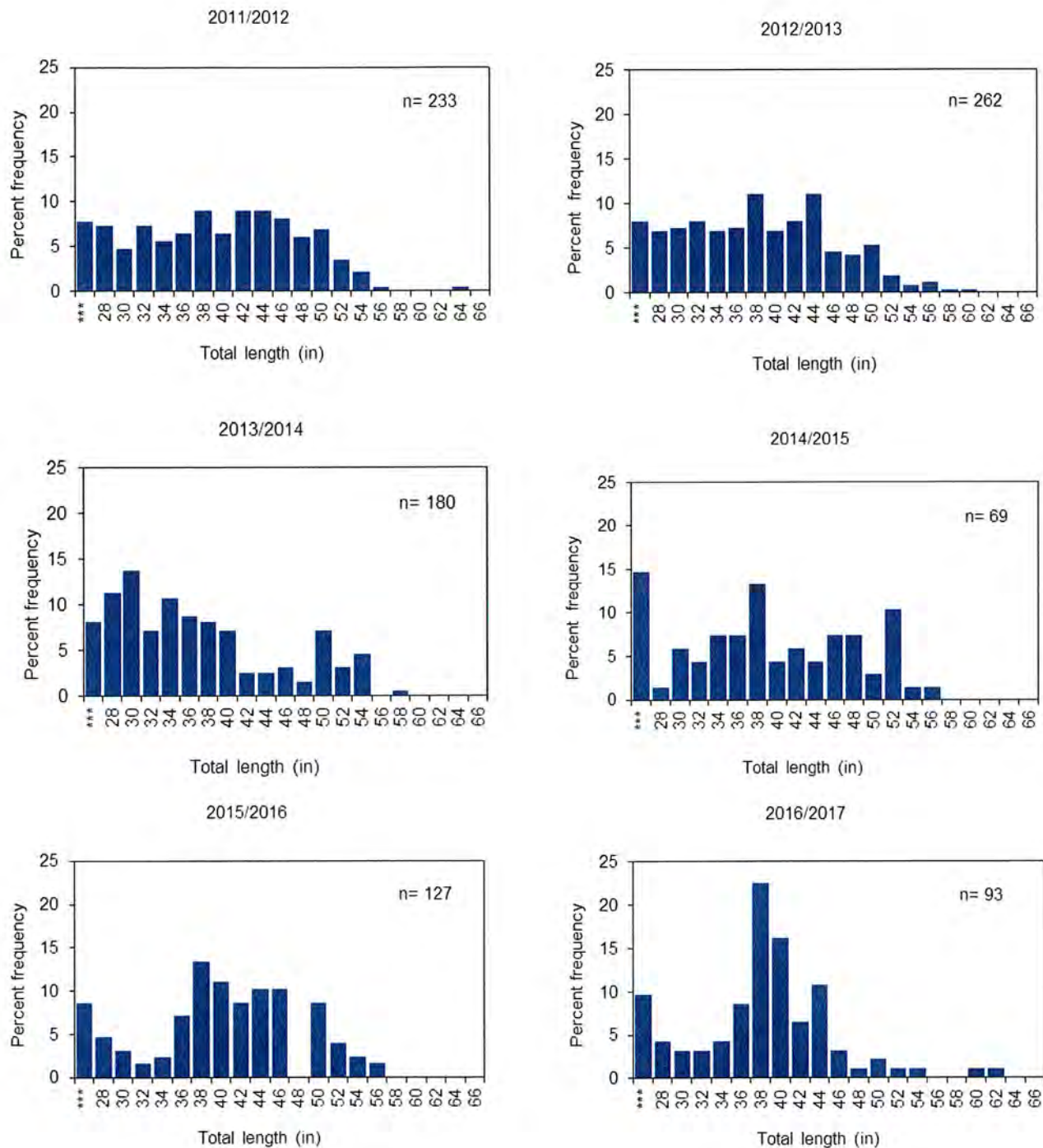
Source: California Department of Fish and Wildlife Commercial Fisheries Information System (includes commercial landing receipt data).



***all sub-legal fish were grouped together

Source: Department of Fish and Wildlife Market Sampling Program

Figure 1. Commercial White Seabass sampled length frequencies, 2011/12 – 2016/17.



***all sub-legal fish were grouped together

Source: Sampler examined landed catch data from California Recreational Fisheries Survey extracted from the RecFIN database at <http://www.recfin.org>.

Figure 2. Recreational White Seabass sampled length frequencies, 2011/12 – 2016/17.

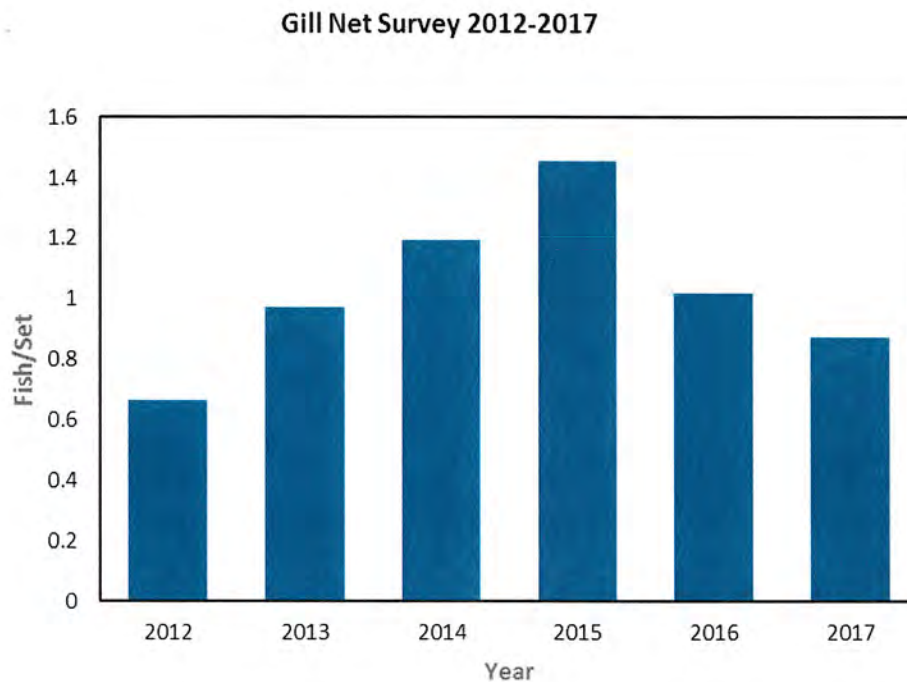


Figure 3. Recruitment data from White Seabass gill net surveys collected by Hubbs-Sea World Research Institute (HSWRI), California State University Northridge (CSUN) and San Diego State University (SDSU).

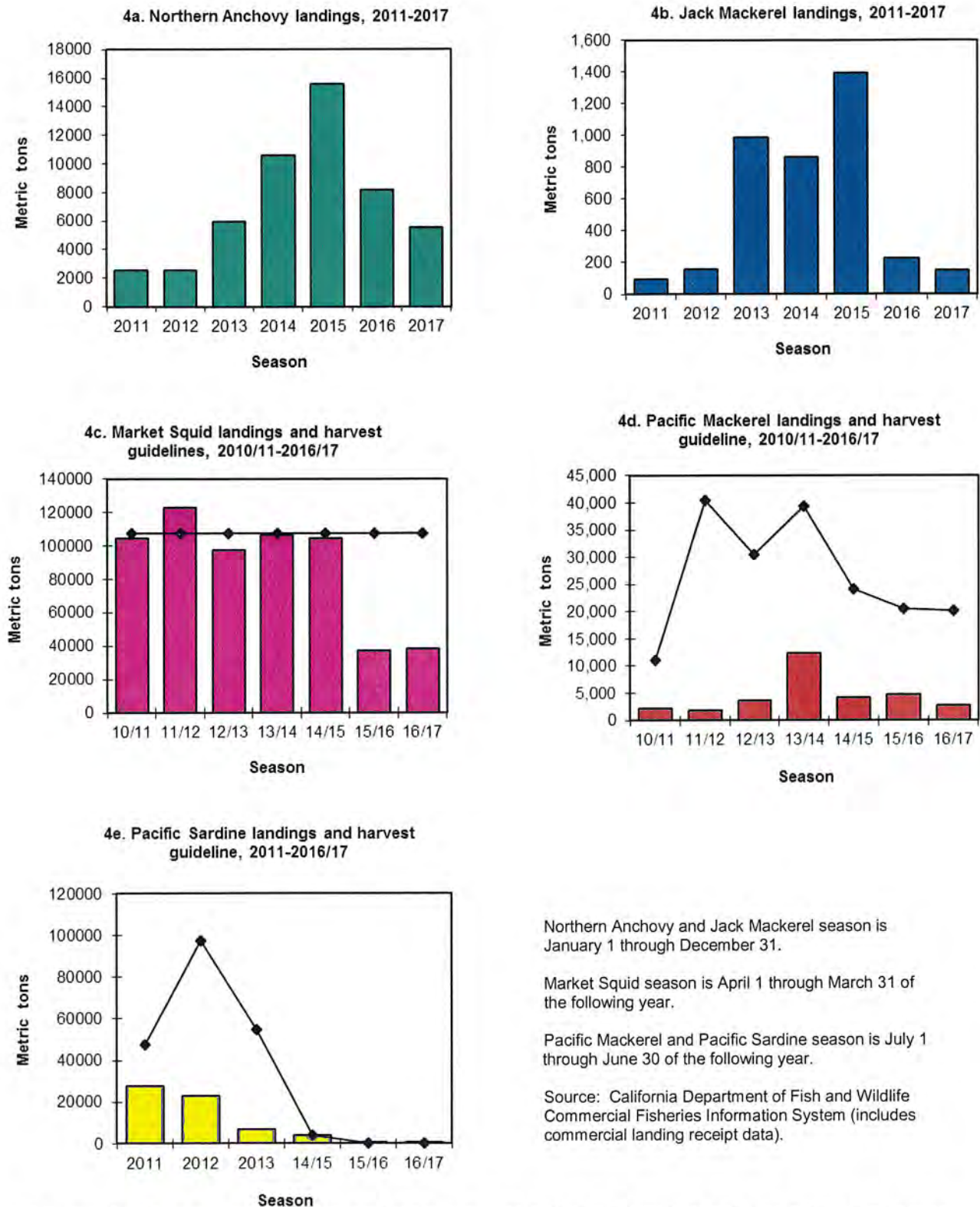
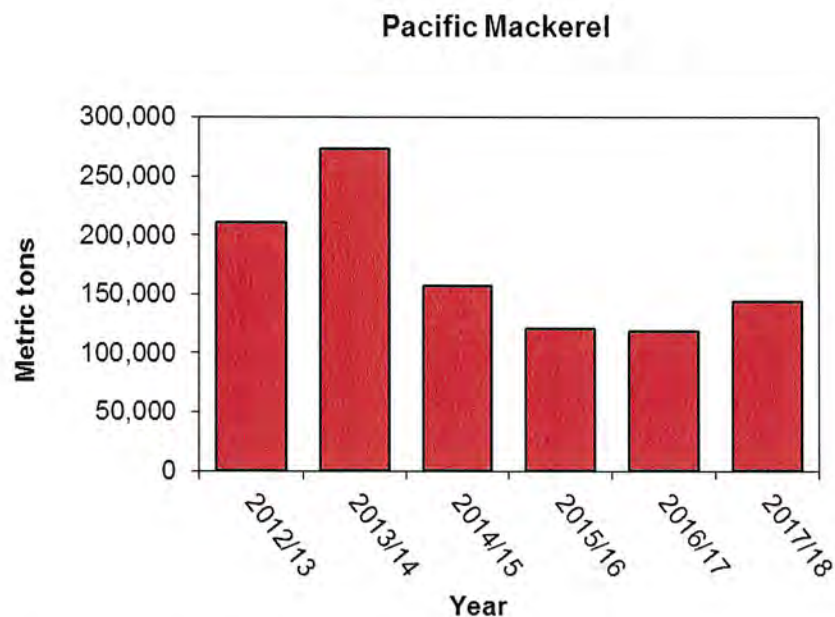
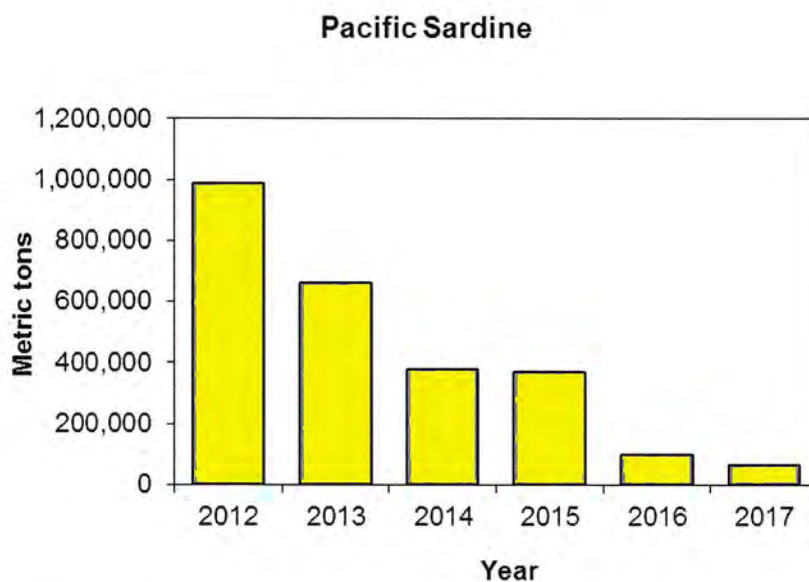


Figure 4. Harvest guidelines and commercial catch of White Seabass forage species.



Source: Pacific Fishery Management Council. CPS SAFE document and PFMC proceedings.

Figure 5. Biomass estimates for Pacific Mackerel in metric tons, 2012/13 – 2017/18.



Source: Pacific Fishery Management Council. CPS SAFE document and PFMC proceedings.

Figure 6. Biomass estimates for Pacific Sardine in metric tons, 2012 – 2017 season.

White Seabass Fishery Management Plan 2016-2017 Annual Review



Prepared by
Department of Fish and Wildlife
Marine Region
April 2018



White Seabass Fishery Management Plan 2016-2017 Annual Review

Executive Summary

The California Fish and Game Commission (Commission) adopted the White Seabass Fishery Management Plan (WSFMP) in June 2002. The WSFMP includes a provision for annual monitoring and assessment of the White Seabass (WSB) fisheries. The White Seabass Scientific and Constituent Advisory Panel (WSSCAP) was established to assist the Department of Fish and Wildlife (Department) and the Commission with the review of the fishery assessments, management proposals, and plan amendments. The annual review includes fishery-dependent data (e.g., commercial and recreational landings and length frequencies) and, if available, fishery-independent data (e.g., recruitment information) as well as documented changes within the social and economic structure of the recreational and commercial industries that utilize the WSB resource within California. The review also includes information on the harvest of White Seabass from Mexican waters and other relevant data. Based on the results of the annual review, in cooperation with the WSSCAP, the Department will provide management recommendations, if needed, to the Commission.

The Commission adopted points of concern criteria in the WSFMP framework to help determine when management measures are needed to address resource issues. The points of concern are:

1. catch is expected to exceed the current harvest guideline or quota;
2. any adverse or significant change in the biological characteristics of White Seabass (age composition, size composition, age at maturity or recruitment) is discovered;
3. an overfishing condition exists or is imminent;
4. any adverse or significant change in the availability of White Seabass forage or in the status of a dependent species is discovered;
5. new information on the status of White Seabass is discovered;
6. an error in data or stock assessment is detected that significantly changes estimates of impacts due to current management.

The Department and WSSCAP met on April 13, 2018 to review the 2016-2017 fishery season (September 1 to August 31), and together agreed that none of the points of concern were met. Additional social and economic information along with the catch information from Mexico support this conclusion. As a result, the Department does not recommend any changes to the management of WSB or to the WSFMP at this time.

Background

The WSSCAP annually reviews current information to evaluate the status of the WSB resource based on points of concern adopted to implement the WSFMP, and to consider whether current management measures provide adequate protection for the resource. If a resource conservation issue is found the WSSCAP will provide its recommendation, rationale, and analysis to the Department. The Department will evaluate the recommendation from the WSSCAP and all available information and will recommend to the Commission management measure(s) to address the issue(s).

Results

Analysis of the points of concern (Table 1) showed that none of the criteria were met in 2016-2017.

Table 1. Analysis of the points of concern.		
Criteria	Analysis	Result
Catch is expected to exceed the current harvest guideline or quota.	2016-2017 total catch = 395,497 pounds; Optimum Yield = 1.2 million pounds*. Total catch is below optimum yield.	No action necessary
Any adverse or significant change in the biological characteristics of WSB (age composition, size composition, age at maturity or recruitment) is discovered.	Recreational and commercial fishery length-frequencies showed no significant change that would indicate a problem in the fishery. No new information on age composition, age at maturity, or age at recruitment.	No action necessary
An overfishing condition exists or is imminent.	See analysis in Table 2. No overall overfishing condition noted.	No action necessary
Any adverse or significant change in the availability of WSB forage or in the status of a dependent species is discovered.	Most forage species decreased in the 2016-2017 season. However, WSB are opportunistic feeders and the Department and WSSCAP feel that there are other prey items for WSB to feed on.	No action necessary
New information on the status of WSB is discovered.	The Department is currently collecting samples to investigate age/length at maturity.	No action necessary
An error in data or stock assessment is detected that significantly changes estimates of impacts due to current management.	Stock assessment was completed in May 2016.	No action necessary

*California Department of Fish and Game. 2002. Final White Seabass Fishery Management Plan, 219 pp.

Point of Concern: Expectation of optimum yield being exceeded.

The Commission established a fishing season of September 1 through August 31 of the following year. The Commission also adopted an optimum yield based on a maximum sustainable yield proxy of the unfished biomass, and it is currently set at 1.2 million pounds. In the 2016-2017 season, the total recreational and commercial harvest was 395,497 pounds, 33 percent of the allowable catch (Appendix A, Table 1).

Point of Concern: Changes in the biological characteristics of White Seabass.

The commercial fishery continues to harvest WSB across a wide size range (Appendix A, Figure 1). In 2016-2017, 281 fish were sampled from the commercial fishery. One hundred percent of the fish sampled were larger than the minimum size limit of 28 inches and approximately three fourths of the fish sampled were larger than 45 inches. Based on previous age-at-length information from reading otoliths and from a previously calculated weight/length relationship, those fish larger than 45 inches are likely more than 11 years old and weigh more than 30 pounds.

Sampled length frequency data for the recreational fishery are presented in Appendix A, Figure 2. Before the start of the 2009-2010 season the Department prepared and distributed a brochure targeting recreational anglers to improve compliance with the recreational minimum size limit for WSB. In the seasons since this brochure was distributed, less than 10 percent of the fish measured were smaller than the minimum size limit of 28 inches. This is a significant improvement from the previous seasons, in which 17-19 percent of all fish measured were less than minimum legal size. This season 93 legal-sized fish were measured from the recreational fishery. Of the legal-sized fish measured from the recreational fishery approximately one half of the fish measured were larger than 40 inches total length. Based on the previously calculated weight/length relationship, those fish larger than 40 inches are likely more than 9 years old and weigh more than 24 pounds.

Point of Concern: An overfishing condition exists or is imminent.

Three criteria (Table 2), all of which must be met to establish a point of concern, determine if an overfishing condition exists or is imminent. For the commercial fishery, there must be a 20 percent decline in landings in each of two consecutive seasons compared to the prior 5-season running average. Commercial landings of WSB (Appendix A, Table 2) totaled 217,915 pounds in the 2016-2017 season; this is a 24 percent decrease when compared to the prior 5-season running average (285,687 pounds). In the 2015-2016 season, commercial landings totaled 247,195 pounds; this is a 27 percent decrease compared to the prior 5-season running average (340,369 pounds). The WSSCAP and the Department agreed that the overfishing criterion for the commercial fishery was met. However, all three criteria must be met to establish a point of concern so no action is recommended at this time.

For the recreational fishery, the overfishing criterion is defined as a 20 percent decline in each of two consecutive seasons for both the number of fish and the average weight (Appendix A, Table 3). In the recreational fishery, the number of fish caught in the 2016-2017 season increased 50 percent when compared to the previous season. The average weight of fish caught in the 2016-2017 season decreased 1 percent when compared to the previous season. The WSSCAP and the Department agreed that the overfishing criterion for the recreational fishery was not met.

The final criterion for determining if an overfishing condition exists is a 30 percent decline in the recruitment index for juvenile WSB compared to the prior 5-season running average of recruitment. The Ocean Resources Enhancement and Hatchery Program (OREHP) had routinely conducted standardized field studies four times a year (August, October, April and June) for juvenile recruitment. However, reductions in funding curtailed survey effort. The Southern California Sport Fishing Enhancement Stamp fund was insufficient to cover all of the OREHP activities as well as the gill net recruitment surveys, and consequently there was no gill net sampling between 2009 and 2011.

In October 2012, gill net sampling similar to previous surveys was reinstated. The objective of the current sampling design seeks to resume the prior gill net sampling regime but in a reduced capacity with fewer locations surveyed and a reduction in the number of nets deployed at each site.

We used number of fish caught per set across the entire sampling year as an index to evaluate juvenile WSB recruitment. There was an increasing trend in number of juvenile WSB caught per set from 2012 to 2015. However, this trend decreased during the 2016 survey and again in 2017 (Appendix A, Figure 3). The number of fish caught per gill net set was averaged from the years 2012 to 2016, and was compared to the current year, 2017. The CPUE for juvenile WSB recruits for 2017 decreased by 17 percent from the previous 5-year average (Appendix A, Table 4).

Based on the analysis of all three overfishing criteria, the WSSCAP and the Department agreed that the overall overfishing point of concern for the fishery was not met.

Table 2. Analysis to determine if the White Seabass resource is overfished (Criteria taken from Section 51.01 (b), Title 14, California Code of Regulations).		
Criteria	Analysis	Result
A 20 percent decline in the total annual commercial landings of WSB for the past two consecutive seasons compared to the prior 5-season running average of landings, based on landing receipt data.	<p>2016-2017 217,915 pounds = 24% decrease 5-season average = 285,687 pounds</p> <p>2015-2016 247,195 pounds = 27% decrease 5-season average = 340,369 pounds</p>	Criterion was met
A 20 percent decline in both the number of fish and the average weight of WSB caught in the recreational fishery for the same two consecutive seasons, as determined by the best available data.	<p>2016-2017 5,675 fish = 50% increase 22.9 pound average = 1% decrease</p> <p>2015-2016 3,793 fish = 21% increase 23.1 pound average = 22% increase</p>	Criterion not met
A 30 percent decline in recruitment indices for juvenile WSB compared to prior 5-season running average of recruitment, as determined by the best available data.	<p>2016-2017 0.88 fish/set = 17% decrease 5-season average = 1.06 fish/set</p>	Criterion not met

Point of Concern: Any adverse or significant change in the availability of White Seabass forage or in the status of a dependent species is discovered.

Prey species (Northern Anchovy, Jack Mackerel, Market Squid, Pacific Mackerel, and Pacific Sardine) are highly mobile and their distributions are affected by oceanographic conditions. A review of WSB forage species (Appendix A, Figures 4, 5, and 6) revealed some changes in availability.

Both Pacific Mackerel and Pacific Sardine have stock assessments conducted by the National Marine Fisheries Service and these stock assessments include biomass estimates. Since 2008, Pacific Mackerel biomass estimates have been conducted every two years. Pacific Sardine biomass estimates are conducted every year. The biomass estimates for Pacific Mackerel for the 2017/2018 season showed a slight increase from their last assessment. The 2014-2015 Pacific Sardine fishery closed two months early in April, and was closed for the 2015-2016 and 2016-2017 seasons.

Since there are currently no biomass estimates or stock assessments for Northern Anchovy, Jack Mackerel, and Market Squid, commercial fishery landings were used as a proxy for their availability. Northern Anchovy, Jack Mackerel, and Market Squid availability decreased and Market Squid increased slightly from the previous year.

Based on the analysis of all of the prey species, the WSSCAP and the Department agreed that this point of concern was not met because of the opportunistic nature of WSB foraging.

Other Points of Concern:

The remaining two points of concern (Table 1) consider any new information on the status of WSB, and if any errors in data or stock assessment were found.

Currently the Department is collecting WSB samples to assess length/age at maturity.

No errors in the current stock assessment have been found.

Additional Information

The Department evaluated basic socio-economic information to characterize the commercial fishery and provided those summaries to the WSSCAP (Appendix A, Table 5). The number of vessels fishing for WSB decreased by 32 percent (60 vessels) from the 2015/16 to 2016/17 seasons. This decrease in the number of vessels occurred mostly in the hook-and-line fishery. The ex-vessel price per pound has shown a steady trend over time and is presently at \$4.00 per pound for all gears combined. Limited socio-economic data are available for the recreational fleet.

Information about the take of WSB in Mexican waters was considered by the WSSCAP. California commercial fishermen are prohibited by Mexican law to fish in the territorial seas of Mexico, and no landings of WSB from Mexico by California commercial fishermen were reported in 2016-2017. Recreational anglers may fish in Mexico under the authority of a Mexican sport fishing license. During the 2016-2017 season, Commercial Passenger Fishing Vessel logbook data reported 33 WSB taken in Mexico, a decrease of 112 fish from the reported 145 taken in the prior season. No additional information about either the recreational or commercial catch of WSB in Mexico is available.

Appendix A – Data Analyses

Table 1. Total catch (pounds) of White Seabass, 2007/08 - 2016/17

Season	Recreational	Commercial	Total
2007/08	150,988	653,264	804,252
2008/09	152,799	414,459	567,258
2009/10	215,071	502,021	717,092
2010/11	306,491	520,605	827,096
2011/12	259,028	406,746	665,774
2012/13	265,816	315,533	581,349
2013/14	219,116	262,441	481,557
2014/15	63,125	196,521	259,646
2015/16	96,244	247,195	343,439
2016/17	177,582	217,915	395,497

Source: California Recreational Fisheries Survey extracted from the RecFIN database at <http://www.recfin.org>, California Department of Fish and Wildlife Commercial Fisheries Information System (commercial landing receipts), and Marine Log System (MLS).

Table 2. Commercial White Seabass landings in pounds, 2007/08 - 2016/17

Season	Pounds Landed	Prior 5-season average	Percent change from previous 5-season average
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2009/10	502,021	433,621	16
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2011/12	406,746	502,347	-19
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Source: California Department of Fish and Wildlife Commercial Fisheries Information System (includes commercial landing receipt data).

Table 3. Recreational White Seabass catch, 2007/08 - 2016/17

Season	Total number of fish caught	Percent change in number of fish from prior season	Average weight in pounds	Percent change in weight from prior season
2007/08	7,593	5	19.3	4
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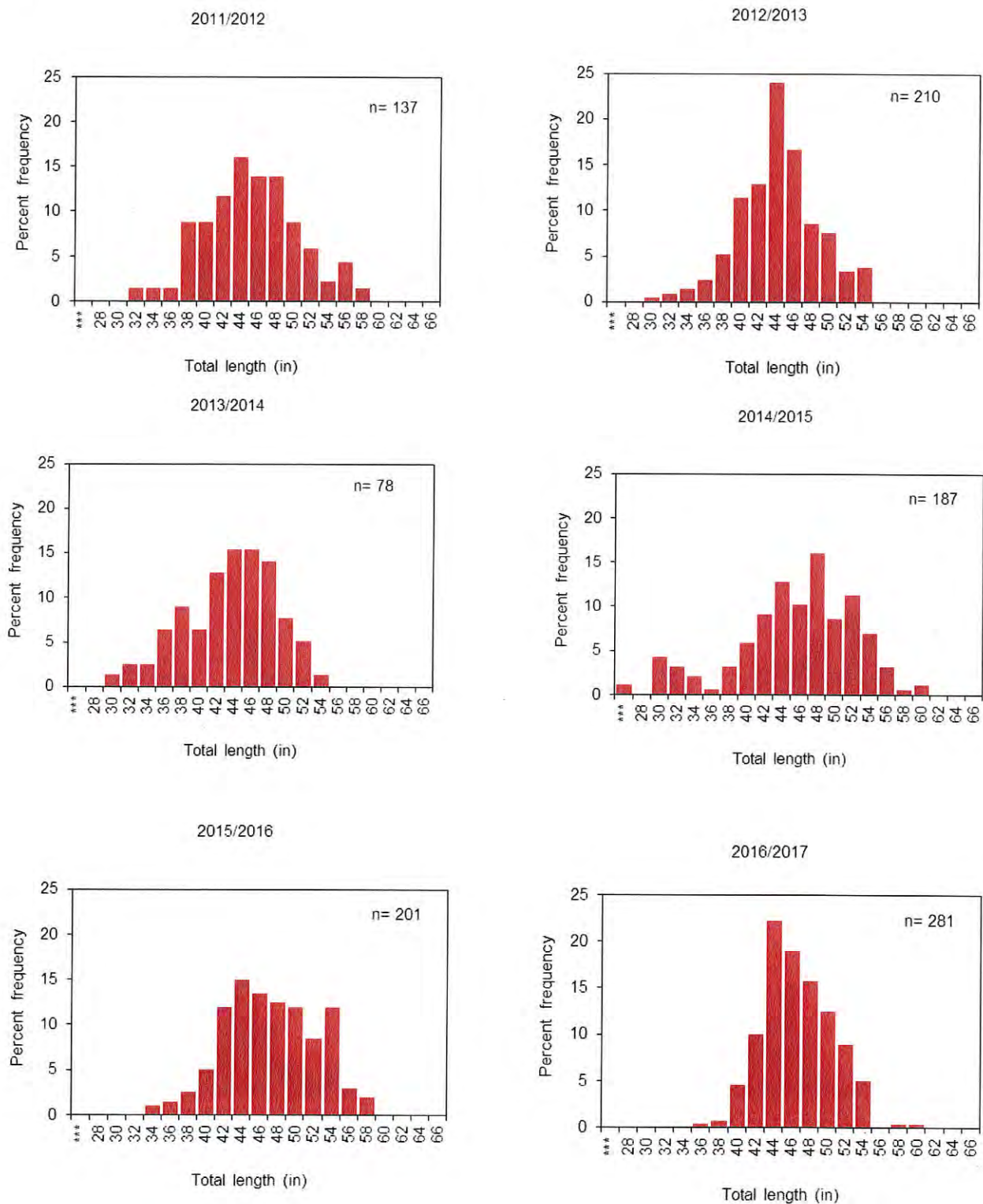
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2014	1.19		
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2016	1.02		
2017	0.88	1.06	-17

Source: White Seabass Gill Net Survey Database. Hubbs-SeaWorld Research Institute and San Diego State University.

Table 5. Sociological and Economic Factors, 2005/06-2016/17		
Season	Total number of vessels landing White Seabass	Most common ex-vessel price per pound
2005/06	95	\$3.00
2006/07	97	\$3.00
2007/08	96	\$3.50
2008/09	93	\$3.50
2009/10	183	\$3.50
2010/11	254	\$4.00
2011/12	276	\$4.00
2012/13	257	\$5.00
2013/14	238	\$5.50
2014/15	177	\$4.00
2015/16	190	\$4.00
2016/17	130	\$4.00

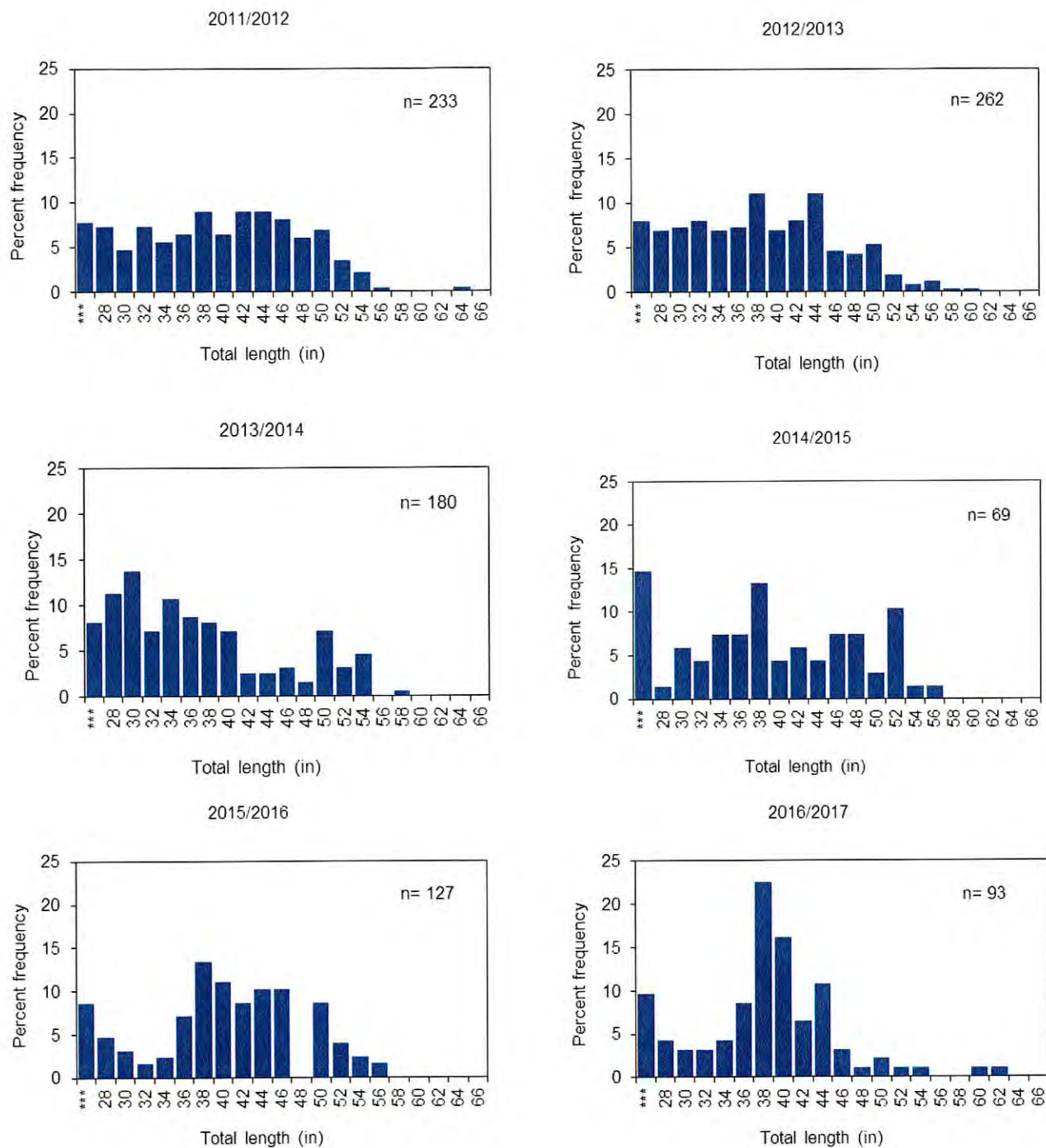
Source: California Department of Fish and Wildlife Commercial Fisheries Information System (includes commercial landing receipt data).



***all sub-legal fish were grouped together

Source: Department of Fish and Wildlife Market Sampling Program

Figure 1. Commercial White Seabass sampled length frequencies, 2011/12 – 2016/17.



***all sub-legal fish were grouped together

Source: Sampler examined landed catch data from California Recreational Fisheries Survey extracted from the RecFIN database at <http://www.recfin.org>.

Figure 2. Recreational White Seabass sampled length frequencies, 2011/12 – 2016/17.

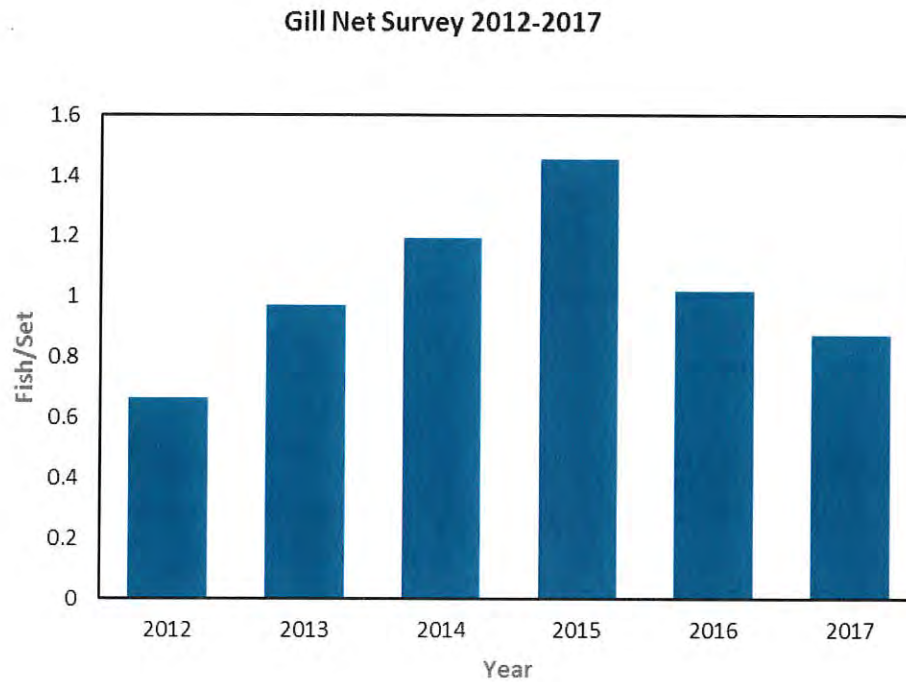


Figure 3. Recruitment data from White Seabass gill net surveys collected by Hubbs-Sea World Research Institute (HSWRI), California State University Northridge (CSUN) and San Diego State University (SDSU).

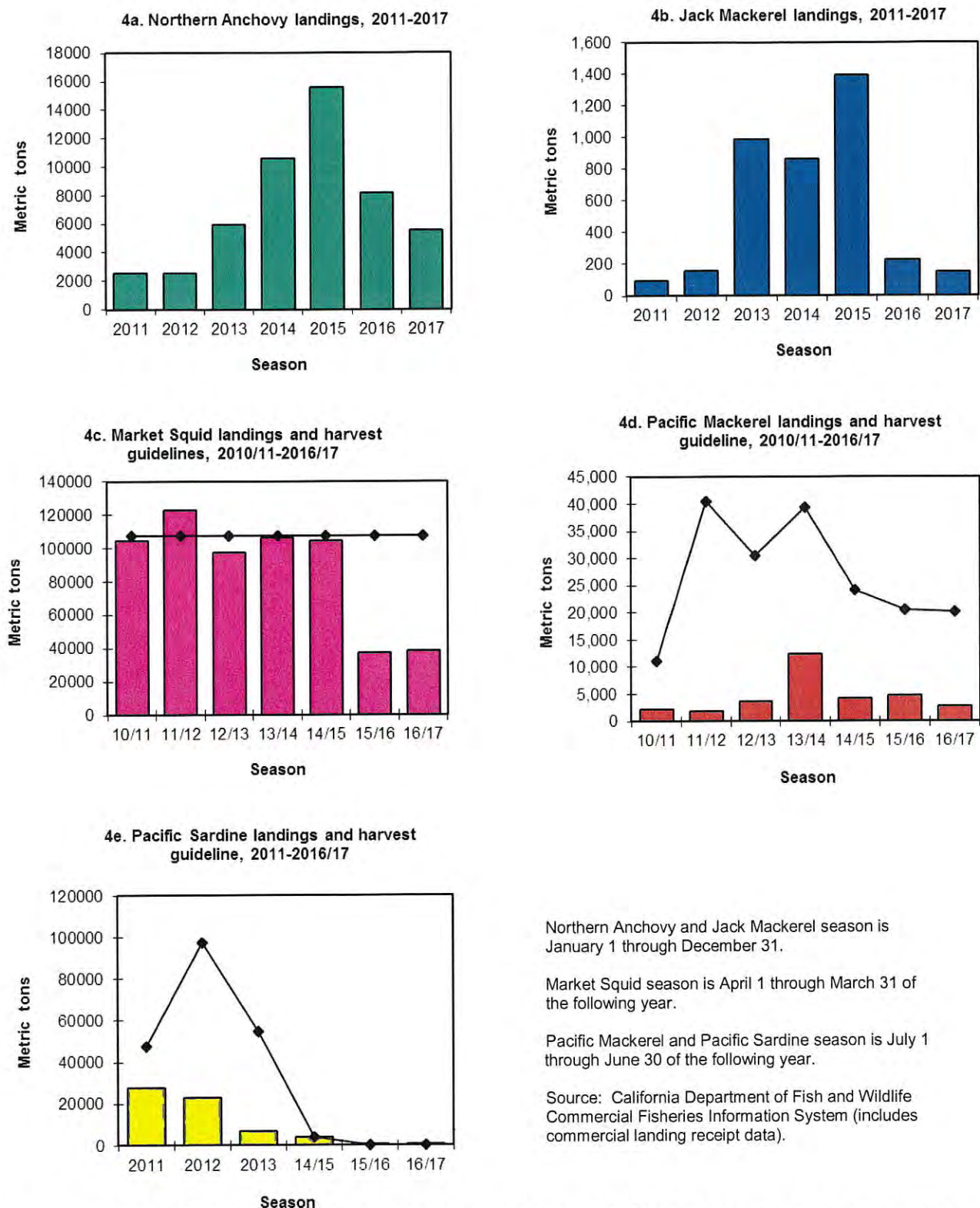
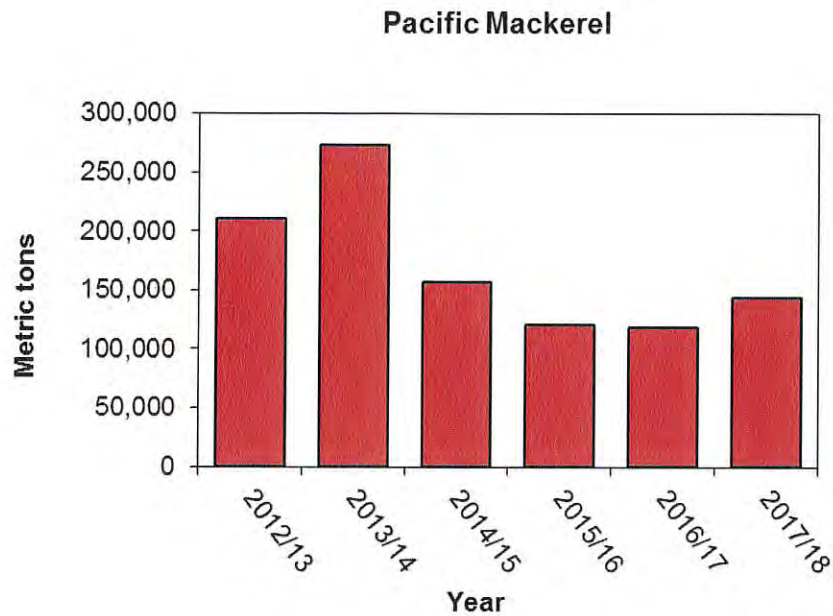
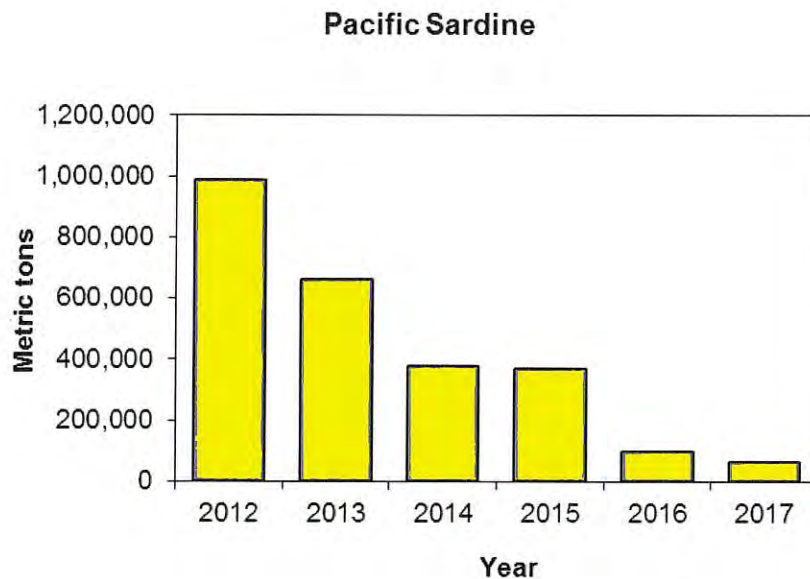


Figure 4. Harvest guidelines and commercial catch of White Seabass forage species.



Source: Pacific Fishery Management Council. CPS SAFE document and PFMC proceedings.

Figure 5. Biomass estimates for Pacific Mackerel in metric tons, 2012/13 – 2017/18.



Source: Pacific Fishery Management Council. CPS SAFE document and PFMC proceedings.

Figure 6. Biomass estimates for Pacific Sardine in metric tons, 2012 – 2017 season.



State of California -The Natural Resources Agency
DEPARTMENT OF FISH AND GAME
1416 9th Street
Sacramento, CA 95814
<http://www.dfg.ca.gov>

EDMUND G. BROWN JR, Governor
CHARLTON H. BONHAM, Director



July 31, 2013

Mr. Dale Glantz
Knocean Sciences, Inc.
13158 Sea Knoll Ct.
San Diego, CA 92130

Subject: Kelp Bed No. 3

Dear Mr. Glantz:

Enclosed is your executed copy of the lease agreement for Kelp Bed No. 3 awarded on April 11, 2012. Should you have any questions or concerns please contact Rebecca Flores-Miller at (831) 649-2835.

Sincerely,

Eric R. Dockter
Analyst
Business Services

LEASE GRANTING THE EXCLUSIVE PRIVILEGE OF HARVESTING KELP AT KELP BED NO. 3

THIS LEASE GRANTING THE EXCLUSIVE PRIVILEGE OF HARVESTING KELP AT Bed No. 3 ("Lease") is made and entered into as of April 8, 2013, by and between The KNOCEAN Sciences, Inc., ("Tenant") and the Fish and Game Commission ("State") with reference to the following facts:

RECITALS

WHEREAS, Fish and Game Code Section 6700 authorizes State to lease to any person the exclusive privilege to harvest kelp in any designated kelp bed if it determines that such lease is in the public interest; and

WHEREAS, Tenant desires to lease Kelp Bed No. 3 to harvest kelp for nutraceutical and cosmeceutical products and functional food ingredients; and

WHEREAS, State desires to enter into a lease agreement for the exclusive privilege to harvest kelp in any designated kelp bed if it determines that such lease is in the public interest.

NOW THEREFORE, On April 11, 2012, State awarded the lease for Kelp Bed No. 3 to Tenant.

TERMS AND CONDITIONS

1. **LEASE.** State hereby grants to Tenant the exclusive privilege to harvest kelp in Kelp Bed No. 3 upon and subject to the terms and conditions of this Lease.
2. **DESCRIPTION.** This Lease covers those areas comprising approximately 2.58 square miles as described in Title 14, California Code of Regulations, Section 165.5(j) as Kelp Bed No. 3.
3. **TERM.** This Lease is for a term ("Term") commencing on April 8, 2013 and ending on April 7, 2018, unless renewed or sooner terminated in accordance with its terms.
4. **MODIFICATION OR TERMINATION.** Fish and Game Code Section 6700 requires that any exclusive lease to harvest kelp, granted by the Commission, must be in the public interest, as determined by the Commission. In addition, Section 165(c)(4) of Title 14 provides, 'If, at any time, the Commission finds that the harvesting of kelp will tend to destroy or impair any kelp bed or beds, or parts thereof, or tend to impair or destroy the supply of food for fish or marine mammals, the Commission may limit or prohibit the harvest of kelp within a bed or portion of a bed for any length of time.' Upon written notice from State, based upon the foregoing authority and describing the concern prompting the notice, Tenant shall comply with any direction therein to reduce or cease any or all activities, until such time as State can determine whether the

continuation of any or all activities initially permitted by the Lease remains in the best interest of the public.

5. **ROYALTY.** In addition to any kelp harvesting license fee required, Tenant shall pay State a royalty rate of \$3.00/ton of wet kelp harvested from the leased area.

6. **ADVANCE PAYMENT.** On penalty of lease forfeiture, commencing March 7, 2013, and on January 1st of each year thereafter during the term of this lease, Tenant, on or before the date due, shall pay to State a nonrefundable advance payment of \$11,610.00, calculated by multiplying the royalty rate in Paragraph 5 herein times the 2.58 square miles of bed pursuant to Title 14, California Code of Regulations, Section 165.5(j) times 1500, computed pursuant to Title 14, California Code of Regulations, Section 165.5(g). Kelp harvested from Kelp Bed No. 3 will be credited against this advance payment at the royalty rate payable under Paragraph 5, until the deposit has been depleted. Kelp harvested in any calendar year after January 1 of the year this Lease first was entered into, in excess of the amount covered by the advance deposit for that year shall be assessed at the end of each month at the basic royalty rate in Paragraph 5. Advance payments shall be delivered to Department of Fish and Wildlife, Administrative Services Branch, 1416 Ninth Street, 12th Floor, Sacramento, California 95814 on or before January 15. Any surplus remaining from the annual advance payment shall be credited to the following annual advance payment; if any surplus remains at the end of the term of the lease, it shall be revoked. Payment shall be made to State in lawful money of the United States, provided that, if any payment made by a check, draft or money order is returned to State due to insufficient funds or otherwise, State shall have the right, upon written notice to Tenant to require Tenant to make all subsequent payments in cash, or by cashier's or certified check.

7. **RENEWAL.** If State determines Tenant has complied with the terms of the Lease, the Tenant shall have a prior right to renew the Lease on terms agreed upon with State. To preserve this prior right, Tenant must request to renew this Lease by written notice to State mailed at least 120 days and not more than 180 days prior to the expiration of the current term. If such notice is not timely given, or if Tenant is not in compliance with the terms of the existing Lease, the existing Lease, including any right to renew, shall terminate upon expiration of the then current term. State and Tenant agree that if, by the date the existing Lease is to expire, the terms of any renewal lease have not been agreed to, State may cease negotiations and declare this Lease terminated with no right to renewal. Notwithstanding the foregoing, State and Tenant, at any time during the term of this Lease, may negotiate and enter into a new lease on terms agreed upon between them. In no event shall Tenant's period of occupancy under the initial term of this Lease extend beyond 20 years. Similarly, the term of any renewal of this Lease shall not exceed 20 years.

8. **LATE PAYMENT.** Payment of advance payments are timely if received by State on or before January 15. Any advance payment not received by State by January 15, regardless of whether the due date falls on a Saturday, Sunday, or holiday, will be subject to a late penalty consisting of an administrative charge, calculated at the rate of ten percent (10%) of the amount of the late payment. The parties agree that the late charge represents a fair and reasonable estimate of the costs State will incur because of late payment. Acceptance of the late charge by State shall not constitute a waiver of Tenant's default for the overdue amount, nor prevent State from exercising other rights

and remedies granted under this Lease. Tenant shall pay the late charge as additional rent within 30 days of the due date of the original payment.

Any annual advance payment not received by State within ninety (90) days of January 15 shall constitute a breach of Lease, giving rise to State's remedies as set forth herein.

Payments of royalty assessments due after exhaustion of the advance payment are due by the 10th day of the month following the assessment. At the end of each calendar year, Tenant shall be assessed a late payment fee of \$100 for each month that royalty payments due to the State are received after the 10th day of the month for which they are due. Failure of Tenant to submit royalty payments due to the State by the 10th day of the month for which they are due for more than three (3) months in any calendar year shall constitute a breach of Lease, giving rise to State's remedies as set forth herein.

Upon written request by Tenant to State, demonstrating unusual or extenuating circumstances causing the late payment, State, in its sole discretion, may waive the late charge or penalty.

9. HOLDOVER. If the Term in Paragraph 3 expires and the Lease has not been renewed pursuant to Paragraph 6, and Tenant remains in possession of the Lease area with State's express or implied permission, Tenant shall become a tenant from month to month only, subject to all the provisions of this Lease except Paragraphs 3 and 6. During this holdover tenancy, kelp harvest may continue and paid for at the bid royalty rate in accordance with Paragraph 5. It is expressly understood that a holdover tenancy does not create any right of renewal beyond that provided by Fish and Game Code Section 6704 as set forth in Paragraph 6, and that the only purpose of a holdover tenancy is to allow continuity of use of the property while State continues to negotiate renewal terms or undertakes to issue a new lease to the highest responsible bidder pursuant to Fish and Game Code Section 6702 and Title 14, California Code of Regulations, Section 165.5. If either party desires to terminate such holdover tenancy, it shall give the other party not less than thirty days advance written notice of the date of termination.

10. INCORPORATION BY REFERENCE. The provisions of Chapter 6 of Division 6 of the Fish and Game Code (commencing with Section 6650) and the regulations at Title 14, California Code of Regulations Sections 165 and 165.5, are made part of this Lease by this reference. If there is a conflict between any term or condition of this Lease and any of the provision(s) incorporated by reference in it, the incorporated provision(s) shall control.

11. INDEMNITY. (For purposes of this Paragraph, the term, "State", shall include the Department of Fish and Wildlife as well as the Fish and Game Commission). Tenant hereby waives all claims and recourse against State, including the right to contribution for loss or damage to persons or property arising from, or in any way connected with or incident to this Lease, except claims arising from, and only to the extent of the gross negligence or willful misconduct of State, its officers, agents or employees. Tenant shall notify the Department of Fish and Wildlife Kelp Coordinator immediately in case of any serious accident, injury, or casualty on, or potentially related to, the Lease area.

Tenant shall protect, indemnify, hold harmless, and defend State, its officers, agents or employees, against any and all claims, demands, damages, costs, expenses or liability costs arising out of the use by Tenant, including its employees and agents, of the Lease area, except for liability arising out of, and to the extent of, the gross negligence or willful misconduct of State, its officers, agents or employees for which State is found liable by a court of competent jurisdiction.

Should State be named as a defendant in any claim or legal action arising out of the use by Tenant, including its employees and agents, of the Lease area, upon tender of the claim or action by State to Tenant, the Tenant shall assume State's defense and represent State in such legal action at Tenant's expense, subject to the provisions herein.

In lieu of tender to Tenant of the claim or action against State, State may elect to represent itself, in which event, State shall bear its own litigation costs, expenses and attorney fees. Notwithstanding the foregoing, in the event State is required to represent itself because of a conflict of interest by counsel representing Tenant, then Tenant, upon demand by State, shall reimburse State for State's litigation costs, expenses and attorney fees. Costs shall include, without limitation, all attorney fees and costs, court costs, if any, costs of mediators or arbitrators, experts and consultants, and any other costs reasonably incurred in response to any claim.

12. INSURANCE. Tenant shall obtain and maintain in full force and effect at all times during the Lease term a policy or policies of insurance, insuring Tenant, State and all other agencies of the State of California against any and all claims or liability for bodily injury, personal injury and property damage based upon or arising out of the use, occupancy, condition or maintenance of the leasehold. The required insurance shall meet the following requirements:

- (a) Business Auto Liability: For autos owned, hired, scheduled or non-owned with a combined single limit no less than \$1 million per occurrence.
- (b) Commercial General Liability: For general aggregate, product/completed operations, personal and advertising injury, \$1 million, with a combined single limit no less than \$1 million per occurrence.
- (c) Worker's Compensation and/or Employer's Liability: In a form and amount covering Tenant's full liability as required under federal and state law.
- (d) Pollution Liability: For vessels owned, hired, scheduled or non-owned with a combined single limit no less than \$1 million per occurrence.

Each policy shall be written on an occurrence basis, and shall identify the Lease by its assigned number. The coverage provided by Tenant shall be primary and non-contributing, and shall not limit the liability of Tenant. Tenant shall furnish to State certificate(s) of insurance reflecting the foregoing.

The certificate(s) of insurance shall:

- (a) Be furnished to State, and no such policy shall be cancelable or subject to reduction of coverage or other modification except after 30 days prior written notice to State.
- (b) Ensure State and all other agencies of the State of California, its officers, agents, employees and servants are included as additional insured but only insofar as the operations under the Lease are concerned.
- (c) Provide that State shall not be responsible for any premiums or assessments on any policy of insurance hereunder.

(d) Comply with those standards as determined by the State of California,
Department of General Services, Office of Risk and Insurance Management.

In the event said insurance, or any of it, expires or lapses at any time during the term of this Lease, the Tenant agrees to provide, no later than fifteen (15) days after said expiration or lapse, written evidence of required insurance coverage from the date of loss of the earlier insurance and continuing for not less than the remainder of the term of the Lease. Tenant's failure to keep in effect at all times all insurance required by this Lease shall be grounds for termination of the Lease, in addition to any other remedies available to State.

13. NOTICES. Notices to the parties to this Lease shall be made in writing and may be given by delivery in person, by U.S. Mail with postage prepaid, or by receipt-confirmed facsimile to:

FISH AND GAME COMMISSION 1416 Ninth Street, Suite 1320 Sacramento, CA 95814 Telephone: (916) 653-4899 Facsimile: (916) 653-5040	KNOCEAN SCIENCES, INC. 402 West Broadway, Suite 400 San Diego, CA 92101 Telephone: (619) 595-3133
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Notices shall be deemed given upon delivery to the addressee. Any notice given by facsimile shall also be given to the addressee by U.S. Mail, with postage prepaid. If a notice given by facsimile is delivered to the addressee after 5:00 p.m. Pacific time, or on a Saturday, Sunday or State of California or national holiday, the notice shall be deemed given on the next business day. Either party may change in its address for notice purposes by giving written notice to the other party in the manner provided in this section.

14. USE. Tenant shall use the Lease area only for the purpose stated in this Lease, and such use shall be continuous from commencement of the Lease term until its expiration or termination, including any holdover tenancy.

The Lease area shall be continuously used by Tenant to conduct kelp harvest operations, in accordance with Title 14, California Code of Regulations, Sections 165 and 165.5, and all other laws and regulations. Tenant shall not use or permit the Lease area to be used in whole or in part during the term of this Lease for any purpose, other than as set forth herein, without the prior written consent of State.

The possessory interest herein given to Tenant does not exclude the general public from the Lease area, and Tenant may not unreasonably impede public access to state waters for purpose of fishing, navigation, commerce or recreation or other public trust values. This Lease is not intended to confer third party beneficiary status to anyone benefiting from the terms of this Lease. The possessory interest is further subject to all valid and existing contracts, leases, licenses, encumbrances, and claims of title which may affect the Lease area.

This Lease provides a tenancy of a temporary nature. The parties to this Lease agree that no Relocation Payment or Relocation Advisory Assistance will be sought or provided in any form as a consequence of this tenancy.

15. CONTINGENCIES. By entering into this lease, the Tenant understands and agrees that the exclusive right to harvest kelp within the leased bed(s) may be subject to additional restrictions or limitations imposed by subsequent action of the Fish and Game Commission.

16. NON-DISCRIMINATION. In its use of the Lease area, Tenant shall not discriminate against, harass, or allow harassment against any person or class of persons on the basis of race, color, creed, religion, national origin, ancestry, sex, sexual orientation, age, marital status, medical condition or disability. Tenant shall ensure that the evaluation and treatment of its employees and applicants for employment are free from such discrimination and harassment.

Tenant shall comply with the provisions of the Fair Employment and Housing Act (Government Code Section 12900 et seq.) and the applicable regulations promulgated thereunder (California Code of Regulations, Title 2, Section 7285.0 et seq.). Tenant shall give written notice of its obligations under this clause to labor organizations with which it has a collective bargaining or other agreement. Tenant shall include the non-discrimination and compliance provisions of this clause in all contracts to perform work under and/or in connection with this Lease.

Tenant shall be solely responsible for complying with the requirements of the Americans With Disabilities Act of 1990 (P.L. 101-336, commencing at Section 12101 of Title 42, United States Code and including Titles I, II and III), the Rehabilitation Act of 1973, and all related regulations, guidelines and amendments to both laws.

17. DRUG-FREE WORKPLACE. Tenant will comply with the requirements of the Drug-Free Workplace Act of 1990, as amended, and will provide a drug-free workplace by taking the following actions:

- (a) Publish a statement notifying employees that unlawful manufacture, distribution, dispensation, possession or use of a controlled substance is prohibited and specifying actions to be taken against employees for violations.
- (b) Establish a Drug-Free Awareness Program to inform employees about:
 - (1) the dangers of drug abuse in the workplace;
 - (2) the Tenant's policy of maintaining a drug-free workplace;
 - (3) any available counseling, rehabilitation and employee assistance programs; and,
 - (4) penalties that may be imposed upon employees for drug abuse violations.
- (c) Provide that every employee who works on the Lease area will:
 - (1) receive a copy of the Tenant's drug-free policy statement; and,
 - (2) agree to abide by the terms of the Tenant's statement as a condition of employment on the Lease area.

Failure to comply with these requirements may result in suspension or termination of this Lease, and Tenant may be ineligible for award of any future State Kelp Leases if the State determines that any of the following has occurred:

- (a) the Tenant has made false certification, or
- (b) violated the certification by failing to carry out the requirements as noted above.

18. NO WARRANTY. This Lease is made without warranty of title, condition or fitness of Kelp Bed No. 3 for the Tenant's intended purpose or use.

19. COMPLIANCE. As a necessary condition for this Lease, Tenant must obtain and maintain all necessary permits and any other entitlements, including a valid Kelp Harvesting License. Tenant shall comply with all applicable federal, state and local laws, including laws relating to public health and safety, resource conservation and environmental protection. For any leased bed(s) north of the County of Monterey, not more than 5 percent of the total weight of kelp harvested in any one day shall consist of bull kelp (*Nereocystis*).

20. REPORTS AND RECORDS. State may require Tenant to submit any periodic reports it deems necessary for the proper administration of State Kelp Lease at Kelp Bed No. 3.

Tenant agrees that the Fish and Game Commission, Department of Fish and Wildlife, and the Bureau of State Audits, or their designated representative, shall have the right to review and copy any records and supporting documentation pertaining to the performance of this Lease. Tenant agrees to maintain such records for possible audit for a minimum of three years after final payment. Tenant agrees to allow the auditor(s) prompt access to such records during normal business hours and similarly to allow interviews of any employees who might reasonably have information related to such records. Tenant agrees to include a similar right of the State to audit records and to interview staff in any sublease or contract related to performance of this Lease.

21. CONFLICTS OF INTEREST. Tenant warrants that no official, employee in the state civil service or other appointed state official, or any person associated with same by blood, adoption, marriage, cohabitation, and/or business relationship:

- (a) has been employed or retained to solicit or aid in the procuring of this Lease;
or
- (b) will be employed in the performance of this Lease without the immediate divulgence of such fact to State.

In the event State determines that the employment of any such official, employee, associated person, or business entity is not compatible, Tenant shall terminate such employment immediately. For breaches or violations of this Paragraph, State shall have the right to annul this Lease without liability.

22. EXPATRIATE CORPORATION. Tenant hereby declares that it is not an expatriate corporation or subsidiary of an expatriate corporation, within the meaning of Public Contract Code sections 10286 and 10286.1 and is eligible to contract with State.

23. BREACH. The occurrence of any one of the following shall constitute a breach of this Lease by Tenant:

- (a) Failure of Tenant to make any annual advance payment within ninety (90) days of January 15;
- (b) Failure of Tenant to submit royalty payments due to the State by the 10th day of the month for which they are due for more than three (3) months in any calendar year;
- (c) Abandonment of the Lease area determined after State has followed the procedures set forth in Civil Code Section 1951.3.

Should a threat to public health or safety or to the environment be created or exist on the Lease area, State may declare an emergency event and, unless an alternative arrangement is preferable in State's discretion, may enter upon and take possession of the Lease area to remedy the emergency without prior notice and/or demand an assignment of the right to operate the Lease area. Upon entering the Lease area under this Section, State shall provide immediate notice of such action by hand delivery or fax of its declaration to Tenant. State may retain possession of the Lease area until the emergency event has been completely and adequately addressed to State's satisfaction. Where a breach of this Lease has caused or exacerbated the emergency event, or where the Tenant is non-cooperative in allowing or addressing any remedial action necessary because of the emergency event, State may terminate the Lease. State shall not be liable in any manner for any inconvenience, disturbance, loss of business, nuisance or other damage arising out of State's entry in the Lease area as provided herein, except damage resulting from the willful misconduct of State or its authorized representatives.

Any failure by Tenant to observe or perform another provision of this Lease where such failure continues for thirty (30) days after written notice thereof by State to Tenant; any such notice shall be deemed to be the notice required under Code of Civil Procedure Section 1161. However, if the nature of Tenant's breach is such that it cannot reasonably be cured within the thirty (30) day period, Tenant shall not be deemed to be in breach if Tenant shall commence such cure within the thirty (30) day period and thereafter diligently prosecutes such cure to completion.

Neither this Lease nor any interest of Tenant hereunder in the Lease area shall be subject to involuntary assignment or transfer by operation of law in any manner whatsoever, including, without limitation, the following:

- (a) transfer by testacy or intestacy;
- (b) assignments or arrangements for the benefit of creditors;
- (c) levy of a writ of attachment or execution on this Lease;
- (d) the appointment of a receiver with the authority to take possession of the Lease area in any proceeding or action in which the Tenant is a party; or
- (e) the filing by or against Tenant of a petition to have Tenant adjudged a bankrupt, or of a petition for reorganization or arrangement under any law relating to bankruptcy.

Any such involuntary assignment or transfer by operation of law shall constitute a breach by Tenant and State shall have the right to elect to take immediate possession of the Lease area, to terminate this Lease and/or invoke other appropriate remedies, in which case this Lease shall not be treated as an asset of Tenant.

Notices of breach shall specify the alleged breach and the applicable Lease provision and shall demand that Tenant perform the provisions of this Lease within the applicable time period or quit the Lease area. No such notice shall be deemed a forfeiture or a termination of this Lease unless State specifically so states in the notice.

24. REMEDIES. In the event of breach by Tenant, State shall have the following remedies. These remedies are not exclusive; they are cumulative and are in addition to any other right or remedy of State at law or in equity.

Collection of Rent: In any case where State has a cause of action for damages, State shall have the privilege of splitting the cause to permit the institution of a separate suit for royalties due hereunder, and neither institution of any suit, nor the subsequent entry of judgment shall bar State from bringing another suit for royalties; it being the purpose of this provision to provide that the forbearance on the part of State in any suit or entry of judgment for any part of the royalties reserved under this Lease, to sue for, or to include in, any suit and judgment the royalties then due, shall not serve as defense against, nor prejudice a subsequent action for, royalties or other obligations due under the Lease. The claims for royalties may be regarded by State, if it so elects, as separate claims capable of being assigned separately.

Continued Performance: At State's option, Tenant shall continue with its responsibilities under this Lease during any dispute.

Termination of Tenant's Right to Possession: Upon an event of breach of this Lease by Tenant, in addition to any other rights or remedies it may have, State may give Tenant a three-day notice to cure the breach or quit the Lease area. If Tenant fails to do either, State may bring a statutory proceeding in unlawful detainer to regain possession of the Lease area. Any notice given by State pursuant to this Paragraph does not constitute a termination of this Lease unless expressly so declared by State in the notice. In the absence of written notice from State, no act by State, including, but not limited to, acts of maintenance, efforts to re-let and/or assign rights to possession of the Lease area, or the appointment of a receiver on State's initiative to protect State's interest under this Lease shall constitute an acceptance of Tenant's surrender of the Lease area, or constitute a termination of this Lease or of Tenant's right to possession of the Lease area. Upon such termination, State has the right to recover from Tenant:

- (a) the worth, at the time of the award, of the unpaid royalties that had been earned at the time of termination of this Lease;
- (b) the worth, at the time of the award, of the amount by which the unpaid royalties that would have been earned after the date of termination of this Lease until the time of the award exceeds the amount of loss of royalties that Tenant proves could have reasonably been avoided;
- (c) the worth, at the time of the award, of the amount by which the unpaid royalties for the balance of the term after the time of the award exceeds the amount of the loss of royalties that Tenant proves could have been reasonably avoided; and
- (d) any other amount necessary to compensate State for all the detriment proximately caused by Tenant's failure to perform its obligations under this Lease, and costs of clearing State's title of any interest of Tenant, commissions, attorneys' fees, and any other costs necessary or appropriate to make the Lease area operational by a new Tenant.

"The worth, at the time of the award," as used herein above shall be computed by allowing interest at the lesser of a rate of ten percent (10%) per annum or the maximum legal rate.

Receiver: If Tenant is in breach of this Lease, State shall have the right to have a receiver appointed to collect royalties and conduct Tenant's business or to avail itself of any other pre-judgment remedy. Neither the filing of a petition for the appointment of a

receiver nor the appointment itself shall constitute an election by State to terminate this Lease.

Right to Cure Tenant's Breach: At any time after Tenant commits a breach, State can cure the breach at Tenant's cost. If State, at any time by reason of Tenant's breach, pays any sum or does any act that requires the payment of any sum, the sum paid by State shall be due immediately from Tenant to State, and if paid at a later date shall bear interest at the rate of ten percent (10%) per annum from the date the sum is paid by State until State is reimbursed by Tenant.

Personal Property of Tenant: In the event any personal property or trade fixtures of Tenant remain at the Lease area after State has regained possession, that property or those fixtures shall be dealt with in accordance with the provisions for Surrender of the Lease area provided below.

State's Obligations After Breach: State shall be under no obligation to observe or perform any covenant of this Lease on its part to be observed or performed that accrues after the date of any breach by Tenant. Such nonperformance by State shall not constitute a termination of Tenant's right to possession nor a constructive eviction.

No Right of Redemption: Tenant hereby waives its rights under California Code of Civil Procedure sections 1174 and 1179 or any present or future law that allows Tenant any right of redemption or relief from forfeiture in the event State takes possession of the Lease area by reason of any breach by Tenant.

Other Relief: State shall have such rights and remedies for failure to pay any and all monetary obligations under this Lease as State would have if Tenant failed to pay royalties due. The remedies provided in this Lease are in addition to any other remedies available to State at law, in equity, by statute, or otherwise.

Attorney's Fees and Costs: Tenant shall reimburse State on demand for all reasonable attorney fees and expenses incurred by State as a result of a breach under this Lease, provided that, in any litigation between the parties to this Lease concerning it, the prevailing party shall be entitled to recover court costs, reasonable attorney fees, and other costs reasonably incurred to secure the remedy obtained in the action.

State shall not be in breach of the performance of any obligation required of it under this Lease unless and until it has failed to perform such obligation for more than thirty (30) days after written notice by Tenant to State specifying the alleged breach and the applicable Lease provision giving rise to the obligation. However, if the nature of State's obligation is such that more than thirty (30) days is required for its performance, then State shall not be deemed in breach if it shall commence performance within such 30-day period and thereafter diligently prosecute the same to completion.

25. TERMINATION. In the event the Lease area becomes unsuitable for the commercial harvest of kelp, or in the event the Tenant becomes unable to continue operating the Lease for commercial kelp harvest for reasons beyond Tenant's ability to control, Tenant may terminate the Lease after thirty (30) days written notice to State. Tenant may terminate the Lease for any other reason through a written request presented to and approved by State at a public hearing held for purposes of

consideration of Tenant's termination request. Such termination shall be effective thirty (30) days after State's approval.

On expiration of or within thirty (30) days after earlier termination of the Lease, Tenant shall surrender the Lease area to State. If Tenant fails to surrender the Lease area to State on the expiration, or within thirty (30) days after earlier termination of the term as provided by this Section, Tenant shall hold State harmless for all damages resulting from Tenant's failure to surrender the Lease area.

26. ASSIGNMENT AND SUBLEASES. Pursuant to Fish and Game Code Section 6708, this Lease may not be assigned, in whole or in part, by Tenant, either voluntarily or by operation of law, and no subleases or other rights may be granted under it by Tenant without the prior approval of State, subject to the conditions that it prescribes. At the election of State, any attempted assignment or subletting without the prior approval of State shall terminate this Lease.

27. RELEASE. Tenant shall within 90 days of the expiration or sooner termination of this Lease, execute, acknowledge and deliver to State in a form provided by State, a release of all rights under this Lease. Should Tenant fail or refuse to deliver such a release, a written notice by State reciting such failure or refusal shall, from the date of its recordation, be conclusive evidence against Tenant of the expiration or termination of this Lease.

28. CONSTRUCTION. This Lease contains the entire agreement between the parties. This Lease shall be governed by and construed in accordance with the laws of the State of California. The Paragraph titles in this Lease are inserted only as a matter of convenience and for reference, and in no way define, limit, or describe the scope or intent of this Lease or in any way affect this Lease.

29. WAIVER AND CONSENT. Unless expressly acknowledged by State in writing, no term, covenant, or condition of this Lease and no default or breach is waived by the acceptance of a late or nonconforming performance. State's consent for one transaction or event under this Lease is not consent to any subsequent occurrence of the same or any other transaction or event.

30. TIME OF THE ESSENCE. Time is of the essence of this Lease and any term, covenant or condition in which performance is a factor.

31. CHANGES. Nothing in this Lease may be waived, modified, amended, or discharged except by an instrument in writing signed by Tenant and State.

32. SEVERABILITY. If a court of competent jurisdiction determines that a Lease provision is legally invalid, illegal or unenforceable, and such decision becomes final, the provision shall be severed and deleted from the Lease and the remainder reasonably interpreted to achieve its intent. Tenant and State agree to replace such void or unenforceable provision with a valid and enforceable provision that will achieve, to the extent possible, the purpose original provision.

33. NO AGENCY. The Tenant, and the agents and employees of the Tenant in the performance of the Lease, shall act in an independent capacity and not as officers or agents of the State of California.

34. CLOSURE. Neither State nor the Department of Fish and Wildlife shall have any liability arising from a closure of waters by the Department of Fish and Wildlife Director pursuant to Fish and Game Code Section 5654, where kelp harvesting operations are taking place in accordance with this Lease.

35. APPROVAL. This Lease, and any renewal of it, is subject to approval by the Department of General Services.

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SIGNATURE PAGE

This Lease and any amendment(s) may be executed in counterparts, each of which, when executed and delivered by State and Tenant, shall be an original and together shall constitute one instrument, with the same force and effect as though all signatures appeared on a single document.

Each signatory attests he or she is duly authorized to execute this Lease on behalf of the principal he or she represents.

STATE OF CALIFORNIA APPROVED:

DIRECTOR OF DEPARTMENT OF
GENERAL SERVICES

By: *Tony Psihopaidas*
TONY PSIHOPAIDAS, Manager
State Owned Leasing & Development

Date: 7/31/13

CONSENT TO LEASE AND APPROVES OF TERMS:

CALIFORNIA FISH AND GAME
COMMISSION

By: *Sonke Mastrup*
SONKE MASTRUP
Executive Director

Date: 7/16/13

TENANT:

KNOCEAN SCIENCES, INC.

By: *Tom Copp*
~~**DALE GLANTZ**~~ **TONY COPP**
Chief Operating Officer CEO

Date: June 13, 2013

Notarized By:
Kelley Latham
Dallas, TX



FOR USE BY DEPARTMENT OF GENERAL SERVICES ONLY

From: Tony Copp <tcopp@knoceansciences.com>
Sent: Thursday, March 15, 2018 9:41 PM
To: Termini, Valerie@FGC; Ashcraft, Susan@FGC; Flores Miller, Rebecca@Wildlife; Ramey, Kirsten@Wildlife
Cc: victor fimbres; Ron Densmore; Pat Carmichael; Dale Glantz
Subject: Revision Letter for Kelp Bed Lease No. 3, Point Loma
Attachments: KNOCEAN Renewal Request Revised March 15, 2018.pdf

Dear Valerie,

Here is my revised renewal letter. A copy of the check was in the original letter.

We have improved the technology of the harvesting choices for Kelp and I believe it will be a positive for the State of California as we seek to renew our lease with lower harvesting requirements.

Best regards,

Tony Copp, CEO
KNOCEAN Sciences, Inc.
214-738-7973

Agenda item 4: Lease renewal request for Kelp Bed No. 3; and
Agenda item 5: Proposed Kelp Harvest Plan



March 15, 2018 (Revised)

Mr. Valerie Termini
Executive Director
California Fish and Game Commission
1416 Ninth Street
P.O. Box 944209
Sacramento, CA 94244-2090

Re: Lease Renewal for California Kelp Bed 3

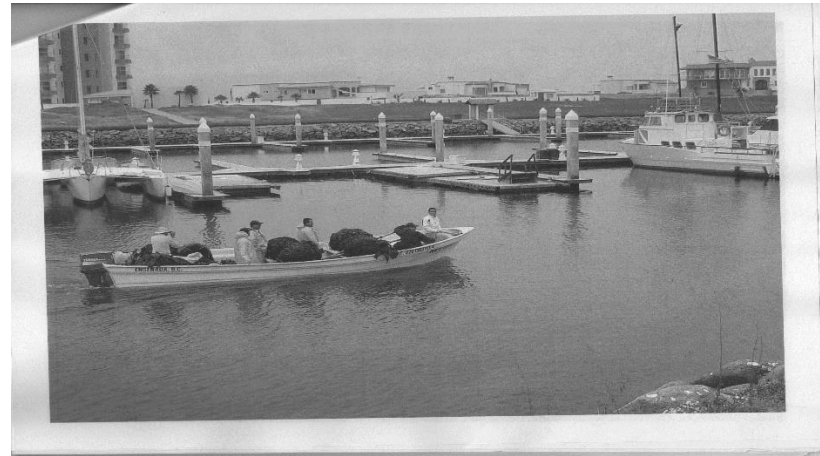
Dear Mrs. Termini,

This is a formal request to renew our existing Kelp Bed 3 Lease off Point Loma. It revises our November 27th renewal letter with new information. In the interim time frame that KNOCEAN Sciences, Inc. has held its initial Lease of Kelp Bed 3, we have conducted major testing with some of the largest cosmetic companies in the world, as our technology has help to shape a perfect a new ingredient for cosmetic and other uses in products that are safe, and today we are now ready to Renew the Lease on Kelp Bed 3 to commence our next phase of competitive products beyond the initial R & D of our first five products. That will require our supply of "*Macrocystis pyrifera*."

As we previously indicated, KNOCEAN is an early stage Dallas, Texas based corporation that is utilizing state of the art technologies to convert harvested brown macro algae ("*Macrocystis pyrifera*, kelp") into a number of new valuable products such as bio-marine based nutraceutical, cosmeceutical and functional food ingredients. We are initiating a new Business Tax Certificate with the City of El Cajon where our Marine Administrator will operate from. The City of San Diego Business Tax Certificate office noted this and suggested that change for our processing of

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In preparation for establishing kelp harvesting and processing operations in Southern California, KNOCEAN retained the services of mechanical and chemical engineers, clinical physicians, biomedical researchers, and marine biologists including former Kelco and ISI Alginates personnel. KNOCEAN is also reviewing the economics of three alternatives: (1) evaluating a contract to hire existing California commercial kelp harvester companies, also used for abalone feed, but which now have idle vessel capacity, to use one of their vessels to harvest as we need to for our manufacturing needs as being reflected in this renewal letter. Here is a picture on the left of one such kelp harvesting vessel with a kelp commercial license that may be used.



Examples are The Cultured Abalone and Abalone Farms with idle capacity in their vessels, and using their crews who focus mostly on mechanical harvesting but with our instruction but whose capability is topped to 500 tons per annum, and any amounts beyond that would shift to our second alternative. Or, (2) our technical team has found that using a KNOCEAN owned and financed small Mexican-style Panga, show on the right above with video attached, for Point Loma and we can use 100% hand harvested processes under the authority of our lease in Kelp Bed 3 for the entire time period with minimal visualization from the coast and KNOCEAN will have its new workers with experience working on these boats led by our marine team of Ron Densmore, Dale Glantz and Victor Fimbres. This would be new for San Diego, CA but it may have powerful benefits. Panga's are available now to purchase from Mexico to bring to San Diego. Then as alternative (3) as volumes grow, obtaining the use of the recently refurbished M/V Supplier, or other similar candidate ships (LCM-6), which KNOCEAN plans to convert into a mechanical kelp harvester. The SUPPLIER is a 62 foot long landing craft with a gross rated tonnage of 12 tons and fuel capacity of 1,000 gals. This third choice would more likely

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KNOCEAN submits this renewal letter in accordance with Title 14, Section 165.5 for a 20-year lease (Through December 31, 2032) for Department of Fish and Game Kelp Bed 3. We have been made aware that Kelp Bed 3 in recent survey's has much lower kelp potential, but that is workable for KNOCEAN Sciences, as we have materially lowered our kelp needs certainly for the initial two years as reflected in this letter. We now only expect to harvest a maximum of 200 tons per year for the first two years of this five year lease due to technological improvements in our final products that lower per unit the Kelp requirements. Kelp Bed 3 is described as:

Bed 3. Leasable. 2.58 square miles. This bed extends from the southern tip of Point Loma to the south jetty of Mission Bay, defined as the area bounded by the mean high tide line and straight lines connecting the following points in the order listed except where noted:

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In our initial lease, we submitted a royalty bid of \$1.71 per wet weight ton of kelp harvested. The deposit for a new lease for Kelp Bed 3 computed on the basis of the royalty rate times the harvest of 1,500 tons of kelp per square mile in southern California [Section 165.5 (g), Title 14, CCRI] is \$6,617.70. We understand that the initial deposit payable on the renewal of Kelp Bed 3 is the same, (also, 2.58 square miles times \$2,565.) However, as we previously offered to get Commission approval, we enhanced our royalty bid to \$3.00/wet ton of kelp harvested. Even though we are harvesting materially less kelp per annum, we are still prepared to offer a bid of \$3.00 per ton to be invoiced on renewal. As part of our service to the Commission, we will have our marine experts report quarterly on how we see the health of the Kelp Bed 3 relative to last prior survey. The CDFW aerial kelp surveys for kelp bed 3 in 2009 found 3.934 km² of surface canopy kelp; during 2016 there was 0.004 km². Survey's were not able to be performed in 2017. Our view is that just because the yield estimates have been low doesn't mean things can't improve

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Our primary purpose for acquiring the lease on Kelp Bed 3 is to secure a source of giant kelp *Macrocystis pyrifera* in the southern California marine region to provide the renewable raw material required for KNOCEAN's innovation conversion process. Our focus is to produce key extracts from the harvested kelp. Our manufacturing and product stream will be designed to utilize all of the kelp that is harvested, thereby eliminating the need for byproduct disposal. We plan to harvest kelp in Bed 3 from its northern to southern limits in water depths ranging from 5 fathom contour out to offshore edge of the kelp bed in approximately 12 fathoms of water.

Our plan is to harvest 200 tons of kelp from Bed 3, using third party vessels, during our first two years of operation. We would plan a May through November harvesting period at two trips (from Santa Barbara area where third party boats are located) during the calendar period with a vessel at 100 tons per a scheduled event. Once in the San Diego area, schedule five daily harvesting events at 20 tons per harvest per period; during each of the two periods. One period can be in June and the second in October. This would be repeated in year two. For years 3-5, we would plan due to growth in our business, to harvest more kelp, a 2,000 tons per year. Similarly we would have, using a converted vessel that will be completed at the end of year two. Beginning in year three, two harvesting periods in each of the May to November period would occur. The first harvesting period would be June-July, with 25 daily events at 20 tons per harvest to yield 1,000 tons, and then in October to November, another 25 daily events at 20 tons per harvest for the second 1,000 tons to yield for the year, 2,000 tons. Years 4-5 would repeat this process.

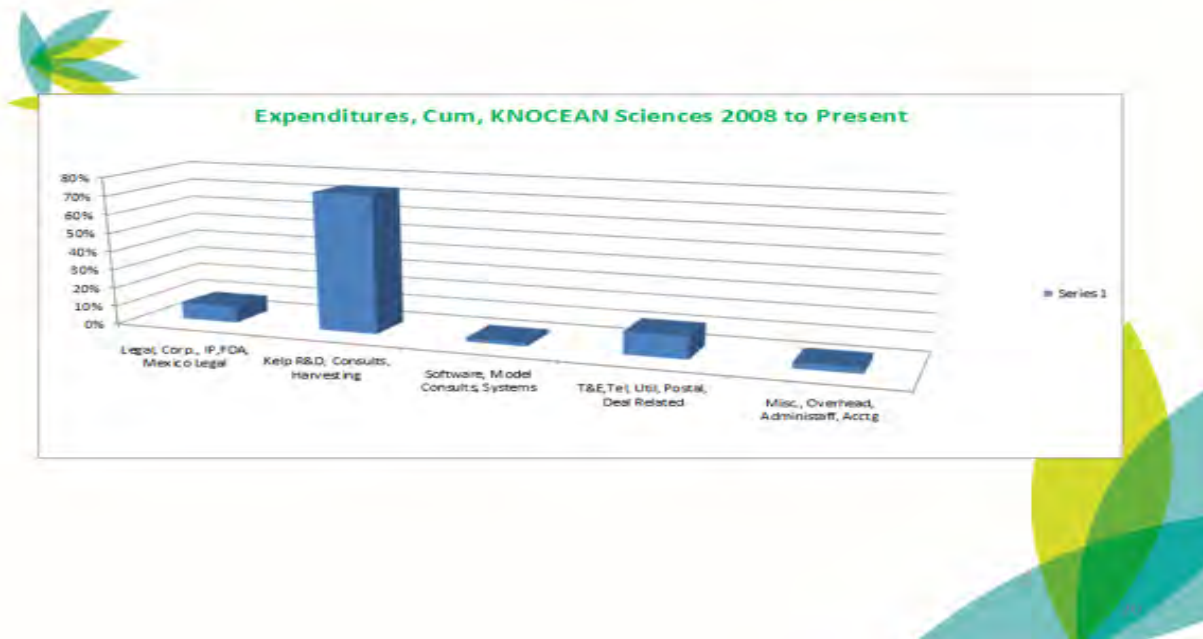
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ingredient products accomplished by Capsugel, Inc., in Greenwood, South Carolina. Our long term plans would include establishing finished product processing capabilities in California.

KNOCEAN is financing this project anchored by its strategic investors who are accredited investors, who are also advisers for any company acquisitions in skincare/cosmetics we may make potentially at the third quarter of this first renewed Kelp Bed lease. KNOCEAN's kelp based technology is used in a newly created line of healthy, skincare products. We are also interested in nutraceuticals and by arrangements in our partnership with Cosmetic Laboratories, and our association with Capsugel. Capsugel was recently sold by Kohlberg, Kravis & Roberts (KKR, who acquired them in 2014) of New York to the Swiss firm Lonza who is a global dietary supplement/health care technology company. They will pay for the cost of ingredients and will have a strategic relationship with KNOCEAN on global distribution arrangements at their global locations. A profit sharing arrangement with Cosmetic Laboratories is being explored as KNOCEAN is also partnering with two major private equity firm one located in Chicago, Illinois and the other in New York, NY, to roll in the KNOCEAN kelp based products in a large cosmetic acquisition target being scrutinized today. KNOCEAN would provide a new source of revenue to the revenue segments of the acquired company and share in profits which would be majority owned by the private equity company, one called GTCR and the other LG.

KNOCEAN's own working capital lines to support these global relationships, and all prior capital for its research and development, licensing, and operations related investments come from its own management team, private accredited investors, and some key strategic partners. Recently joining KNOCEAN and investing in the company is the former Vice Chairman of Neiman Marcus, a nationwide luxury retailing firm, and a former top executive of the well know cosmetic company Laura Mercier, recently sold to Shiseido. All these arrangements have been accomplished by Copp Ventures, LLC, headed by E. Anthony Copp, also Chairman at KNOCEAN. Copp was also co-founder and Vice Chairman of Bone Solutions, Inc. (www.bonesolutions.net). The cost of ingredients will include the amortized costs of vessels, docking, and solar drying and processing of the kelp. Capital spending for our San Diego based operations is expected to be \$2.5 million. KNOCEAN has already funded over \$2.5 million to achieve its first patent, its continuing research and development costs, to perfect its first five products innovated from kelp, not previously available. The allocation of these costs are shown in the Chart below.



KNOCEAN plans to continue the stewardship role established by Kelco and ISP Alginates in helping to maintain healthy kelp forest resources, and this effort will be managed by Dale Glantz. There is a long history of research and evaluation that reveals kelp harvesting to be a well run and sustainable industry. KNOCEAN strongly supports the kelp harvesting regulations established by the State of California and the management efforts of the Department of Fish and Game. In addition to complying with all harvesting regulations, KNOCEAN will also establish and abide by special methods to assure that individual kelp plants are not harvested continuously. KNOCEAN will utilize the same harvest techniques development by Kelco, which is similar to a farmer harvesting a field. The vessel will establish a cut parallel to shore and positively identify it using a recording GPS system. The harvest cut and the GPS technique will allow KNOCEAN's vessel to systematically harvest the bed to assure the same area is not cut more than once every 4 to 6 months. KNOCEAN currently has no plans to harvest kelp off central California, so there will be no conflicts between our harvesting operations, rafting female sea otters, or the bull kelp species *Nereocystis leutkeana*.

Please contact us if you have any questions or require additional information relative to this kelp Bed 3 renewal request.

Sincerely,

E. Anthony "Tony" Copp, Ph.D.
Chief Executive Officer
KNOCEAN Sciences, Inc.
6614 Darbrook Drive
Dallas, TX 75254
214-738-7973
tcopp@knoceansciences.com

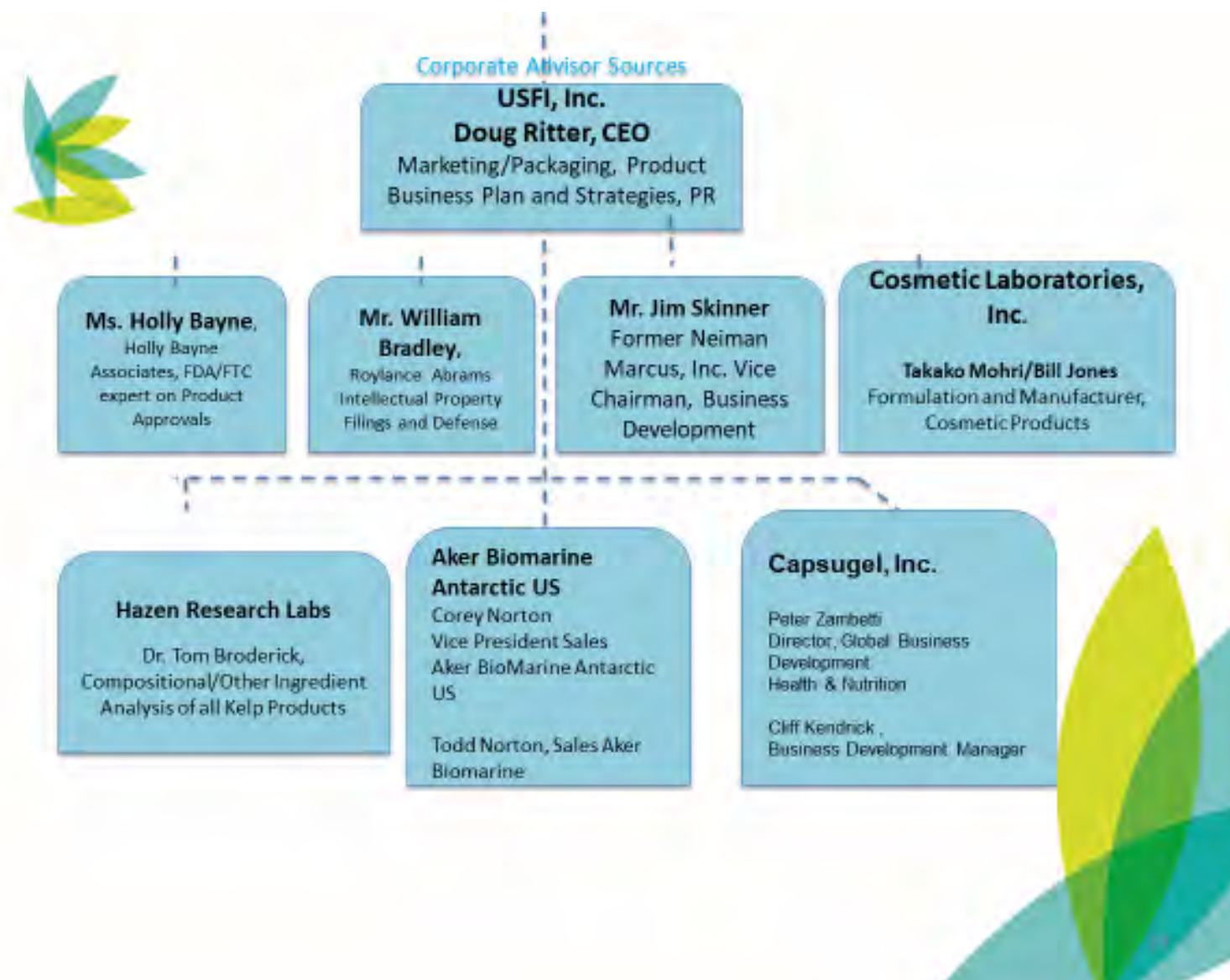
Cc: Kirsten Ramey, Senior Environmental Scientist, California Department of Fish and Game, Eureka, Kirsten.ramey@wildlife.ca.gov

Susan Ashcraft, Marine Advisor, California Fish and Game Commission, Sacramento, susan.ashcraft@fgc.ca.gov

Dale Glantz, COO, KNOCEAN Sciences, Inc. (dale.glantz@earthlink.com)

Corporate Organization





CITY OF SAN DIEGO * CERTIFICATE OF PAYMENT OF BUSINESS TAX

KNOCEAN SCIENCES INC
TONY COPP
6614 DARTBROOK DR
DALLAS TX 75254-7920

Certificate Number: B2011034195

Business Name: KNOCEAN SCIENCES INC
Business Owner: KNOCEAN SCIENCES INC
Business Address: 6614 DARTBROOK DR
DALLAS TX 75254-7920

Primary Business Activity: WHOLESALE TRADE, NONDURABLE GOODS

Secondary Business Activity: MISCELLANEOUS MFG

Effective Date: 12/01/2017
Expiration Date: 11/30/2018

PLEASE NOTIFY THE CITY TREASURER'S OFFICE IN WRITING OF ANY CHANGE IN OWNERSHIP OR ADDRESS – PLEASE SEE REVERSE SIDE FOR ADDITIONAL INFORMATION

BUSINESS FILE COPY

CITY OF SAN DIEGO
CERTIFICATE OF PAYMENT OF BUSINESS TAX
PO BOX 122289, SAN DIEGO, CA 92112-2289
1200 3RD AVENUE, MS 51T, SAN DIEGO, CA 92101
(619) 615-1500; FAX (619) 533-3272
www.sandiego.gov/treasurer

Certificate Number: B2011034195 PIN: SFCLG

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KNOCEAN SCIENCES INC
TONY COPP
6614 DARTBROOK DR
DALLAS, TX 75254-7920

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Mailing Address: KNOCEAN SCIENCES INC
TONY COPP
6614 DARTBROOK DR
DALLAS TX 75254-7920

This certificate acknowledges payment of business taxes pursuant to the San Diego Municipal Code. This is not a License to do business within the City of San Diego in violation of any section of the Municipal Code or regulation adopted by the City Council including, but not limited to: Zoning restrictions; Land Use specifications as defined in Planned Districts, Redevelopment areas, Historical Districts, or Revitalization areas; Business Tax Regulations; Police Department Regulations; and Fire, Health or Sanitation Permits and Regulations.

This document is issued without verification that the payer is subject to or exempt from licensing by the State of California.

Payment of the required tax at the time or times due is for the term and purpose stated and is pursuant to City Ordinance. Please refer to delinquency information under "Notice".

NOTICE: It is the responsibility of the certificate holder to renew this certificate of payment of business tax within the proper time limits. Failure to do so, even if you have not received a renewal notice, will result in the assessment of a penalty. Please note your expiration date on this certificate above. The certificate holder is requested to notify the City Treasurer's Office upon sale or closure of the business, change of location, or change of business activity.

The tax or fees collected are **Not Refundable** unless collected as a direct result of an error by the City of San Diego.

This certificate is NOT transferable for a change in business ownership.

See reverse side.

Memorandum

2018 JUN 12 PM 3:00

Date: June 12, 2018

To: Valerie Termini
Executive Director
Fish and Game Commission

From: Charlton H. Bonham
Director



Subject: **Consent Item for the June 20-21, 2018, Fish and Game Commission Meeting:
KNOCEAN Sciences, Inc. Kelp Bed Lease Renewal Request and Updated Kelp
Harvest Plan**

KNOCEAN Sciences, Inc. has requested a 20-year lease renewal of Administrative Kelp Bed (Kelp Bed) 3, totaling 2.58 square miles, in San Diego County for the exclusive harvest of giant kelp (*Macrocystis pyrifera*). KNOCEAN Sciences, Inc. will provide a royalty rate of \$3.00 per ton of wet kelp harvested, as per Section 165.5(c)(2) and (g), Title 14, California Code of Regulations (CCR). The Department of Fish and Wildlife (Department) has reviewed the application letter, financial capability information, and the Kelp Harvest Plan (KHP) in accordance with Title 14, CCR, sections 165.5 (b)(2) through (b)(4) and (c).

Fish and Game Code 6704 states the duration of the term for any lease renewal shall not exceed 20 years; however, in other recent lease renewals the Fish and Game Commission (Commission) determined that 5-year renewal period allow for opportunity to review lease terms, including royalty rates. Therefore, the Department recommends the Commission approve Kelp Bed 3 lease and KHP for a period of five years.

Upon lease execution, the Department requests the Applicant provide opportunities for Department staff to observe the at-sea harvest operations upon advance notice to KNOCEAN Sciences, Inc. (Section 105.5, Title 14, CCR).

If you have any questions regarding this item, please contact Dr. Craig Shuman, Marine Regional Manager, at (916) 445-6459 or by email at Craig.Shuman@wildlife.ca.gov.

Attachments

ec: Stafford Lehr, Deputy Director
Wildlife and Fisheries Branch
Stafford.Lehr@Wildlife.ca.gov

Valerie Termini, Executive Director
Fish and Game Commission
June 12, 2018
Page 2

Craig Shuman, Marine Regional Manager
Marine Region
Craig.Shuman@wildlife.ca.gov

Kirsten Ramey
Senior Environmental Scientist Supervisor
Marine Region
Kirsten.Ramey@wildlife.ca.gov

Rebecca Flores Miller
Environmental Scientist
Marine Region
Rebecca.FloresMiller@wildlife.ca.gov

Agenda item 4: Lease renewal request for Kelp Bed No. 3; and
Agenda item 5: Proposed Kelp Harvest Plan



March 15, 2018 (Revised)

Mr. Valerie Termini
Executive Director
California Fish and Game Commission
1416 Ninth Street
P.O. Box 944209
Sacramento, CA 94244-2090

Re: Lease Renewal for California Kelp Bed 3

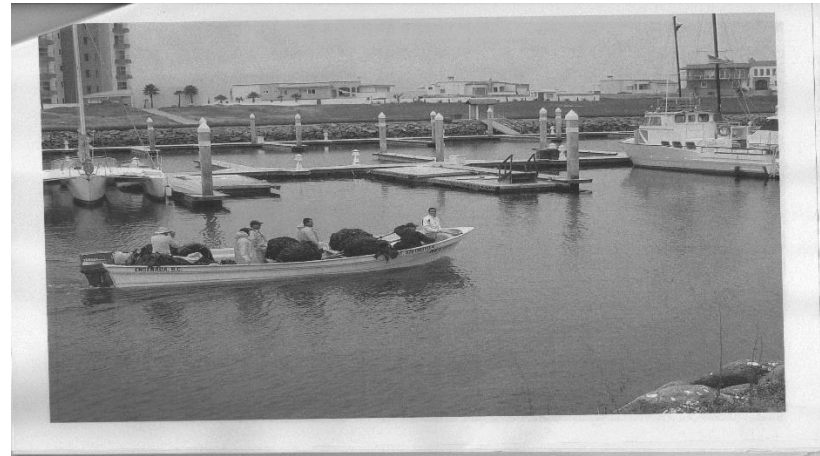
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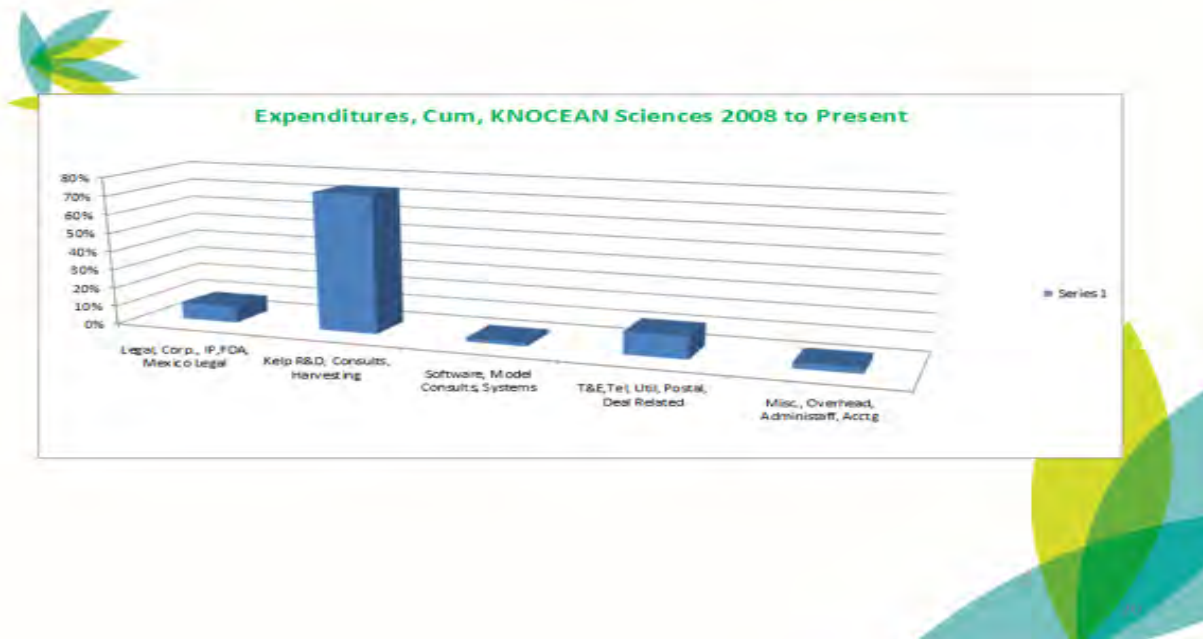
KNOCEAN whether third party harvesters or our own converted vessel, will use mechanical harvesting techniques to obtain the kelp. The vessel conversions, or even if we use continually the existing idle commercial kelp vessels, that these contracts with a third party company, or our refurbishment and ongoing operation and maintenance would potentially add jobs and income in the State.

The kelp that KNOCEAN plans to harvest will be brought onboard and deposited in nets for easy handling. The kelp unloading process will take place at Pacific Tugboat Service's site prior to being transported to Dulzura for initial processing including solar drying. Most of the equipment and jobs at the Dulzura processing location is expected to be sourced in California, which would potentially create additional opportunities for citizens of the State. The manufacturing of our final ingredients products will be accomplished for cosmetic products in Irving, Texas at Cosmetic Laboratories, Inc., who provide formulation and processing services for final product packaging. For neutraceuticals, the plan is to have final

ingredient products accomplished by Capsugel, Inc., in Greenwood, South Carolina. Our long term plans would include establishing finished product processing capabilities in California.

KNOCEAN is financing this project anchored by its strategic investors who are accredited investors, who are also advisers for any company acquisitions in skincare/cosmetics we may make potentially at the third quarter of this first renewed Kelp Bed lease. KNOCEAN's kelp based technology is used in a newly created line of healthy, skincare products. We are also interested in nutraceuticals and by arrangements in our partnership with Cosmetic Laboratories, and our association with Capsugel. Capsugel was recently sold by Kohlberg, Kravis & Roberts (KKR, who acquired them in 2014) of New York to the Swiss firm Lonza who is a global dietary supplement/health care technology company. They will pay for the cost of ingredients and will have a strategic relationship with KNOCEAN on global distribution arrangements at their global locations. A profit sharing arrangement with Cosmetic Laboratories is being explored as KNOCEAN is also partnering with two major private equity firm one located in Chicago, Illinois and the other in New York, NY, to roll in the KNOCEAN kelp based products in a large cosmetic acquisition target being scrutinized today. KNOCEAN would provide a new source of revenue to the revenue segments of the acquired company and share in profits which would be majority owned by the private equity company, one called GTCR and the other LG.

KNOCEAN's own working capital lines to support these global relationships, and all prior capital for its research and development, licensing, and operations related investments come from its own management team, private accredited investors, and some key strategic partners. Recently joining KNOCEAN and investing in the company is the former Vice Chairman of Neiman Marcus, a nationwide luxury retailing firm, and a former top executive of the well know cosmetic company Laura Mercier, recently sold to Shiseido. All these arrangements have been accomplished by Copp Ventures, LLC, headed by E. Anthony Copp, also Chairman at KNOCEAN. Copp was also co-founder and Vice Chairman of Bone Solutions, Inc. (www.bonesolutions.net). The cost of ingredients will include the amortized costs of vessels, docking, and solar drying and processing of the kelp. Capital spending for our San Diego based operations is expected to be \$2.5 million. KNOCEAN has already funded over \$2.5 million to achieve its first patent, its continuing research and development costs, to perfect its first five products innovated from kelp, not previously available. The allocation of these costs are shown in the Chart below.



KNOCEAN plans to continue the stewardship role established by Kelco and ISP Alginates in helping to maintain healthy kelp forest resources, and this effort will be managed by Dale Glantz. There is a long history of research and evaluation that reveals kelp harvesting to be a well run and sustainable industry. KNOCEAN strongly supports the kelp harvesting regulations established by the State of California and the management efforts of the Department of Fish and Game. In addition to complying with all harvesting regulations, KNOCEAN will also establish and abide by special methods to assure that individual kelp plants are not harvested continuously. KNOCEAN will utilize the same harvest techniques development by Kelco, which is similar to a farmer harvesting a field. The vessel will establish a cut parallel to shore and positively identify it using a recording GPS system. The harvest cut and the GPS technique will allow KNOCEAN's vessel to systematically harvest the bed to assure the same area is not cut more than once every 4 to 6 months. KNOCEAN currently has no plans to harvest kelp off central California, so there will be no conflicts between our harvesting operations, rafting female sea otters, or the bull kelp species *Nereocystis leutkeana*.

Please contact us if you have any questions or require additional information relative to this kelp Bed 3 renewal request.

Sincerely,

E. Anthony "Tony" Copp, Ph.D.
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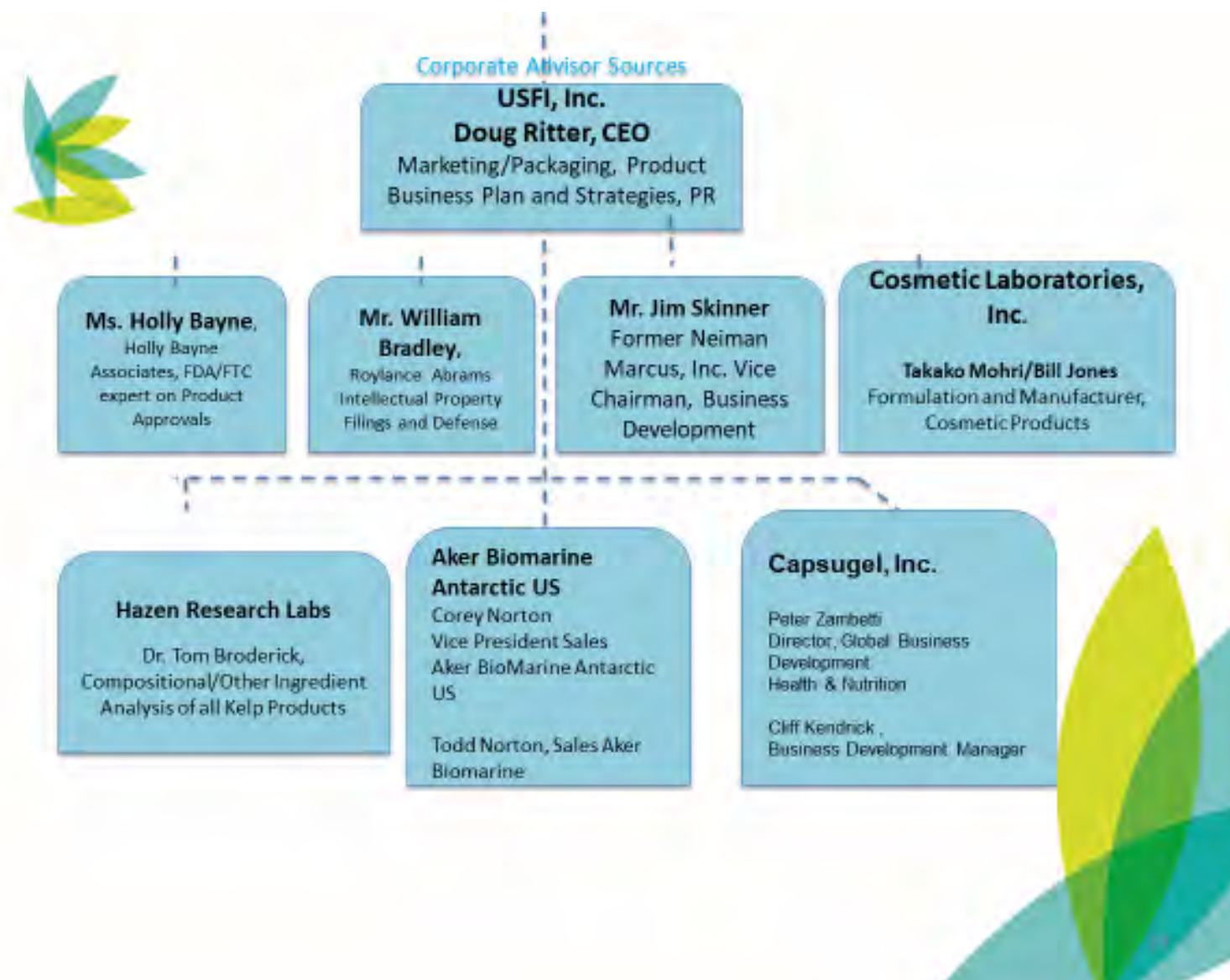
Cc: Kirsten Ramey, Senior Environmental Scientist, California Department of Fish and Game, Eureka, Kirsten.ramey@wildlife.ca.gov

Susan Ashcraft, Marine Advisor, California Fish and Game Commission, Sacramento, susan.ashcraft@fgc.ca.gov

Dale Glantz, COO, KNOCEAN Sciences, Inc. (dale.glantz@earthlink.com)

Corporate Organization





California Fish and Game Commission

Staff Report on Staff Time Allocation and Activities

June 7, 2018

Commission staff time is a tangible and invaluable asset. Especially since the Commission's staff is so small, where and how staff members spend their time is important. This report identifies where Commission staff allocated time to general activity categories (see table; sample tasks for each general category begin on page 2) and specific activities during April and May 2018.

The general allocation table summarizes time across all staff classifications, though some classifications require a greater emphasis on certain task categories than others. For example, advisors can spend 30% or more of their time on special projects due to committee project assignments, while regulatory analysts spend up to 70% of their time on regulatory program tasks. Currently, while new staff are being trained, you can expect to see an increase in administrative time due to on-the-job training.

General Allocation

Task Category	April Staff Time	May Staff Time
Regulatory Program	16%	16%
Commission/Committee Meetings	26%	10%
Legal Matters	6%	5%
External Affairs	6%	4%
Special Projects	10%	11%
Administration	22%	27%
Leave Time	5%	15%
Unfilled Positions	15%	15%
Total Staff Time ¹	106%	103%

¹ Total staff time is greater than 100% due to overtime

Activities for April 2018

- Completed recruitment for new Wildlife Advisor position
- Conducted two publicly-noticed meetings (April 12 FGC teleconference and April 18-19 Fish and Game Commission)
- Continued onboarding and training of staff services analyst
- Continued onboarding and training of Sea Grant Fellow
- Participated in Pacific Fishery Management Council delegation conference call
- Participated in Marine Protection Act Leadership Team
- Released solicitation, scored and interviewed applicants for new two-year contract for commission meeting video streaming and hosting service

- Participated in InterTribal Sinkyone Council Consultation meeting
- Participated in the Biodiveristy Action Plan meeting
- Participated in the MPA Statewide Leadership Team

Activities for May 2018

- Began training, orientation and onboarding process for new wildlife advisor
- Participated in DFW's executive leadership academy training
- Received, reviewed and scored applications for the seasonal clerk vacancy
- Participated in the MLMA CA Fisheries Portal meeting
- Prepared for the two coastal fishing communities meetings with local fisherman and stakeholders
- Participated in The Nature Conservancy and PFMC's Climate Shift Initiative Workshop in Portland, Oregon
- Participated in Ocean Protection Council's Coastal and Ocean Climate Action Team meeting
- Conducted joint meeting with CDFW on Aquaculture Best Management Practices
- Participated in hunting partner coalition meeting with CDFW

General Allocation Categories with Sample Tasks

Regulatory Program

- | | |
|--|---|
| <ul style="list-style-type: none"> • Coordination meetings with DFW to develop timetables and notices • Review and process CESA petitions • Prepare and file notices, re-notices, ISORs and FSORs | <ul style="list-style-type: none"> • Prepare administrative records • Track and respond to public comments • Consult, research and respond to inquiries from OAL |
|--|---|

Commission/Committee Meetings and Support

- | | |
|--|---|
| <ul style="list-style-type: none"> • Research and review practices and procedures for adaptive management • Research and compile subject-specific information • Review and develop policies • Develop and distribute meeting agendas and materials • Agenda and debrief meetings • Prepare meeting summaries, audio files and voting records | <ul style="list-style-type: none"> • Develop and distribute after-meeting memos/letters • Make travel arrangements for staff and commissioners • Conduct onsite meeting management • Process submitted meeting materials • Provide commissioner support (expense claims, office hours, etc.) • Process and analyze regulatory petitions and non-regulatory requests |
|--|---|

Legal Matters

- Respond to Public Records Act requests
- Process appeals and accusations
- Process requests for permit transfers
- Process kelp and state water bottom leases
- Litigation

External Affairs

- Engage and educate legislators, monitor legislation
- Maintain state, federal and tribal government relations
- DFW partnership, including joint development of management plans and concepts
- Website maintenance

Special Projects

- Predator Policy Workgroup
- Fishing from piers and jetties
- Coastal fishing communities
- Fisheries Bycatch Workgroup
- Streamline routine regulatory actions

Administration

- Correspondence
- Purchases and payments
- Contract management
- Personnel management
- Strategic planning
- Budget development and tracking
- Health and safety oversight
- Internal processes and procedures
- Staff training and professional development

Leave Time

- Holidays
- Sick leave
- Vacation or annual leave
- Jury duty
- Bereavement
- Professional development

Unfilled

- Seasonal Clerk
- Legal/Regulatory Clerk



Department of Fish & Wildlife Legislative Report

June 2018
(as of June 5, 2018)

- AB 18** **(Garcia, Eduardo D) California Clean Water, Climate, Coastal Protection, and Outdoor Access For All Act of 2018.**
Introduced: 12/5/2016
Last Amend: 8/30/2017
Status: 9/1/2017-From committee: Do pass and re-refer to Com. on APPR. (Ayes 4. Noes 1.) (August 31). Re-referred to Com. on APPR.
Location: 9/1/2017-S. APPR.
Summary: Under current law, programs have been established pursuant to bond acts for, among other things, the development and enhancement of state and local parks and recreational facilities. This bill would enact the California Clean Water, Climate, Coastal Protection, and Outdoor Access For All Act of 2018, which, if approved by the voters, would authorize the issuance of bonds in an amount of \$3,470,000,000 pursuant to the State General Obligation Bond Law to finance a clean water, climate, coastal protection, and outdoor access for all program.
- AB 424** **(McCarty D) Possession of a firearm in a school zone.**
Introduced: 2/9/2017
Last Amend: 8/30/2017
Status: 10/14/2017-Approved by the Governor. Chaptered by Secretary of State - Chapter 779, Statutes of 2017.
Location: 10/14/2017-A. CHAPTERED
Summary: Would delete the authority of a school district superintendent, his or her designee, or equivalent school authority to provide written permission for a person to possess a firearm within a school zone. By expanding the scope of a crime, the bill would create a state-mandated local program. The bill would exempt from that crime the activities of a program involving shooting sports or activities that are sanctioned by a school, school district, college, university, or other governing body of the institution, as specified, and the activities of a certified hunter education program, as specified. The bill would make other conforming changes to related provisions.
- AB 425** **(Caballero D) Timber harvesting plans: exemptions: temporary roads.**
Introduced: 2/9/2017
Last Amend: 4/4/2017
Status: 9/13/2017-Ordered to inactive file at the request of Senator Hertzberg.
Location: 9/13/2017-S. INACTIVE FILE
Summary: The Z'berg-Nejedly Forest Practices Act of 1973 authorizes the State Board of Forestry and Fire Protection to exempt from some or all of those provisions of the act a person engaging in specified forest management activities, including the cutting or removal of trees in compliance with existing law relating to defensible space. In this regard, the act authorizes, until January 1, 2021, the Forest Fire Prevention Pilot Project Exemption if specified conditions are met. This bill would expand the exemption to allow the construction or reconstruction of temporary roads on slopes of 40% or less if certain conditions are met, including that a registered professional forester designates temporary road locations, landing locations, associated class III watercourse crossings, unstable areas, and connected headwall swales, including convergent slopes, on specified maps.

AB 474 **(Garcia, Eduardo D) Hazardous waste: spent brine solutions.**

Introduced: 2/13/2017

Last Amend: 8/21/2017

Status: 10/15/2017-Approved by the Governor. Chaptered by Secretary of State - Chapter 840, Statutes of 2017.

Location: 10/15/2017-A. CHAPTERED

Summary: Current law exempts from certain requirements of the Hazardous Waste Control Law wastes from the extraction, beneficiation, or processing of ores and minerals that are not subject to regulation under the federal Resource Conservation and Recovery Act of 1976, including spent brine solutions used to produce geothermal energy that meet specified requirements. This bill would exempt spent brine solutions that are byproducts of the treatment of groundwater to meet California drinking water standards from those same requirements if certain conditions are met, including that the spent brine solutions are transferred for dewatering via a closed piping system to lined surface impoundments regulated by the California regional water quality control boards.

AB 510 **(Quirk-Silva D) State property acquisition: West Coyote Hills project site: funding.**

Introduced: 2/13/2017

Last Amend: 7/20/2017

Status: 9/1/2017-Failed Deadline pursuant to Rule 61(a)(12). (Last location was APPR. SUSPENSE FILE on 8/21/2017)(May be acted upon Jan 2018)

Location: 9/1/2017-S. 2 YEAR

Summary: Would require that the \$15,000,000 appropriated in the Budget Act of 2017 for the purposes of SB 714 of the 2017–18 Regular Session be deposited in the West Coyote Hills Conservancy Program Account in the Coastal Trust Fund to be used for the purchase of specified property and related projects. The bill would make findings and declarations regarding funding under the bill for the Wildlife Conservation Board to open up, operate, and maintain the Robert E. Ward Nature Preserve. The bill would state the intent of the Legislature in enacting this act to specify the particular uses of the appropriated funds.

AB 521 **(Frazier D) Hunting: elk tags: apprentice elk hunt tags: fees for residents.**

Introduced: 2/13/2017

Last Amend: 6/26/2017

Status: 9/1/2017-Failed Deadline pursuant to Rule 61(a)(12). (Last location was N.R. & W. on 7/14/2017)(May be acted upon Jan 2018)

Location: 9/1/2017-S. 2 YEAR

Summary: Under current law, a hunting license grants the privilege to take birds and mammals. Current law authorizes the Department of Fish and Wildlife to issue a tag that is required in addition to a hunting license to take an elk. Current law sets the fee for an elk tag for a resident of the state at \$165, as adjusted annually pursuant to a specified index. This bill would reduce the fee for an elk tag for a resident of the state to \$100 and would prohibit the fee from being adjusted, except pursuant to an analysis of the fee to ensure that the appropriate fee amount is charged and a recommendation to the Legislature or the Fish and Game Commission that the fee be adjusted.

AB 661 **(Mayes R) Magnesia Spring Ecological Reserve: Mirage Trail.**

Introduced: 2/14/2017

Last Amend: 7/3/2017

Status: 9/27/2017-Approved by the Governor. Chaptered by Secretary of State - Chapter 315, Statutes of 2017.

Location: 9/27/2017-A. CHAPTERED

Summary: Current law requires, until January 1, 2018, that the Mirage Trail within the Magnesia Spring Ecological Reserve be open 9 months of the year during the months of May to January, inclusive, and closed for 3 months during the months of February to April, inclusive, to recreational hiking if the Fish and Game Commission determines that specified conditions relating to providing

funding and ensuring the proper use and monitoring of the reserve are met. This bill would require the commission, beginning January 1, 2020, and by January 1 every 2 years thereafter, at a public hearing, to assess compliance with the requirements of those provisions and post its findings and any recommendations on its Internet Web site.

AB 707 **(Aguiar-Curry D) Clear Lake.**

Introduced: 2/15/2017

Last Amend: 7/3/2017

Status: 10/15/2017-Approved by the Governor. Chaptered by Secretary of State - Chapter 842, Statutes of 2017.

Location: 10/15/2017-A. CHAPTERED

Summary: Would establish in the Natural Resources Agency, the Blue Ribbon Committee for the Rehabilitation of Clear Lake. The bill would require the committee to consist of specified persons, including the Secretary of the Natural Resources Agency, or his or her designee. The bill would require the committee to meet quarterly for the purposes of discussion, reviewing research, planning, and providing oversight regarding the health of Clear Lake. The bill would require the committee to hold 2 meetings per year in the County of Lake.

AB 718 **(Frazier D) Mosquito abatement and vector control districts: managed wetland habitat: memoranda of understanding.**

Introduced: 2/15/2017

Last Amend: 9/8/2017

Status: 10/3/2017-Approved by the Governor. Chaptered by Secretary of State - Chapter 446, Statutes of 2017.

Location: 10/3/2017-A. CHAPTERED

Summary: Current law provides for the formation of mosquito abatement and vector control districts, and prescribes the powers, functions, and duties of those districts, as specified. This bill would authorize a private landowner whose property includes managed wetland habitat, as defined, located within the boundaries of a district and meets other criteria to initiate the opportunity to enter into a memorandum of understanding with the district to establish a process to implement best management practices with regard to the managed wetland habitat.

AB 721 **(Bigelow R) Firearms: prohibited firearms.**

Introduced: 2/15/2017

Status: 7/21/2017-Failed Deadline pursuant to Rule 61(a)(11). (Last location was PUB. S. on 5/10/2017)(May be acted upon Jan 2018)

Location: 7/21/2017-S. 2 YEAR

Summary: Current law prohibits the manufacture, importation, sale, or possession in the state of short-barreled rifles and short-barreled shotguns, as defined. Current law authorizes certain government entities and certain peace officers to purchase and possess these firearms under certain circumstances, as specified. This bill would add district attorney's offices and peace officer members of these offices to the specified entities and persons authorized to purchase and possess these weapons under specified circumstances.

AB 748 **(Ting D) Peace officers: video and audio recordings: disclosure.**

Introduced: 2/15/2017

Last Amend: 7/19/2017

Status: 5/17/2018-In committee: Set, first hearing. Hearing canceled at the request of author.

Location: 5/16/2018-S. JUD.

Summary: The California Public Records Act requires that public records, as defined, be available to the public for inspection and made promptly available to any person. Current law makes records of investigations conducted by any state or local police agency exempt from these requirements. Current law requires specified information regarding the investigation of crimes to be disclosed to the public unless disclosure would endanger the safety of a person involved in an investigation or would

endanger the successful completion of the investigation. This bill would, notwithstanding the above provisions, allow a video or audio recording that relates to a matter of public concern because it depicts an incident involving a peace officer's use of force, or is reasonably believed to involve a violation of law or agency policy by a peace officer, to be withheld for a maximum of 120 calendar days if disclosure would substantially impede an active investigation.

AB 816 (Kiley R) California Environmental Protection Agency: Natural Resources Agency: Web casts of public meetings and workshops.

Introduced: 2/15/2017

Status: 9/1/2017-Failed Deadline pursuant to Rule 61(a)(12). (Last location was APPR. SUSPENSE FILE on 8/21/2017)(May be acted upon Jan 2018)

Location: 9/1/2017-S. 2 YEAR

Summary: Would require that each department, board, and commission of the Natural Resources Agency, except as specified, and each department, board, and office of the California Environmental Protection Agency Web cast all onsite public meetings, in a manner that enables listeners and viewers to ask questions and provide public comment by telephone or electronic communication commensurate with those attending the meeting. The bill would require the agencies to make the recording of a Web cast available online for no less than 3 years for subsequent viewing by interested members of the public.

AB 931 (Weber D) Criminal procedure: use of force by peace officers.

Introduced: 2/16/2017

Last Amend: 4/16/2018

Status: 4/25/2018-Re-referred to Coms. on PUB. S. and APPR.

Location: 4/25/2018-S. PUB. S.

Summary: Would limit the use of deadly force, as defined, by a peace officer to those situations where it is necessary to prevent imminent and serious bodily injury or death to the officer or to a third party, as specified. The bill would prohibit the use of deadly force by a peace officer in a situation where an individual poses a risk only to himself or herself. The bill would also limit the use of deadly force by a peace officer against a person fleeing from arrest or imprisonment to only those situations in which the officer has probable cause to believe that the person has committed, or intends to commit, a felony involving serious bodily injury or death, and there is an imminent risk of serious bodily injury or death to the officer or to another person if the subject is not immediately apprehended.

AB 986 (Gallagher R) Hunting and sport fishing licenses: sport fishing license duration: reduction in license fees for veterans.

Introduced: 2/16/2017

Last Amend: 1/22/2018

Status: 4/19/2018-Referred to Coms. on N.R. & W. and V.A.

Location: 4/19/2018-S. N.R. & W.

Summary: Current law requires a resident or a nonresident, 16 years of age or older, upon payment of a specified fee, to be issued a sport fishing license for the period of a calendar year, or, if issued after the beginning of the year, for the remainder thereof. Current law also requires the issuance of shorter term licenses upon payment of a specified lesser fee. This bill, in addition to sport fishing licenses for the periods specified above, would require a sport fishing license to be issued to a resident or nonresident for the period of 12 consecutive months, upon payment of a fee that is equal to 130% of the fees for issuance of resident or nonresident calendar-year licenses, as applicable

AB 1000 (Friedman D) Water conveyance: use of facility with unused capacity.

Introduced: 2/16/2017

Last Amend: 7/3/2017

Status: 9/1/2017-Failed Deadline pursuant to Rule 61(a)(12). (Last location was APPR. SUSPENSE FILE on 8/28/2017)(May be acted upon Jan 2018)

Location: 9/1/2017-S. 2 YEAR

Summary: Current law prohibits the state or a regional or local public agency from denying a bona fide transferor of water from using a water conveyance facility that has unused capacity for the period of time for which that capacity is available, if fair compensation is paid for that use and other requirements are met. This bill would, notwithstanding that provision, prohibit a transferor of water from using a water conveyance facility that has unused capacity to transfer water from a groundwater basin underlying desert lands, as defined, that is in the vicinity of specified federal lands or state lands to outside of the groundwater basin unless the State Lands Commission, in consultation with the Department of Fish and Wildlife, finds that the transfer of the water will not adversely affect the natural or cultural resources of those federal and state lands.

AB 1031 (Waldron R) Personal income taxes: voluntary contributions: Rare and Endangered Species Preservation Program: Native California Wildlife Rehabilitation Voluntary Tax Contribution Fund.

Introduced: 2/16/2017

Last Amend: 8/24/2017

Status: 10/5/2017-Approved by the Governor. Chaptered by Secretary of State - Chapter 504, Statutes of 2017.

Location: 10/5/2017-A. CHAPTERED

Summary: Current law allows an individual taxpayer to contribute amounts in excess of his or her personal income tax liability for the support of specified funds and accounts, including among others, to the Endangered and Rare Fish, Wildlife, and Plant Species Conservation and Enhancement Account. Current law authorizes contributions to be made to this account pursuant to these provisions until January 1, 2018, or until an earlier date if specified minimum contributions are not received. Current law requires all moneys contributed to this account pursuant to these provisions to be allocated, upon appropriation by the Legislature, to the Franchise Tax Board and the Controller for the costs of collection and administration of the funds, and to the Department of Fish and Wildlife for specified purposes. This bill would authorize contributions to be made to this account pursuant to these provisions until January 1, 2025, or until an earlier date if the Franchise Tax Board determines that the amount of contributions estimated to be received during a calendar year will not at least equal the minimum contribution amount of \$250,000.

AB 1133 (Dahle R) California Endangered Species Act: experimental populations.

Introduced: 2/17/2017

Last Amend: 8/21/2017

Status: 9/25/2017-Approved by the Governor. Chaptered by Secretary of State - Chapter 276, Statutes of 2017.

Location: 9/25/2017-A. CHAPTERED

Summary: Would provide that a person who obtains a federal enhancement of survival permit that authorizes the take of endangered or threatened species that is also listed as endangered, threatened, or candidate under CESA, in order to establish or maintain an experimental population of the species pursuant to FESA, requires no further authorization or approval under CESA for that person to take that species as identified in, and in accordance with, the enhancement of survival permit, if specified requirements are met. These provisions would remain in effect only until the effective date of an amendment to FESA that alters the requirements for issuing an enhancement of survival permit.

AB 1151 (Gloria D) Vaquita-friendly fish and fish products.

Introduced: 2/17/2017

Last Amend: 5/30/2017

Status: 9/12/2017-Ordered to inactive file at the request of Senator Allen.

Location: 9/12/2017-S. INACTIVE FILE

Summary: Current law makes it unlawful for any person to possess, sell, offer for sale, trade, or distribute a shark fin, as defined. Current law generally makes violations of provisions relating to fish and wildlife a crime. This bill would, commencing January 1, 2019, make it unlawful to sell, offer for sale, trade, or distribute fish and fish products that are not vaquita-friendly, as defined. The bill would

require the Department of Fish and Wildlife to adopt regulations on or before January 1, 2019, to enforce this prohibition and would prohibit the department from enforcing the prohibition until July 1, 2019.

AB 1197 (Limón D) Oil spill contingency plans: spill management teams.

Introduced: 2/17/2017

Last Amend: 8/21/2017

Status: 10/8/2017-Approved by the Governor. Chaptered by Secretary of State - Chapter 584, Statutes of 2017.

Location: 10/8/2017-A. CHAPTERED

Summary: Current law provides for the rating of oil spill response organizations (OSROs) by the administrator pursuant to specified provisions and requires an oil spill contingency plan to identify at least one rated OSRO for each rating level established pursuant to those provisions. This bill would no longer require an oil spill contingency plan to identify at least one rated OSRO for each rating level and would instead require the plan to identify at least one OSRO rated pursuant to those provisions, and would authorize an owner or operator to rely on its own response equipment and personnel, if they have been rated by the administrator, as specified.

AB 1228 (Bloom D) Marine fisheries: experimental fishing permits.

Introduced: 2/17/2017

Last Amend: 7/17/2017

Status: 1/12/2018-Stricken from file.

Location: 10/7/2017-A. VETOED

Summary: Would authorize the Fish and Game Commission to approve experimental fishing permits to be issued by the Department of Fish and Wildlife for specified purposes that would authorize commercial or recreational marine fishing activity otherwise prohibited by the Fish and Game Code or regulations adopted pursuant to that code, subject to certain requirements, including a requirement that activities conducted under the permit be consistent with specified policies enacted as part of the Marine Life Management Act of 1998 and any applicable fishery management plan and a requirement that the permit be subject to certain commission conditions.

AB 1254 (Wood D) Production or cultivation of a controlled substance: civil penalties.

Introduced: 2/17/2017

Last Amend: 7/10/2017

Status: 9/1/2017-Failed Deadline pursuant to Rule 61(a)(12). (Last location was APPR. SUSPENSE FILE on 8/21/2017)(May be acted upon Jan 2018)

Location: 9/1/2017-S. 2 YEAR

Summary: Current law makes a person found to have violated specified provisions of law generally protecting fish and wildlife, water, or other natural resources in connection with the production or cultivation of a controlled substance liable for a civil penalty in addition to any penalties imposed by any other law. With respect to a violation that occurs on land that a person owns, leases, or otherwise uses or occupies with the consent of the landowner, existing law makes each day that a violation occurs or continues to occur a separate violation subject to the additional civil penalty. This bill would also make each day that a violation occurs or continues to occur on the specified types of public or private land or while the person was trespassing on public or private land a separate violation subject to the additional civil penalty.

AB 1273 (Gallagher R) California Environmental Quality Act: exemption: levee repairs.

Introduced: 2/17/2017

Last Amend: 5/2/2017

Status: 7/14/2017-Failed Deadline pursuant to Rule 61(a)(10). (Last location was N.R. & W. on 7/6/2017)(May be acted upon Jan 2018)

Location: 7/14/2017-S. 2 YEAR

Summary: Would, until July 1, 2023, exempt from the requirements of CEQA repairs of critical levees of the State Plan of Flood Control within an existing levee footprint to meet standards of public health and safety, except as otherwise provided in a specified regulation. The bill would require the lead agency to take certain actions regarding the repairs. This bill contains other existing laws.

AB 1282 (Mullin D) Transportation Permitting Task Force.

Introduced: 2/17/2017

Last Amend: 6/29/2017

Status: 10/10/2017-Approved by the Governor. Chaptered by Secretary of State - Chapter 643, Statutes of 2017.

Location: 10/10/2017-A. CHAPTERED

Summary: Would require, by April 1, 2018, the Secretary of Transportation, in consultation with the Secretary of the Natural Resources Agency, to establish a Transportation Permitting Taskforce consisting of representatives from specified entities to develop a process for early engagement for all parties in the development of transportation projects, establish reasonable deadlines for permit approvals, and provide for greater certainty of permit approval requirements. The bill would require the Secretary of Transportation, by December 1, 2019, to prepare and submit to the relevant policy and fiscal committees of the Legislature a report of findings based on the efforts of the taskforce.

AB 1337 (Patterson R) Fish and Game Commission: meetings and hearings: live broadcast.

Introduced: 2/17/2017

Status: 5/15/2018-Consideration of Governor's veto pending.

Location: 5/14/2018-A. VETOED

Summary: Would require the Fish and Game Commission to provide a live video broadcast on its Internet Web site of every commission meeting or hearing that is open and public and every meeting or hearing conducted by the marine resources committee, wildlife resources committee, or tribal committee that is open and public.

AB 1404 (Berman D) California Environmental Quality Act: categorical exemption: infill development.

Introduced: 2/17/2017

Last Amend: 7/10/2017

Status: 9/1/2017-Failed Deadline pursuant to Rule 61(a)(12). (Last location was APPR. SUSPENSE FILE on 8/21/2017)(May be acted upon Jan 2018)

Location: 9/1/2017-S. 2 YEAR

Summary: CEQA requires the Office of Planning and Research to prepare and develop, and the Secretary of the Natural Resources Agency to certify and adopt, guidelines for the implementation of CEQA. CEQA requires the guidelines to include a list of classes of projects that have been determined not to have a significant effect on the environment and that shall be exempt from CEQA (categorical exemption). Current guidelines for the implementation of CEQA exempts from the requirements of CEQA infill development meeting certain requirements, including the requirement that the proposed development occurs within city limits. This bill would revise the above-described categorical exemption to include proposed residential and mixed-use housing projects occurring within an unincorporated area of a county.

AB 1420 (Aguilar-Curry D) Water rights: small irrigation use: lake or streambed alteration agreements.

Introduced: 2/17/2017

Status: 9/1/2017-Failed Deadline pursuant to Rule 61(a)(12). (Last location was APPR. SUSPENSE FILE on 7/10/2017)(May be acted upon Jan 2018)

Location: 9/1/2017-S. 2 YEAR

Summary: Would require the State Water Resources Control Board to give priority to adopting, on or before June 30, 2021, except as provided, general conditions that permit a registrant to store water for small irrigation use during times of high streamflow in exchange for the registrant reducing diversions during periods of low streamflow, as specified. The bill would require that the actions of the board under these provisions be deemed an action taken for the protection of the environment for purposes

of specified California Environmental Quality Act guidelines, if those actions do not result in the relaxation of streamflow standards.

AB 1479 (Bonta D) Public records: custodian of records: civil penalties.

Introduced: 2/17/2017

Last Amend: 9/1/2017

Status: 1/12/2018-Stricken from file.

Location: 10/13/2017-A. VETOED

Summary: Would, until January 1, 2023, require public agencies to designate a person or persons, or office or offices to act as the agency's custodian of records who is responsible for responding to any request made pursuant to the California Public Records Act and any inquiry from the public about a decision by the agency to deny a request for records. The bill also would make other conforming changes. Because the bill would require local agencies to perform additional duties, the bill would impose a state-mandated local program.

AB 1587 (Levine D) Invasive species: dreissenid mussels.

Introduced: 2/17/2017

Last Amend: 6/29/2017

Status: 9/1/2017-Failed Deadline pursuant to Rule 61(a)(12). (Last location was APPR. SUSPENSE FILE on 8/21/2017)(May be acted upon Jan 2018)

Location: 9/1/2017-S. 2 YEAR

Summary: Current law, until January 1, 2020, generally prohibits a person from possessing, importing, shipping, or transporting in the state, or from placing, planting, or causing to be placed or planted in any water within the state, dreissenid mussels, and authorizes the Director of Fish and Wildlife or his or her designee to engage in various enforcement activities with regard to dreissenid mussels. Current law authorizes the director to conduct inspections of waters of the state and facilities located within waters of the state that may contain dreissenid mussels and, if those mussels are detected or may be present, order the closure of the waters or facilities to conveyances or otherwise restrict access to the waters or facilities, with the concurrence of the Secretary of the Natural Resources Agency. This bill would also authorize a peace officer to engage in certain of these enforcement activities, as prescribed, and would extend to January 1, 2023, the repeal date of those provisions.

AB 1804 (Berman D) California Environmental Quality Act: categorical exemption: infill development.

Introduced: 1/10/2018

Status: 5/30/2018-In Senate. Read first time. To Com. on RLS. for assignment.

Location: 5/30/2018-S. RLS.

Summary: CEQA requires the Office of Planning and Research to prepare and develop, and the Secretary of the Natural Resources Agency to certify and adopt, guidelines for the implementation of CEQA. CEQA requires the guidelines to include a list of classes of projects that have been determined not to have a significant effect on the environment and that are required to be exempt from CEQA (categorical exemption). Current guidelines for the implementation of CEQA exempts from the requirements of CEQA infill development meeting certain requirements, including the requirement that the proposed development occurs within city limits. This bill would revise the above-described categorical exemption to include proposed residential and mixed-use housing projects occurring within an unincorporated area of a county.

AB 1918 (Garcia, Eduardo D) Office of Sustainable Outdoor Recreation.

Introduced: 1/23/2018

Last Amend: 3/12/2018

Status: 5/31/2018-In Senate. Read first time. To Com. on RLS. for assignment.

Location: 5/31/2018-S. RLS.

Summary: Current law establishes in the Natural Resources Agency the Blue Ribbon Committee for the Rehabilitation of Clear Lake, for the purposes of discussion, reviewing research, planning, and

providing oversight regarding the health of Clear Lake. This bill would establish in the agency the Office of Sustainable Outdoor Recreation. The bill would require the office to undertake certain activities such as promoting economic development and job growth in the outdoor recreation economy of the state. The bill would also require the office to create an advisory committee to provide advice, expertise, support, and service to the office.

AB 1945 (Garcia, Eduardo D) California Global Warming Solutions Act of 2006: Greenhouse Gas Reduction Fund: investment plan.

Introduced: 1/29/2018

Last Amend: 5/25/2018

Status: 5/31/2018-In Senate. Read first time. To Com. on RLS. for assignment.

Location: 5/31/2018-S. RLS.

Summary: Would require the State Air Resources Board to work with state agencies administering grant programs that allocate moneys from the Greenhouse Gas Reduction Fund to give specified communities preferential points during grant application scoring for programs intended to improve air quality, to include a specified application timeline for programs with competitive application processes, and to allow applicants from the Counties of Imperial and San Diego to include daytime population numbers in grant applications.

AB 2054 (Gonzalez Fletcher D) Agricultural pests: shot hole borer beetles.

Introduced: 2/6/2018

Last Amend: 3/6/2018

Status: 5/30/2018-In Senate. Read first time. To Com. on RLS. for assignment.

Location: 5/30/2018-S. RLS.

Summary: Would require the Invasive Species Council of California and the California Invasive Species Advisory Committee to coordinate with state and local public agencies, as specified, and stakeholder groups to develop a plan for the cure or suppression of diseases associated with the spread of the Polyphagous and Kuroshio shot hole borers. The bill would authorize the Department of Food and Agriculture, upon completion of the plan, and subject to the availability of appropriations, to support state and local efforts to cure or suppress those diseases by means including, but not limited to, research and grants.

AB 2087 (Waldron R) State government operations: technology modernization.

Introduced: 2/7/2018

Status: 5/30/2018-In Senate. Read first time. To Com. on RLS. for assignment.

Location: 5/30/2018-S. RLS.

Summary: Would require each state agency, as defined, including the Legislature, not later than January 1, 2020, to establish modernization goals that will achieve specified objectives. The bill would require those goals to include, but not be limited to, goals for modernization of the agency's information technology system and for usage of technologies that will improve the efficiency of the agency. The bill would require an agency, upon establishing those goals, to create an implementation and cost assessment plan for achieving them.

AB 2151 (Gray D) Hunting: reduced-price antelope, elk, bear, and bighorn sheep tags: resident junior hunters.

Introduced: 2/12/2018

Last Amend: 4/30/2018

Status: 5/17/2018-Referred to Com. on N.R. & W.

Location: 5/17/2018-S. N.R. & W.

Summary: Would, beginning July 1, 2019, and until July 1, 2025, reduce the fee required to obtain an antelope, elk, bear, or bighorn sheep tag to \$20, as adjusted pursuant to the specified index, for a person who is a resident of the state and who possesses a junior hunting license. The bill would require the Department of Fish and Wildlife to prepare a report to the Legislature no later than July 1, 2024, on the effect of these reduced-fee licenses on rates of participation by junior hunters, the Big

Game Management Account, and the Fish and Game Preservation Fund. The bill would make other related and conforming changes.

AB 2175 (Aguilar-Curry D) Vessels: removal.

Introduced: 2/12/2018

Last Amend: 4/12/2018

Status: 5/30/2018-In Senate. Read first time. To Com. on RLS. for assignment.

Location: 5/30/2018-S. RLS.

Summary: Would authorize a peace officer or marine safety officer, while engaged in the performance of official duties, to remove a vessel from, and, if necessary, store a vessel removed from, public property within the territorial limits in which the officer may act, under specified circumstances relating to the use of the vessel in the commission of a crime. The bill would authorize a court to order a person convicted of a crime involving the use of a vessel that is removed and impounded pursuant to these provisions to pay the costs of towing and storage of the vessel and any related administrative costs imposed in connection with the removal, impoundment, storage, or release of the vessel.

AB 2192 (Stone, Mark D) State-funded research: grant requirements.

Introduced: 2/12/2018

Last Amend: 4/5/2018

Status: 5/17/2018-Referred to Coms. on G.O. and JUD.

Location: 5/17/2018-S. G.O.

Summary: Would expand the scope of the California Taxpayer Access to Publicly Funded Research Act to include research grants provided in whole or in part by any state agency within the executive branch, as specified. The bill would specify that the public availability requirements apply only to peer-reviewed manuscripts accepted for publication. The bill would require the grantee to ensure that the peer-reviewed manuscript is available to the state agency on an appropriate publicly accessible repository approved by that agency and would eliminate the references to the California Digital Open Source Library. The bill would also extend the operation of these provisions indefinitely.

AB 2222 (Quirk D) Crime prevention and investigation: informational databases: firearms.

Introduced: 2/12/2018

Last Amend: 5/25/2018

Status: 6/4/2018-In Senate. Read first time. To Com. on RLS. for assignment.

Location: 6/4/2018-S. RLS.

Summary: Current law directs police and sheriffs' departments to submit the description of serialized or uniquely inscribed nonserialized property that has been reported stolen, lost, found, recovered, or under observation, directly to an automated Department of Justice system. Current law requires that any information entered into the Department of Justice system regarding a firearm remain in the system until the firearm is found, recovered, no longer under observation, or the record is deemed to have been entered in error. Current law also requires the costs resulting from this requirement to be reimbursed from funds other than those collected from specified fees relating to firearms. This bill would extend this firearms reporting requirement to all law enforcement agencies in the state, as defined, and would require that the report be entered within 7 days of the agency being notified of the precipitating event.

AB 2252 (Limón D) State grants: state grant administrator.

Introduced: 2/13/2018

Last Amend: 4/3/2018

Status: 5/30/2018-In Senate. Read first time. To Com. on RLS. for assignment.

Location: 5/30/2018-S. RLS.

Summary: Would establish, within the Government Operations Agency, a state grant administrator who is designated by the Governor to serve as the state's primary point of contact for information on grants provided by state agencies. The bill would authorize the state grant administrator, among other

things, to support the establishment of a statewide network of individuals who serve as point of contact for state grant opportunities in state agencies.

AB 2348 (Aguiar-Curry D) California Waterfowl Habitat Program: eligibility: winter-flooded rice lands.

Introduced: 2/13/2018

Last Amend: 4/17/2018

Status: 5/30/2018-In Senate. Read first time. To Com. on RLS. for assignment.

Location: 5/30/2018-S. RLS.

Summary: Current law authorizes the Director of Fish and Wildlife, pursuant to the California Waterfowl Habitat Program, to enter into land use contracts to conserve waterfowl and waterfowl habitat with nonpublic entities that are owners of record, or with lessees, who have the owners of record execute the contract, of land determined by the director to be important for the conservation of waterfowl, subject to the appropriation of money for that purpose. This bill would specifically authorize the director to enter into contracts with nonpublic entities that are owners of record, or with lessees, who have the owners of record execute the contract, of productive agricultural rice lands that are winter-flooded and that are determined by the director to be important for the conservation of waterfowl.

AB 2369 (Gonzalez Fletcher D) Fishing: marine protected areas: violations.

Introduced: 2/14/2018

Last Amend: 6/4/2018

Status: 6/4/2018-From committee chair, with author's amendments: Amend, and re-refer to committee. Read second time, amended, and re-referred to Com. on N.R. & W.

Location: 5/10/2018-S. N.R. & W.

Summary: Under the The Marine Life Protection Act, the Fish and Game Commission is authorized to regulate commercial and recreational fishing and any other taking of marine species in marine protected areas, but the taking of a marine species in a marine life reserve, a type of marine protected area, is prohibited for any purpose, including recreational and commercial fishing, except as authorized by the commission for scientific purposes. This bill would expand the applicability of a misdemeanor for a violation of this regulation from a person who holds a commercial passenger fishing boat license to a person who is operating a boat or vessel licensed as a commercial passenger fishing boat at the time of the violation. By expanding the scope of a crime, this bill would impose a state-mandated local program.

AB 2421 (Stone, Mark D) Wildlife Conservation Board: Monarch Butterfly and Pollinator Rescue Program.

Introduced: 2/14/2018

Last Amend: 3/20/2018

Status: 5/30/2018-In Senate. Read first time. To Com. on RLS. for assignment.

Location: 5/30/2018-S. RLS.

Summary: Would establish the Monarch Butterfly and Pollinator Rescue Program, to be administered by the Wildlife Conservation Board, for the purpose of recovering and sustaining populations of monarch butterflies and other pollinators. To achieve these purposes, the bill would authorize the board to provide grants to private landowners, nonprofit organizations, or public agencies, for the restoration of California prairie and monarch butterfly overwintering habitat on private and public lands and to provide technical assistance to those grant recipients.

AB 2441 (Frazier D) Sacramento-San Joaquin Delta Abandoned Vessel Removal Account: removal of abandoned commercial vessels.

Introduced: 2/14/2018

Last Amend: 4/16/2018

Status: 5/30/2018-In Senate. Read first time. To Com. on RLS. for assignment.

Location: 5/30/2018-S. RLS.

Summary: Current law requires that all rental income received for surface uses, including, but not limited to, surface drilling rights, upon lands under the jurisdiction of the commission be deposited in the State Treasury to the credit of the General Fund, except for certain income from state school lands, royalties received from the extraction of minerals on the surface of those lands, and all rental income from surface uses for lands at Lake Tahoe. This bill would additionally exclude from the above requirement relating to the use of rental income received from surface uses of public lands, all rental income from surface uses for lands in the Sacramento-San Joaquin Delta, as defined.

AB 2465 (Gallagher R) Sport fishing licenses: decline in sales: advisory group.

Introduced: 2/14/2018

Last Amend: 3/21/2018

Status: 5/30/2018-In Senate. Read first time. To Com. on RLS. for assignment.

Location: 5/30/2018-S. RLS.

Summary: Would require the Department of Fish and Wildlife, on or before February 1, 2019, to convene a sport fishing industry group, to be known as the R3 Group, with "R3" standing for "Recruitment, Retention, and Reactivation." Under the bill, the purpose of the R3 Group would be to collaborate with the department to identify barriers to sport fishing that contribute to the decline in sales of sport fishing licenses.

AB 2470 (Grayson D) Invasive species.

Introduced: 2/14/2018

Last Amend: 5/25/2018

Status: 5/31/2018-In Senate. Read first time. To Com. on RLS. for assignment.

Location: 5/31/2018-S. RLS.

Summary: Would establish the Invasive Species Council of California, composed as prescribed, to help coordinate a comprehensive effort to prevent the introduction of invasive species in the state and to provide for the control or eradication of invasive species already established in the state. The bill would establish a California Invasive Species Advisory Committee to advise the council on a broad array of issues related to preventing the introduction of invasive species and providing for their control or eradication, as well as minimizing the economic, ecological, and human health impacts that invasive species cause.

AB 2528 (Bloom D) Climate adaptation.

Introduced: 2/14/2018

Last Amend: 4/24/2018

Status: 5/30/2018-In Senate. Read first time. To Com. on RLS. for assignment.

Location: 5/30/2018-S. RLS.

Summary: Current law requires the Natural Resources Agency, by July 1, 2017, and every 3 years thereafter, to update the state's climate adaptation strategy to identify vulnerabilities to climate change by sectors, including the biodiversity and habitat sector, and priority actions needed to reduce the risks in those sectors. This bill would specify that the biodiversity and habitat sector includes habitat resilience areas, as defined. The bill would also require state agencies to maximize the objective of protecting and enhancing habitat resilience areas.

AB 2545 (Gallagher R) Department of Fish and Wildlife: lake or streambed alteration agreements.

Introduced: 2/15/2018

Last Amend: 5/25/2018

Status: 5/31/2018-In Senate. Read first time. To Com. on RLS. for assignment.

Location: 5/31/2018-S. RLS.

Summary: Current law prohibits an entity from substantially diverting or obstructing the natural flow of, or substantially changing or using any material from the bed, channel, or bank of, any river, stream, or lake, or from depositing certain material where it may pass into any river, stream, or lake, without first notifying the Department of Fish and Wildlife of that activity, and entering into a lake or streambed alteration agreement if required by the department to protect fish and wildlife resources. This bill

would require the department, until January 1, 2023, to establish procedures for the issuance of a general agreement in lieu of an individual alteration agreement pursuant to these provisions. The bill would require the department to adopt general agreements, as specified, for these activities.

AB 2551 (Wood D) Forest and Wildland Health Improvement and Fire Prevention Program: joint prescribed burning operations.

Introduced: 2/15/2018

Last Amend: 5/25/2018

Status: 5/31/2018-In Senate. Read first time. To Com. on RLS. for assignment.

Location: 5/31/2018-S. RLS.

Summary: Would require the Department of Forestry and Fire Prevention to establish, implement, and administer the Forest and Wildland Health Improvement and Fire Prevention Program, as prescribed. The bill would require the department to take specified actions to implement and administer programs that are intended to promote forest and wildland health, restoration, and resilience, and improve fire outcomes, prevention, and preparedness throughout the state. The bill would also require the department, to the extent feasible, to collaborate with the Department of Corrections and Rehabilitation to utilize correctional officers and conservation crews for vegetation management and fire prevention activities.

AB 2627 (Kalra D) Migratory nongame birds: Migratory Bird Treaty Act: incidental take.

Introduced: 2/15/2018

Last Amend: 5/25/2018

Status: 6/4/2018-In Senate. Read first time. To Com. on RLS. for assignment.

Location: 6/4/2018-S. RLS.

Summary: The Migratory Bird Treaty Act authorizes states and territories of the United States to make and enforce laws or regulations that give further protection to migratory birds, their nests, and eggs. Current state law makes unlawful the taking or possession of any migratory nongame bird, or part of any migratory nongame bird, as designated in the act, except as provided by rules and regulations adopted by the United States Secretary of the Interior under provisions of the act. This bill would permit an entity to take a migratory nongame bird, as defined, if the take is incidental to otherwise lawful activity and the entity complies with best management practices for avoiding, minimizing, and mitigating take of migratory nongame birds, as specified.

AB 2640 (Wood D) Protected species: Lost River sucker and shortnose sucker limited take authorization.

Introduced: 2/15/2018

Last Amend: 4/17/2018

Status: 5/24/2018-Referred to Com. on N.R. & W.

Location: 5/24/2018-S. N.R. & W.

Summary: Would permit the Department of Fish and Wildlife to authorize, under the California Endangered Species Act, the take or possession of the Lost River sucker and shortnose sucker resulting from impacts attributable to or otherwise related to the decommissioning and removal of the Iron Gate Dam, Copco 1 Dam, Copco 2 Dam, or J.C. Boyle Dam, consistent with the Klamath Hydroelectric Settlement Agreement, if specified conditions are met.

AB 2649 (Arambula D) Water rights: water management.

Introduced: 2/15/2018

Last Amend: 5/25/2018

Status: 6/4/2018-In Senate. Read first time. To Com. on RLS. for assignment.

Location: 6/4/2018-S. RLS.

Summary: Would require the State Water Resources Control Board to prioritize a temporary permit for a project that enhances the ability of a local or state agency to capture water during high precipitation events for local storage or recharge, with certain conditions and consistent with water rights priorities and protections for fish and wildlife. The bill would exempt temporary permits for these

projects from the California Environmental Quality Act. The bill would require the board to set a reduced application fee for an applicant for a temporary permit for these projects.

AB 2697 (Gallagher R) Wildlife, bird, and waterfowl habitat: idled agricultural lands.

Introduced: 2/15/2018

Last Amend: 5/25/2018

Status: 6/4/2018-In Senate. Read first time. To Com. on RLS. for assignment.

Location: 6/4/2018-S. RLS.

Summary: Would require the Wildlife Conservation Board to establish a program, which may include direct payments or other incentives, to encourage landowners to voluntarily cultivate or retain cover crops or other upland vegetation on idled lands to provide waterfowl, upland game bird, and other wildlife habitat cover for purposes, including, but not limited to, encouraging the use of idle agricultural lands for wildlife habitat. The bill would also authorize the department to provide incentives pursuant to the program for the creation or enhancement of waterfowl brood habitat, and to develop guidelines and criteria for the program as it deems appropriate.

AB 2721 (Quirk D) Cannabis: testing laboratories.

Introduced: 2/15/2018

Last Amend: 3/23/2018

Status: 5/24/2018-Referred to Com. on B., P. & E.D.

Location: 5/24/2018-S. B., P. & E.D.

Summary: Would authorize a testing laboratory to receive and test samples of cannabis or cannabis products from a person over 21 years of age when the cannabis has been grown by that person and will be used solely for his or her personal use pursuant to AUMA. The bill would prohibit a testing laboratory from certifying samples from the person over 21 years of age for resale or transfer to another person. The bill would require all tests pursuant to these provisions to be recorded with the name of the person submitting the sample and the amount of cannabis or cannabis product received.

AB 2781 (Low D) Forensic ballistic and firearms procedures.

Introduced: 2/16/2018

Last Amend: 5/25/2018

Status: 6/4/2018-In Senate. Read first time. To Com. on RLS. for assignment.

Location: 6/4/2018-S. RLS.

Summary: Current law authorizes local law enforcement agencies to have specified information related to firearms entered into the United States Department of Justice, National Integrated Ballistic Information Network to ensure that representative samples of fired bullets and cartridge cases from crime scenes are recorded, as specified. This bill would require a law enforcement agency, as defined, to obtain ballistic images from firearms and cartridge cases obtained by the agency as specified, and submit those images to the National Integrated Ballistic Identification Network or a comparable automated ballistic identification system used by the agency. The bill would also require the Department of Justice to develop a protocol for the implementation of this requirement.

AB 2787 (Quirk D) Lead fishing tackle.

Introduced: 2/16/2018

Last Amend: 5/25/2018

Status: 5/31/2018-In Senate. Read first time. To Com. on RLS. for assignment.

Location: 5/31/2018-S. RLS.

Summary: Current law authorizes the Fish and Game Commission, by regulation, to prescribe the manner and means of taking fish, reptiles, and amphibians for noncommercial purposes. Under existing law, the Department of Fish and Wildlife exercises various functions with regard to the taking of fish and wildlife. This bill would require the department, on or before March 1, 2020, to review existing research and data on the impacts of lead fishing tackle on, at minimum, the environment, including wildlife, rivers, lakes, streams, and potential drinking water sources, review efforts in other

jurisdictions to regulate the use of lead fishing tackle, and submit a report on the findings of the review to the Governor and the Legislature, as provided.

AB 2803 (Limón D) Public nuisance: residential lead-based paint.

Introduced: 2/16/2018

Last Amend: 4/23/2018

Status: 5/30/2018-Referred to Coms. on JUD., EQ. and APPR.

Location: 5/30/2018-S. JUD.

Summary: Would provide that residential lead-based paint that affects the health of a considerable number of persons constitutes a public nuisance. Under the bill, a party may be subject to liability for public nuisance if that party promoted lead-based paint for a particular use with actual or constructive knowledge that such use would cause health hazards sufficiently serious to render that use unreasonable, as specified. The bill would provide that, in an action seeking solely abatement of residential lead-based paint, causation may be established without presenting evidence that a particular party caused a particular lead-based paint to be applied in a particular residence, as specified.

AB 2805 (Bigelow R) Wild pigs: validations.

Introduced: 2/16/2018

Last Amend: 5/25/2018

Status: 5/31/2018-In Senate. Read first time. To Com. on RLS. for assignment.

Location: 5/31/2018-S. RLS.

Summary: Current law requires a person to procure, as specified, either a hunting license and a wild pig tag or a depredation permit in order to take a wild pig. However, current law provides that any wild pig that is encountered while in the act of inflicting injury to, or damaging or destroying, or threatening to immediately damage or destroy, land or other property may be taken immediately by the owner or the owner's employee or agent, as specified. Under current law, a violation of the Fish and Game Code is a crime. This bill would revise and recast the provisions applicable to wild pigs by, among other things, specifying that the wild pig is not a game mammal or nongame mammal.

AB 2864 (Limón D) Coastal resources: oil spills.

Introduced: 2/16/2018

Last Amend: 5/25/2018

Status: 5/31/2018-In Senate. Read first time. To Com. on RLS. for assignment.

Location: 5/31/2018-S. RLS.

Summary: The Lempert-Keene-Seastrand Oil Spill Prevention and Response Act provides that the administrator for oil spill response, subject to the Governor, has the primary authority to direct prevention, removal, abatement, response, containment, and cleanup efforts with regard to all aspects of any oil spill in waters of the state, in accordance with any applicable facility or vessel contingency plan and the California oil spill contingency plan. This bill, for spills affecting coastal resources, would require the administrator to invite the California Coastal Commission or the San Francisco Bay Conservation and Development Commission, as applicable according to jurisdiction, to participate in the natural resource damage assessment process regarding injuries to coastal resources and potential restoration and mitigation measures for inclusion in the damage assessment and restoration plan.

AB 2889 (Caballero D) Timber harvesting plans: guidance and assistance.

Introduced: 2/16/2018

Last Amend: 4/30/2018

Status: 5/30/2018-In Senate. Read first time. To Com. on RLS. for assignment.

Location: 5/30/2018-S. RLS.

Summary: Current law prohibits a person, as defined, from conducting timber operations, as defined, unless a timber harvesting plan that meets specified requirements and is prepared by a professional forester for those operations has been submitted to the Department of Forestry and Fire Protection.

Existing law requires the department to review, approve, or require the modification of, timber harvesting plans in accordance with prescribed procedures. This bill would require the department to provide guidance and assistance to ensure the uniform and efficient implementation of processes and procedures regulating the filing, review, approval, required modification, completion, and appeal of decisions relating to timber harvesting plans, as provided.

AB 2958 (Quirk D) State bodies: meetings: teleconference.

Introduced: 2/16/2018

Last Amend: 4/25/2018

Status: 5/30/2018-Referred to Com. on G.O.

Location: 5/30/2018-S. G.O.

Summary: The Bagley-Keene Open Meeting Act requires, with specified exceptions, that all meetings of a state body, as defined, be open and public, and all persons be permitted to attend any meeting of a state body, except as provided. Current law, among other things, requires a state body that elects to conduct a meeting or proceeding by teleconference to post agendas at all teleconference locations, to identify each teleconference location in the notice and agenda, and to make each teleconference location accessible to the public. Existing law requires the agenda to provide an opportunity for members of the public to address the state body directly at each teleconference location, as specified. This bill, for an advisory board, advisory commission, advisory committee, advisory subcommittee, or similar multimember advisory body that does not have rulemaking or voting authority, would instead require a member of a state body participating by teleconference to be listed in the meeting minutes.

AB 2975 (Friedman D) Wild and scenic rivers.

Introduced: 2/16/2018

Last Amend: 5/29/2018

Status: 6/4/2018-In Senate. Read first time. To Com. on RLS. for assignment.

Location: 6/4/2018-S. RLS.

Summary: Would, if (1) the federal government takes action to enact a statute that, upon enactment, would require the removal or delisting of any river or segment of a river in California that is included in the national wild and scenic rivers system and not in the state wild and scenic rivers system; or (2) the secretary determines that the federal government by enactment of a statute or by executive order has exempted a river or segment of a river in California that is not in the state wild and scenic river system from the protection of certain federal provisions governing restrictions on water resources projects, require the secretary, after holding a public hearing on the issue, based on the information obtained through the public hearing, to determine whether the provision of state protection for the river or segment of the river that has been removed, delisted, or exempted from the federal wild and scenic rivers system is in the best interest of the state and, if so, to take specified actions, until December 31, 2025, to add the river or segment of a river to the state wild and scenic rivers system and to classify that river or segment of a river, as prescribed.

AB 3009 (Quirk D) Hazardous materials: lead-based paint.

Introduced: 2/16/2018

Last Amend: 5/25/2018

Status: 5/29/2018-Read second time. Ordered to third reading.

Location: 5/29/2018-A. THIRD READING

Summary: Would impose a \$2 charge on manufacturers of paint, as defined, for each gallon of paint sold in the state. The bill would require the California Department of Tax and Fee Administration to collect the charges, as prescribed. The bill would, except as provided, require the collected charges to be deposited into the Lead-Based Paint Cleanup Fund, which the bill would create in the State Treasury.

AB 3030 (Caballero D) California Environmental Quality Act: exemption: qualified opportunity zones.

Introduced: 2/16/2018

Last Amend: 4/18/2018

Status: 6/4/2018-In Senate. Read first time. To Com. on RLS. for assignment.

Location: 6/4/2018-S. RLS.

Summary: Current federal law provides certain federal tax incentives to a taxpayer who invests in a qualified opportunity fund, which is an investment vehicle organized for the purpose of investing in qualified opportunity zone property, as prescribed. This bill would exempt a project that is financed by a qualified opportunity fund and that meets certain requirements from CEQA. The bill would require a lead agency, before making a determination that the project is exempt from CEQA, to hold a noticed public hearing on the project, as specified. The bill would require the lead agency, if it determines that a project is exempt from CEQA under the above exemption and determines to approve or carry out the project, to file a specified notice with the Office of Planning and Research.

AB 3133 (Berman D) State Public Works Board.

Introduced: 2/16/2018

Last Amend: 3/19/2018

Status: 5/17/2018-Referred to Com. on N.R. & W.

Location: 5/17/2018-S. N.R. & W.

Summary: Would add the Secretary of the Natural Resources Agency as a member of the State Public Works Board for the purpose of hearing and deciding matters related to the acquisition of properties or construction of projects for any programs under the jurisdiction of the Natural Resources Agency. This bill would additionally require the chairperson of the board, when the Secretary of the Natural Resources Agency is serving as a member of the board, in the case of a vote of the board that results in a tie, to cast the deciding vote.

AB 3157 (Lackey R) Taxation: cannabis.

Introduced: 2/16/2018

Last Amend: 5/10/2018

Status: 5/25/2018-In committee: Held under submission.

Location: 5/16/2018-A. APPR. SUSPENSE FILE

Summary: The Control, Regulate and Tax Adult Use of Marijuana Act (AUMA), an initiative measure approved as Proposition 64 at the November 8, 2016, statewide general election, and additionally amended by statute, imposes an excise tax commencing January 1, 2018, on the purchase of cannabis and cannabis products, as defined, at the rate of 15% of the average market price of any retail sale by a cannabis retailer. This bill would reduce that excise tax rate to 11% on and after the operative date of this bill until June 1, 2021, at which time the excise tax rate would revert back to 15%. This bill would suspend the imposition of the cultivation tax on and after the operative date of this bill until June 1, 2021.

AB 3160 (Grayson D) Federal public lands: conveyances: defense base closure and realignment.

Introduced: 2/16/2018

Last Amend: 4/18/2018

Status: 5/24/2018-Referred to Com. on N.R. & W.

Location: 5/24/2018-S. N.R. & W.

Summary: Current law generally establishes a policy of the state to discourage conveyances of federal public lands in California from the federal government. Current law specifies that these conveyances are void ab initio unless the State Lands Commission was provided with the right of first refusal or the right to arrange for the transfer of the federal public land to another entity. Under current law, if the commission was provided with the right of first refusal or the right to arrange for the transfer of the federal public lands to another entity, the commission is required to issue a certificate affirming certain compliance before the conveyance of federal public lands in California. This bill would authorize the executive officer of the commission to issue these certifications of compliance.

AB 3173 (Irwin D) Unmanned aerial vehicles.

Introduced: 2/16/2018

Last Amend: 4/26/2018

Status: 5/30/2018-Referred to Com. on PUB. S.

Location: 5/30/2018-S. PUB. S.

Summary: Current federal laws and regulations regulate the operation of unmanned aircraft systems (UASs), also known as drones or remotely piloted aircraft. Current federal laws and regulations require the registration of certain UASs, require commercial operators of UASs to be licensed, prohibit the operation of UASs above specified altitudes and within specified distances of an airport, prohibit nighttime operation, and require a UAS to remain within the sight of the pilot. This bill would make it an infraction to operate an unregistered UAS that is required to be registered under federal law. This bill would make it an infraction to operate an unregistered UAS that is required to be registered under federal law.

AB 3218 (Arambula D) Millerton Lake State Recreation Area: acquisition of land.

Introduced: 2/16/2018

Last Amend: 5/25/2018

Status: 5/31/2018-In Senate. Read first time. To Com. on RLS. for assignment.

Location: 5/31/2018-S. RLS.

Summary: Would require the Department of Parks and Recreation to effectively manage lands currently within its jurisdiction in the Millerton Lake State Recreation Area adjacent to the San Joaquin River, and would authorize the department to enter into an agreement with the conservancy to manage lands acquired by the San Joaquin River Conservancy adjacent to the state recreation area, as specified.

SB 1 (Beall D) Transportation funding.

Introduced: 12/5/2016

Last Amend: 4/3/2017

Status: 4/28/2017-Approved by the Governor. Chaptered by Secretary of State. Chapter 5, Statutes of 2017.

Location: 4/28/2017-S. CHAPTERED

Summary: Would create the Road Maintenance and Rehabilitation Program to address deferred maintenance on the state highway system and the local street and road system. The bill would require the California Transportation Commission to adopt performance criteria, consistent with a specified asset management plan, to ensure efficient use of certain funds available for the program.

SB 5 (De León D) California Drought, Water, Parks, Climate, Coastal Protection, and Outdoor Access For All Act of 2018.

Introduced: 12/5/2016

Last Amend: 9/10/2017

Status: 10/15/2017-Approved by the Governor. Chaptered by Secretary of State. Chapter 852, Statutes of 2017.

Location: 10/15/2017-S. CHAPTERED

Summary: Would enact the California Drought, Water, Parks, Climate, Coastal Protection, and Outdoor Access For All Act of 2018, which, if approved by the voters, would authorize the issuance of bonds in an amount of \$4,000,000,000 pursuant to the State General Obligation Bond Law to finance a drought, water, parks, climate, coastal protection, and outdoor access for all program. The bill, upon voter approval, would reallocate \$100,000,000 of the unissued bonds authorized for the purposes of Propositions 1, 40, and 84 to finance the purposes of a drought, water, parks, climate, coastal protection, and outdoor access for all program.

SB 49 (De León D) California Environmental, Public Health, and Workers Defense Act of 2017.

Introduced: 12/5/2016

Last Amend: 9/12/2017

Status: 9/12/2017-From committee with author's amendments. Read second time and amended. Re-referred to Com. on RLS.

Location: 9/11/2017-A. RLS.

Summary: Would require specified agencies to take prescribed actions to maintain and enforce certain requirements and standards pertaining to air, water, and protected species. By imposing new duties on local agencies, this bill would impose a state-mandated local program. This bill contains other related provisions and other existing laws.

SB 50

(Allen D) Federal public lands: conveyances.

Introduced: 12/5/2016

Last Amend: 9/5/2017

Status: 10/6/2017-Approved by the Governor. Chaptered by Secretary of State. Chapter 535, Statutes of 2017.

Location: 10/6/2017-S. CHAPTERED

Summary: Would establish, except as provided, a policy of the state to discourage conveyances of federal public lands in California from the federal government. The bill would, except as provided, specify that these conveyances are void ab initio unless the State Lands Commission was provided with the right of first refusal or the right to arrange for the transfer of the federal public land to another entity.

SB 80

(Wieckowski D) California Environmental Quality Act: notices.

Introduced: 1/11/2017

Last Amend: 6/21/2017

Status: 3/3/2018-Last day to consider Governor's veto pursuant to Joint Rule 58.5.

Location: 10/16/2017-S. VETOED

Summary: The California Environmental Quality Act requires the lead agency to mail certain notices to persons who have filed a written request for notices. The act provides that if the agency offers to provide the notices by email, upon filing a written request for notices, a person may request that the notices be provided to him or her by email. This bill would require the lead agency to post those notices on the agency's Internet Web site. The bill would require the agency to offer to provide those notices by email. Because this bill would increase the level of service provided by a local agency, this bill would impose a state-mandated local program.

SB 92

(Committee on Budget and Fiscal Review) Public resources.

Introduced: 1/11/2017

Last Amend: 6/9/2017

Status: 6/27/2017-Approved by the Governor. Chaptered by Secretary of State. Chapter 26, Statutes of 2017.

Location: 6/27/2017-S. CHAPTERED

Summary: Current law regulating commercial fishing imposes, or authorizes the imposition of, various license, permit, and registration fees. Current law requires specified persons to pay commercial fishing fees, referred to as a "landing tax," calculated on the total weight of fish delivered, based on a rate-per-pound schedule applicable to specified aquatic species. This bill would rename the "landing tax" as a "landing fee" and would revise the rate schedule by increasing certain fees while decreasing other fees to specified amounts. The bill would make conforming and other related changes.

SB 94

(Committee on Budget and Fiscal Review) Cannabis: medicinal and adult use.

Introduced: 1/11/2017

Last Amend: 6/9/2017

Status: 6/27/2017-Approved by the Governor. Chaptered by Secretary of State. Chapter 27, Statutes of 2017.

Location: 6/27/2017-S. CHAPTERED

Summary: The Medical Marijuana Program also provides immunity from arrest to those exempt patients or designated primary caregivers who engage in certain acts involving marijuana, up to certain limits, and who have identification cards issued pursuant to the program unless there is reasonable cause to believe that the information contained in the card is false or fraudulent, the card has been obtained by means of fraud, or the person is otherwise in violation of the law. This bill would

require probable cause to believe that the information on the card is false or fraudulent, the card was obtained by fraud, or the person is otherwise in violation of the law to overcome immunity from arrest to patients and primary caregivers in possession of an identification card.

SB 144 **(McGuire D) Fish and wildlife: steelhead trout: fishing report-restoration card.**

Introduced: 1/13/2017

Last Amend: 3/15/2017

Status: 9/26/2017-Approved by the Governor. Chaptered by Secretary of State. Chapter 305, Statutes of 2017.

Location: 9/26/2017-S. CHAPTERED

Summary: Current law requires revenues from steelhead trout fishing license fees to be deposited in the Fish and Game Preservation Fund and to be available for expenditure, upon appropriation by the Legislature, to monitor, restore, or enhance steelhead trout resources consistent with specified law, and to administer the fishing report-restoration card program. This bill would extend the operation of those provisions to July 1, 2022, to be repealed as of January 1, 2023. The bill would require the department to report to the Legislature regarding the fishing report-restoration card program's projects on or before July 1, 2021.

SB 161 **(McGuire D) Fish and Game Commission: tribal committee.**

Introduced: 1/19/2017

Status: 10/3/2017-Approved by the Governor. Chaptered by Secretary of State. Chapter 457, Statutes of 2017.

Location: 10/3/2017-S. CHAPTERED

Summary: Current law requires the Fish and Game Commission to form a marine resources committee and a wildlife resources committee from its membership. This bill would require the commission to form a tribal committee from its membership consisting of at least one commissioner and would require the committee to report to the commission from time to time on its activities and to make recommendations on all tribal matters considered by the commission.

SB 187 **(Berryhill R) Sport fishing licenses: duration.**

Introduced: 1/25/2017

Last Amend: 5/3/2017

Status: 9/1/2017-Failed Deadline pursuant to Rule 61(a)(12). (Last location was APPR. SUSPENSE FILE on 7/19/2017)(May be acted upon Jan 2018)

Location: 9/1/2017-A. 2 YEAR

Summary: Would require a resident or a nonresident, 16 years of age or older, upon payment of a specified fee, to be issued a sport fishing license for the period of 12 consecutive months beginning on the date specified on the license, instead of for the period of a calendar year, or the remainder thereof. The bill would require the commission to include, among the costs required to be recovered by an adjustment of the fee amount, transition costs related to the new licensing period.

SB 214 **(Atkins D) San Diego River Conservancy.**

Introduced: 2/1/2017

Last Amend: 9/5/2017

Status: 9/26/2017-Approved by the Governor. Chaptered by Secretary of State. Chapter 306, Statutes of 2017.

Location: 9/26/2017-S. CHAPTERED

Summary: The San Diego River Conservancy Act establishes the San Diego River Conservancy in the Natural Resources Agency, and prescribes the territory, membership, functions, and duties of the conservancy with regard to, among other things, the acquisition, protection, and management of public lands within the San Diego River area, as defined. This bill would specify that the powers of the conservancy include improving, developing, and preserving lands for the purpose of protecting the natural, cultural, and historical resources, and entering into a joint powers agreement, as specified.

- [SB 234](#) (Berryhill R) Fishing: local regulation: report.**
Introduced: 2/6/2017
Last Amend: 3/21/2017
Status: 9/1/2017-Failed Deadline pursuant to Rule 61(a)(12). (Last location was APPR. SUSPENSE FILE on 7/19/2017)(May be acted upon Jan 2018)
Location: 9/1/2017-A. 2 YEAR
Summary: Would require the Fish and Game Commission to undertake a survey and evaluation of local ordinances that regulate fishing and to submit the survey and evaluation to the Legislature in a report by December 31, 2018.
- [SB 345](#) (Bradford D) Law enforcement agencies: public records.**
Introduced: 2/14/2017
Last Amend: 9/5/2017
Status: 3/3/2018-Last day to consider Governor's veto pursuant to Joint Rule 58.5.
Location: 10/14/2017-S. VETOED
Summary: Would, commencing January 1, 2019, require the Department of Alcoholic Beverage Control, the Department of the California Highway Patrol, the Department of Corrections and Rehabilitation, the Department of Fish and Wildlife, the Department of Justice, the Commission on Peace Officer Standards and Training, and each local law enforcement agency to conspicuously post on their Internet Web sites all current standards, policies, practices, operating procedures, and education and training materials that would otherwise be available to the public if a request was made pursuant to the California Public Records Act.
- [SB 347](#) (Jackson D) State Remote Piloted Aircraft Act.**
Introduced: 2/14/2017
Last Amend: 6/21/2017
Status: 6/5/2018-Set for hearing 6/19/2018
Location: 6/5/2018-A. P. & C.P.
Summary: Would enact the State Remote Piloted Aircraft Act. The bill would prohibit a person from operating a remote piloted aircraft in any number of specified manners and would require any person using, operating, or renting a remote piloted aircraft and every commercial operator of a remote piloted aircraft to maintain adequate liability insurance or proof of financial responsibility, as specified.
- [SB 473](#) (Hertzberg D) California Endangered Species Act.**
Introduced: 2/16/2017
Last Amend: 9/5/2017
Status: 9/8/2017-Ordered to inactive file on request of Assembly Member Calderon.
Location: 9/8/2017-A. INACTIVE FILE
Summary: The California Endangered Species Act, prohibits the taking of an endangered or threatened species, except in certain situations. The act also provides, until January 1, 2020, that the accidental take of candidate, threatened, or endangered species resulting from acts that occur on a farm or a ranch in the course of otherwise lawful routine and ongoing agricultural activities is not prohibited by the act. The act requires the Department of Fish and Wildlife to define "routine and agricultural activities" by regulation. This bill would also apply the take prohibition to public agencies.
- [SB 495](#) (Vidak R) Endangered species: blunt-nosed leopard lizard: taking or possession.**
Introduced: 2/16/2017
Last Amend: 4/9/2018
Status: 4/23/2018-From committee: Be re-referred to Com. on W.,P., & W. (Ayes 8. Noes 0.) (April 23). Re-referred to Com. on W.,P., & W. (Set for Hearing 6/4/2018)
Location: 4/23/2018-A. W.,P. & W.

Summary: Would permit the Department of Fish and Wildlife to authorize, under the California Endangered Species Act, the take or possession of the blunt-nosed leopard lizard resulting from impacts attributable to or otherwise related to the Allensworth Community Services District Safe Drinking Water Project to drill a new water well for the community of Allensworth and the Colonel Allensworth State Historic Park, if specified conditions are met. The bill would also make a conforming change.

SB 506 (Nielsen R) Department of Fish and Wildlife: lake or streambed alteration agreements: Internet Web site.

Introduced: 2/16/2017

Last Amend: 6/5/2017

Status: 2/4/2018-Last day to consider Governor's veto pursuant to Joint Rule 58.5.

Location: 7/21/2017-S. VETOED

Summary: Would require the Department of Fish and Wildlife, on or before December 31, 2018, and periodically thereafter, to upgrade the information on its Internet Web site regarding lake or streambed alteration agreements, to update its "Frequently Asked Questions" document and other appropriate sources of information regarding the lake and streambed alteration program, and to provide guidance on its Internet Web site to facilitate members of the public in obtaining individualized guidance regarding the lake and streambed alteration program, as specified.

SB 518 (Berryhill R) Sport fishing licenses: 12 consecutive month licenses.

Introduced: 2/16/2017

Last Amend: 4/4/2018

Status: 5/10/2018-From committee: Be re-referred to Com. on W.,P., & W. (Ayes 9. Noes 0.) (May 10). Re-referred to Com. on W.,P., & W.

Location: 5/10/2018-A. W.,P. & W.

Summary: Current law requires a resident or a nonresident, 16 years of age or older, upon payment of a specified fee, to be issued a sport fishing license for the period of a calendar year, or, if issued after the beginning of the year, for the remainder thereof. Current law also requires the issuance of shorter term licenses upon payment of a specified lesser fee. Current law requires the Fish and Game Commission to adjust the amount of the fees, as prescribed, to fully recover, but not exceed, all reasonable administrative and implementation costs of the Department of Fish and Wildlife and the commission relating to those licenses. This bill, in addition to sport fishing licenses for the periods specified above, would require a sport fishing license to be issued to a resident or nonresident for the period of 12 consecutive months, upon payment of a fee that is equal to 130% of the fees for issuance of resident or nonresident calendar-year licenses, as applicable.

SB 580 (Pan D) Water development projects: Sacramento-San Joaquin watersheds.

Introduced: 2/17/2017

Status: 9/26/2017-Approved by the Governor. Chaptered by Secretary of State. Chapter 309, Statutes of 2017.

Location: 9/26/2017-S. CHAPTERED

Summary: Current law adopts and authorizes federally adopted and approved projects, including a project for flood control along the American and Sacramento Rivers. The projects are authorized at an estimated cost to the state of the sum that may be appropriated by the Legislature for state participation upon the recommendation and advice of the Department of Water Resources or the Central Valley Flood Protection Board. This bill would revise the authorization for the project for flood control along the American and Sacramento Rivers as further modified by a specified report adopted by Congress.

SB 588 (Hertzberg D) Marine resources and preservation.

Introduced: 2/17/2017

Last Amend: 5/7/2018

Status: 5/7/2018-From committee with author's amendments. Read second time and amended. Re-referred to Com. on NAT. RES.

Location: 5/7/2018-A. NAT. RES.

Summary: Would express the intent of the Legislature to end offshore drilling off the coast of California and that the act shall not encourage additional oil and gas leases. This bill would also express the intent of the Legislature to create a responsible and permanent funding source to preserve the resources, biodiversity, and culture of the state, and, by enacting a program to permit the partial conversion of an offshore oil platform to an artificial reef, to encourage the early termination of offshore oil drilling off the coast of California

SB 615 **(Hueso D) Salton Sea restoration.**

Introduced: 2/17/2017

Last Amend: 9/8/2017

Status: 10/15/2017-Approved by the Governor. Chaptered by Secretary of State. Chapter 859, Statutes of 2017.

Location: 10/15/2017-S. CHAPTERED

Summary: Would specify that any barrier in the Salton Sea within or below a certain elevation would not be considered a dam and would provide that the construction of facilities to separate fresh water from highly saline water for the purposes of implementing restoration activities pursuant to the act shall not be subject to review, approval, inspection, or fees associated with certain laws relating to dams and reservoirs. The bill would state various legislative findings and declarations relating to the Salton Sea, would name the state's comprehensive management plan for the Salton Sea the "John J. Benoit Salton Sea Restoration Plan."

SB 667 **(Atkins D) Department of Water Resources: riverine and riparian stewardship improvements.**

Introduced: 2/17/2017

Last Amend: 6/20/2017

Status: 10/6/2017-Approved by the Governor. Chaptered by Secretary of State. Chapter 543, Statutes of 2017.

Location: 10/6/2017-S. CHAPTERED

Summary: Current law authorizes the Director of Water Resources to establish a program of flood control and urban creek restoration, known as the Urban Streams Restoration Program, consisting of the development of the capability by the Department of Water Resources to respond to requests from local agencies and organizations for planning and design assistance for efficient and effective urban creek protection, restoration, and enhancement. This bill, upon an appropriation of funds from the Legislature, would require the department to establish a program to implement watershed-based riverine and riparian stewardship improvements by providing technical and financial assistance in support of projects with certain benefits.

SB 701 **(Hueso D) Salton Sea Obligations Act of 2018.**

Introduced: 2/17/2017

Last Amend: 7/3/2017

Status: 9/1/2017-September 1 hearing: Held in committee and under submission.

Location: 8/23/2017-A. APPR.

Summary: Would enact the Salton Sea Obligations Act of 2018, which, if approved by the voters, would authorize the issuance of bonds in the amount of \$500,000,000 pursuant to the State General Obligation Bond Law to finance a program to comply with specified state obligations relating to the Salton Sea. This bill would provide for the submission of these provisions to the voters at the November 6, 2018, statewide general election.

SB 714 **(Newman D) State Coastal Conservancy: West Coyote Hills Conservancy Program.**

Introduced: 2/17/2017

Last Amend: 9/12/2017

Status: 4/16/2018-Referred to Com. on NAT. RES.

Location: 4/16/2018-A. NAT. RES.

Summary: Would, until January 1, 2028, establish the West Coyote Hills Conservancy Program, to be administered by the State Coastal Conservancy and to undertake projects and award grants in the West Coyote Hills area, as described, for purposes relating to improvement of public access, and the protection, restoration, and enhancement of natural resources in the area. The bill would prescribe the duties of the conservancy with regard to the implementation and administration of the program. This bill contains other related provisions.

SB 771 (De León D) California Environmental Quality Act: continuing education: public employees.

Introduced: 2/17/2017

Last Amend: 7/18/2017

Status: 9/13/2017-Ordered to inactive file on request of Assembly Member Calderon.

Location: 9/13/2017-A. INACTIVE FILE

Summary: Would establish a continuing education requirement for employees of public agencies who have primary responsibility to administer the California Environmental Quality Act (CEQA, as specified. Because this bill would require a public agency to ensure that this continuing education requirement is met, this bill would impose a state-mandated local program.

SB 809 (Committee on Natural Resources and Water) Natural resources.

Introduced: 3/8/2017

Last Amend: 6/20/2017

Status: 10/5/2017-Approved by the Governor. Chaptered by Secretary of State. Chapter 521, Statutes of 2017.

Location: 10/5/2017-S. CHAPTERED

Summary: The California Constitution establishes the 5-member Fish and Game Commission, with members appointed by the Governor and approved by the Senate. Current statutory law requires the commissioners to annually elect one of their number as president and one as vice president, by a concurrent vote of at least 3 commissioners. Current law prohibits a president or vice president from serving more than 2 consecutive years. This bill would eliminate this prohibition.

SB 919 (Dodd D) Water resources: stream gages.

Introduced: 1/22/2018

Last Amend: 3/15/2018

Status: 5/29/2018-Read third time. Passed. (Ayes 29. Noes 8.) Ordered to the Assembly. In Assembly. Read first time. Held at Desk.

Location: 5/29/2018-A. DESK

Summary: Would require the Department of Water Resources, upon appropriation by the Legislature, to develop a plan to deploy a network of stream gages that includes a determination of funding needs and opportunities for reactivating existing gages. The bill would require the department, in consultation with the board, the Department of Fish and Wildlife, the Central Valley Flood Protection Board, interested stakeholders, and, to the extent they wish to consult, local agencies, to develop the plan to address significant gaps in information necessary for water management.

SB 991 (Wilk R) Agriculture: bees: apiaries.

Introduced: 2/5/2018

Status: 2/14/2018-Referred to Com. on RLS.

Location: 2/5/2018-S. RLS.

Summary: The Apiary Protection Act generally regulates bee management and beekeepers and provides various enforcement and penalty provisions for violating the act. Existing law prohibits a person from maintaining an apiary (1) on premises other than that of his or her residence unless the apiary is identified, as prescribed, (2) on private land not owned or leased by the person without approval, as specified, and (3) on public land without the expressed oral or written approval of the entity that owns, leases, controls, or occupies the land, as prescribed. This bill would make nonsubstantive changes in these provisions.

SB 1015 (Allen D) California Climate Resiliency Program.

Introduced: 2/7/2018

Last Amend: 5/10/2018

Status: 5/29/2018-Read third time. Passed. (Ayes 27. Noes 9.) Ordered to the Assembly. In Assembly. Read first time. Held at Desk.

Location: 5/29/2018-A. DESK

Summary: Would establish the California Climate Resiliency Program to increase resiliency to climate change impacts in urban and rural communities throughout the state and to fund the planning and implementation of projects that improve and enhance the climate change resiliency of natural systems, natural and working lands, and developed areas. The bill would require that the program be developed and implemented by the Wildlife Conservation Board, in coordination with any participating state conservancies, as defined.

SB 1017 (Allen D) Commercial fishing: drift gill net shark and swordfish fishery.

Introduced: 2/7/2018

Last Amend: 5/25/2018

Status: 5/31/2018-In Assembly. Read first time. Held at Desk.

Location: 5/30/2018-A. DESK

Summary: Current law authorizes a drift gill net shark and swordfish permit (DGN permit) permit to be transferred to another person under certain circumstances. Current law establishes an annual fee of \$330 for a DGN permit and requires that fee to be adjusted annually pursuant to a specified index. This bill would require the department, between January 1, 2019, and March 31, 2020, to develop a voluntary permit transition program, as prescribed, and to implement the program upon appropriation by the Legislature of private or federal funding received by the department for this purpose. The bill would increase the fee for a DGN permit that expires on March 31, 2019, to \$482.75. The bill would require a DGN permit issued pursuant to these provisions to be surrendered or revoked as of January 31, 2023.

SB 1020 (Berryhill R) Sport fishing: daily bag limit: possession.

Introduced: 2/7/2018

Status: 2/14/2018-Referred to Com. on RLS.

Location: 2/7/2018-S. RLS.

Summary: Under current law, it is unlawful for any person to possess more than one daily bag limit of any fish taken under a sport fishing license unless authorized by regulations adopted by the Fish and Game Commission. This bill would make a nonsubstantive change to this provision.

SB 1277 (Hueso D) Salton Sea: governance.

Introduced: 2/16/2018

Status: 3/1/2018-Referred to Com. on RLS.

Location: 2/16/2018-S. RLS.

Summary: Would state the intent of the Legislature to enact legislation that would create a governance and administrative structure to manage the day-to-day implementation of the Salton Sea Management Program.

SB 1301 (Beall D) State permitting: environment: processing procedures: dam safety or flood risk reduction project.

Introduced: 2/16/2018

Last Amend: 5/25/2018

Status: 5/31/2018-In Assembly. Read first time. Held at Desk.

Location: 5/30/2018-A. DESK

Summary: Would require the Office of Planning and Research to develop a joint multiagency preapplication and a model fee-for-service agreement, in consultation with a state agency with the power to issue a permit that would authorize a dam safety project or authorize a flood risk reduction

project and any interested potential project applicants. The bill would authorize a project applicant to complete a joint multiagency preapplication and submit the preapplication to each state agency named in the preapplication at any time.

SB 1309 (McGuire D) Fishing: Fisheries Omnibus Bill of 2018.

Introduced: 2/16/2018

Last Amend: 4/23/2018

Status: 5/31/2018-In Assembly. Read first time. Held at Desk.

Location: 5/30/2018-A. DESK

Summary: Current law requires the Department of Fish and Wildlife to issue a commercial fishing salmon stamp upon application for the stamp and payment of a base fee of \$85. That base fee is required to be adjusted during specified commercial salmon seasons. However, current law prohibits the total fees, as adjusted, from exceeding \$260. Current law requires the department to deposit revenues from this fee, funds received from other sources, as specified, and other specified revenues in the Commercial Salmon Stamp Dedicated Subaccount in the Fish and Game Preservation Fund. This bill would extend the operation of these provisions until January 1, 2029.

SB 1310 (McGuire D) Fishing: Dungeness crab.

Introduced: 2/16/2018

Last Amend: 4/9/2018

Status: 5/31/2018-Read third time. Urgency clause adopted. Passed. (Ayes 39. Noes 0.) Ordered to the Assembly. In Assembly. Read first time. Held at Desk.

Location: 5/31/2018-A. DESK

Summary: Current law sets forth the qualifications for initial issuance of a Dungeness crab vessel permit, including a person's history of participating in the Dungeness crab fishery before the establishment of the permit program, provides that one category of permit issued pursuant to those provisions shall become null and void upon the death of the permittee, and provides a penalty for submitting false information in connection with initial issuance of the permit. Current law provides for renewal of a permit. Current law requires the owner of a permitted vessel to transfer the permit upon sale to the person purchasing the vessel. This bill would delete the provisions relating to the initial issuance of a permit, except for the provision that makes one category of permit null and void upon the death of the permittee.

SB 1311 (Berryhill R) Fishing and hunting: annual sportsman's licenses.

Introduced: 2/16/2018

Last Amend: 4/18/2018

Status: 5/31/2018-Read third time. Passed. (Ayes 39. Noes 0.) Ordered to the Assembly. In Assembly. Read first time. Held at Desk.

Location: 5/31/2018-A. DESK

Summary: Would create the annual sportsman's license that affords the holder of the license the same privileges as the annual hunting and fishing licenses but that is valid for a term of one year from July 1 to June 30, inclusive, or, if issued after the beginning of that term, for the remainder of the term. The bill would limit the issuance of these licenses to residents and would require the Department of Fish and Wildlife to issue these licenses from January 1, 2020, to January 1, 2026, inclusive, upon payment of an unspecified fee. The bill would require the fee to be adjusted annually pursuant to a specified index. The bill would require the department to collect all relevant, appropriate, and sufficient data necessary to evaluate the benefit of the annual sportsman's license and to justify the amount of the fees.

SB 1487 (Stern D) Iconic African Species Protection Act.

Introduced: 2/16/2018

Last Amend: 5/25/2018

Status: 5/31/2018-In Assembly. Read first time. Held at Desk.

Location: 5/30/2018-A. DESK

Summary: Would enact the Iconic African Species Protection Act and would prohibit the possession of specified African species and any part, product, offspring, or the dead body or parts thereof, including, but not limited to, the African elephant or the black rhinoceros, by any individual, firm, corporation, association, or partnership within the State of California, except as specified for, among other things, use for educational or scientific purposes by a bona fide educational or scientific institution, as defined.

For more information call:

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McKinleyville

Russell E. Burns, Member
Napa

Peter S. Silva, Member
Jamul

STATE OF CALIFORNIA
Edmund G. Brown Jr., Governor

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Fish and Game Commission



Wildlife Heritage and Conservation
Since 1870

Senator Ben Allen
State Capitol, Room 5072
Sacramento, CA 95814

Subject: Support of concepts within SB 1017

Dear Honorable Senator Allen,

The California Fish and Game Commission (Commission) writes in support of the concepts within SB 1017 regarding the California drift gillnet (DGN) fishery. As you know, the DGN fishery that operates off of California is complicated. Finding comprehensive, long-term solutions to address the environmental impacts associated with this fishery is needed, while also considering economic impacts within the solutions.

One of the Commission's current priorities is to support California's sustainable coastal fishing communities. To maintain a robust coastal fishing economy, fishing communities need both adaptive management and flexibility to fish a variety of fish stocks. This priority aligns with one of the objectives articulated by the Magnuson-Stevens Fishery Conservation and Management Act (MSA), which governs management of federal fisheries, including the DGN swordfish fishery. The MSA highlights the importance of providing opportunity, ensuring the environmental and economic viability of fisheries and fishing communities, while at the same time, avoiding and minimizing bycatch.

As you may be aware, the DGN fishery is managed federally by the Pacific Fishery Management Council (PFMC). The fishery primarily harvests swordfish, but can also take other commercially valuable species such as bonito, thresher and mako shark, and opah. The DGN fishery operates under a limited entry permit system which has included increasingly more restrictive gear requirements and time-area closures intended to limit bycatch of protected species. In recent years, PFMC has been actively engaged in reviewing DGN management measures and evaluating alternative gear, including deep set buoy gear (DSBG). The PFMC is in process of authorizing DSBG, which would help to open additional access for California fishermen to fish this healthy and sustainable fish stock with lower bycatch. For the DGN fishery, PFMC also adopted requirements for full observer coverage and hard bycatch caps last year, which the Commission was also in support of. Hard bycatch caps, which limit the maximum number of marine mammals and sea turtles caught as bycatch fishery-wide, would have required the

fishery to shut down for the rest of the season and potentially the following season if any limit was reached. If hard caps are combined with full observer coverage, the public can be assured that the fishery is operating in the most environmentally sensitive way it ever has and the data collected can be verified. However, NOAA Fisheries decided not to implement the recommendation from the PPMC for full observer coverage and bycatch .

Absent these requirements, the Commission submitted a letter urging NOAA Fisheries to authorize and incentivize DSBG as soon as possible. SB 1017 highlights three key areas for the DGN fishery: observer coverage, hard bycatch caps, and transition of DGN to DSBG, which the Commission has long supported in concept. Over the past twenty years, the number of U.S. West Coast, DGN swordfish fishery participants and landings have significantly declined, attributed in large part to regulations and time/area closures implemented to mitigate bycatch in the fishery. From a peak of 251 permits in 1986, the number of participants in the fishery has dwindled to below 50 permits; in 2017, all landings were made by just seventeen of these. However, the fishery still provides high economic importance, and concerns remain regarding management measures implemented to address bycatch and the subsequent economic impacts to California fishermen and coastal communities, despite a healthy swordfish stock, a high demand for swordfish, and increasing imports to replace the California-caught fish.

Collaborative research and experimental fishing permit trials of DSBG conducted thus far indicate that the gear can minimize interactions with protected species and minimize finfish bycatch over DGN, however it has not yet demonstrated economic viability for most fishermen. DSBG, if implemented, should also be aligned with economic incentives to allow for fishermen to easily convert from DGN to DSBG.

As mentioned, sustainable coastal fishing communities are a priority to the Commission and to Californians. Continuing to work with the fishermen on this challenging issue to ensure their economic livelihoods is critical to the successful transition to a different gear type and to the resiliency of these communities.

Thank you for your work on this important issue.

Sincerely,

California Fish and Game Commission
Progress in Addressing the
2012 Fish and Wildlife Strategic Vision Recommendations

April 12, 2018

In 2010, under the leadership of Governor Brown and pursuant to AB 2376 (Chapter 424, Statutes of 2010), the California Natural Resources Agency convened a committee to develop a strategic vision for the then California Department of Fish and Game (DFG) and the California Fish and Game Commission (Commission).

The California Fish and Wildlife Strategic Vision Project was intended to establish a strategic vision for the Commission and what is now the California Department of Fish and Wildlife (DFW) that included, among other things, improving and enhancing capacity and effectiveness in fulfilling public trust responsibilities for protecting and managing the state's fish and wildlife. As part of the project, a blue ribbon citizen commission and a stakeholder advisory group supported an executive committee in developing a 2012 report, *California Fish and Wildlife Strategic Vision: Recommendations for Enhancing the State's Fish and Wildlife Management Agencies*, that detailed 28 recommendations to help achieve the goals and objectives of the strategic vision.

At the request of the Commission in February 2018, this report has been prepared to document progress the Commission has made in achieving the goals identified in the strategic vision. The actions identified in this report were originally compiled in July 2017 to inform development of a report to the California State Legislature on progress in addressing the 2012 strategic vision recommendations, following a similar report that was prepared by DFW in 2013. The identified actions are grouped by issue areas that the stakeholders actively engaged in the strategic vision process found to be of significance for improving effectiveness in protecting and managing the state's fish and wildlife resources.

The full list of recommendations and actions are found in Table 1; where no actions are listed specific actions had not yet been taken, and where the action is "N/A" the recommendation was determined not to apply to the Commission. For context when reviewing the table, the strategic vision report defined "foundational strategies" as those themes that stood out as fundamental to the practices or strategies that DFW and Commission leadership and staff should use in their work; in other words, they represent the fundamental way in which the public should experience DFW and Commission efforts to meet their missions.

Table 1: Strategic Vision Recommendations and Actions Taken by the Commission

Topic	Recommendation	Commission Action
Foundational Strategy: Commit to Formal and Informal Collaboration and Partnerships	Create an internal culture that supports partnerships, encourages collaboration, and promotes cooperation.	<ul style="list-style-type: none"> The commission has convened multiple, collaborative stakeholder groups, such as the Fisheries Bycatch Workgroup and the Predator Policy Workgroup, that confer and provide recommendations related to fish and wildlife management issues. Commission staff serves as a member of the Statewide Marine Protected Areas (MPA) Leadership Team convened by the Natural Resources Agency and co-administered with the department; the team fosters coordination, collaboration, and cooperation between state and federal managing agencies, stakeholders, tribes, and non-government organizations through the partnership-based MPA Management Program. The program is composed of four components: Outreach and education, research and monitoring, enforcement and compliance, and policy and permitting.
	Create, foster and actively participate in effective partnerships/collaborations with and among other agencies and stakeholders to achieve shared goals.	<ul style="list-style-type: none"> The commission has convened multiple, collaborative stakeholder groups that confer and develop recommendations related to fish and wildlife management issues, such as the Fisheries Bycatch Workgroup and the Predator Policy Workgroup.
	Following the CFWSV Project, a stakeholder group should continue as an advisory body to DFG and the Commission.	
	Where appropriate, engage in meaningful consultation and collaboration with tribal officials of California Native American Tribes in decision making processes that affect tribal lands, cultural resources and/or issues of mutual concern.	<ul style="list-style-type: none"> In 2015, the Commission adopted a tribal consultation policy. The commission established the Tribal Committee to provide a forum for discussion and resolution among tribes, tribal communities, resource users, management agencies, and the commission regarding tribal concerns and issues associated with fish and wildlife resources. Commission staff actively solicits tribal input and conducts formal consultations, when requested, on fish and wildlife issues. Beginning in 2017, the commission will host an annual tribal planning meeting to coordinate the upcoming regulatory and policy activities before the commission. The meeting will provide a venue for education about process, identifying regulatory and policy needs, and developing collaborative interests; this will include State and federal agencies to facilitate cross-sector collaboration.

Topic	Recommendation	Commission Action
Foundational Strategy: Transparent Decision-Making	Be transparent about functions, programs and activities.	<ul style="list-style-type: none"> • The commission established the Wildlife Resources Committee (mirroring the well-established and statutorily authorized Marine Resources Committee) to provide a forum for discussion and resolution among resource users, management agencies, and the commission regarding wildlife resource management issues. Ultimately, the committee was authorized in statute and a science advisor position established to ensure smooth committee functioning and progress on important wildlife issues. • The commission established the Tribal Committee to provide a forum for discussion and resolution among tribes, tribal communities, resource users, management agencies, and the commission regarding tribal concerns and issues associated with fish and wildlife resources. • The commission has convened multiple, collaborative stakeholder groups, such as the Fisheries Bycatch Workgroup and the Predator Policy Workgroup, that confer and develop recommendations related to fish and wildlife issues. The commission also uses issue-specific workshops to facilitate greater understanding of fish and wildlife issues; examples include coastal fishing communities meetings and the Delta Fisheries Forum. • To increase public understanding and create more transparent decision-making, commission staff developed a tracking system for regulation change petitions and non-regulatory requests; in addition, the commission adopted regulations for a petition form that provides the public with guidance on information the commission needs to properly evaluate and act upon regulation change requests. • To support public engagement, the commission adopted meeting procedure regulations in 2016 to clarify meeting processes. • In 2016, the commission adopted a conflict of interest code for commissioners and employees involved in its decision-making, consistent with Government Code section 87300, including four disclosure categories that reflect the current organizational structure and duties within commission authority. • Regular commission meetings are video-recorded and live-streamed over the Internet, commission teleconference meetings are audio-recorded and live-streamed over the Internet, and committee meetings and workshops are audio-recorded. All recordings are available to the public through the commission's website. • The commission provides meeting materials to the public in advance of every meeting and regularly updates its website to increase transparency and improve public understanding of issues before the commission. • Commission staff provide regular updates at commission meetings regarding staffing and recent accomplishments.

Topic	Recommendation	Commission Action
<i>Foundational Strategy: Integrated Resource Management (IRM) processes.</i>	Support and participate in multi-agency collaboratives that will effectively promote IRM among state and federal natural resource permitting and planning agencies, and/or multi-agency/user natural resource stakeholder groups.	
<i>Mandates, Efficiencies and Funding</i>	Require open and transparent accounting to build public confidence in how funds are managed.	<ul style="list-style-type: none"> • The department has begun a mission-based budget effort that will include the commission, which will bring more transparency to the department's and commission's activities, statutory mandates, and funding. The budget effort will be a collaboration with the Department of Finance, legislative staff and stakeholders. • In 2017-18, the department and commission will transition to Fi\$Cal, the state's new accounting and budgeting system, which will increase fiscal transparency. The department and commission have committed resources to ensure staff are trained on using the system and will be able to make the best use of the information that the new system will make available to the public. • In 2015, commission staff made a presentation to the commission on its budget allocations and expenditures; staff plans to make a similar presentation in 2017. • Every year, the department presents to the commission an update on budget allocations.
	As part of a strategic planning effort, evaluate and implement program efficiencies.	<ul style="list-style-type: none"> • In late 2017, the commission will undertake a process to update its strategic plan, during which priorities, efficiencies and effectiveness will be discussed and addressed. • Working with the department in 2012 and 2014, the commission adopted an overhaul of regulations for public use of department lands to improve clarity, consistency and efficiency. • Working with the department in 2016, the commission adopted regulations to expand the department Lands Pass Program to increase the number of properties requiring purchase of a Lands Pass for entry from 7 to 43, thereby helping make the program more self-sufficient. • Commission staff have worked closely with the department on increasing regulatory efficiency through a department Regulations Unit and through a reduction in the number of annual rulemakings and federal conformance rulemakings.
	Pursue a high-level task force that reviews and makes recommendations regarding the Commission and DFG funding and efficiencies.	

Topic	Recommendation	Commission Action
	Pursue a high-level task force that reviews and makes recommendations regarding the Commission and DFG mandates.	<ul style="list-style-type: none"> Annually the commission continues to accrue unfunded mandates through the legislative process.
	In the future, when the legislature enacts legislation, it identifies a specific means by which the new mandate can be paid for.	<ul style="list-style-type: none"> N/A
Defining Success	Develop performance metrics to define success, tie performance to DFG's and the Commission's mission statements, and match DFG's and the Commission's goals with funding (priorities).	<ul style="list-style-type: none"> In 2015, consistent with the Statewide Leadership Accountability Act, commission staff established monitoring metrics related to regulations development, petitions for regulation change, annual and federal conformance rulemakings, and action on appeals. As part of the department's mission-based budget process during Fiscal Year 2017-18, the commission will develop additional performance and monitoring metrics for its functions. In late 2017, the commission will undertake a process to update its strategic plan, which will also inform the mission-based budget process.
Science	Decisions made by managers and policy-makers are informed by credible science in fully transparent processes.	<ul style="list-style-type: none"> The commission supports continuing professional development of its science advisors to the marine and wildlife resources committees through attendance at science meetings and conferences and other forms of continuing education, to help provide and interpret credible science in the decision-making process. The commission is developing a climate change policy to help ensure that climate science is incorporated into recommendations developed for the commission. The commission's marine and wildlife science advisors regularly communicate with state and federal agencies, including the department, on the latest research and monitoring data, to ensure integration of the best available science into the decision-making process; and to guide the commission on interpretation and application of the science relied upon.
	Focus on building DFG capacity to address the complex role that science must necessarily play in adaptive management, including the use of knowledgeable science integrators.	<ul style="list-style-type: none"> N/A

Statutes and Regulations	Review the California Fish and Game Code and Title 14 of the California Code of Regulations to identify and make recommendations to: (1) resolve inconsistencies; (2) eliminate redundancies; (3) eliminate unused and outdated code sections; (4) consolidate sections creating parallel systems and processes; and (5) restructure codes to group similar statutes and regulations.	<ul style="list-style-type: none"> • A legislative outcome of the strategic vision process was engaging the California Law Revision Commission (CLRC) to evaluate the Fish and Game Code to accomplish the goals identified under this recommendation. The CLRC has completed its work and supplied the department with recommended changes. Department and commission staff are reviewing the recommended changes and will provide comments once the review is complete. Final changes are expected to be codified in legislation in 2018; once codified, commission staff will update Title 14 of the California Code of Regulations as appropriate. • Commission staff agrees that an overhaul of Title 14 is warranted, but lacks the resources to conduct such an effort; in the meantime, commission staff is making small, incremental improvements as various rulemaking files are submitted to the commission. • Working with the department in 2012 and 2014, the commission adopted an overhaul of regulations for public use of department lands to improve clarity, consistency and efficiency. • Working with the department in 2015 and 2016, the commission adopted regulations to “automatically” conform state marine fishing regulations to federal regulations, which will eliminate redundancy and increase efficiency.
	All policies are in writing and employees are trained in the proper implementation of policies.	<ul style="list-style-type: none"> • To increase public understanding and create more transparent decision-making, the commission adopted regulations for a petition form that provides the public with guidance on information the commission needs to properly evaluate and act upon regulation changes. • To support public engagement and ensure consistent application of commission meeting procedures, the commission adopted meeting procedure regulations in 2016 to clarify meeting processes. • Commission staff developed and refined internal administrative procedures that are organized into a cross-referenced system for greater accessibility. The system enables more consistent application of administrative procedures, allows staff to quickly find answers to process questions, gives new or temporary staff an easy way to find and learn commission procedures, and helps the commission operate in a more consistent, open and transparent fashion. • New commission employees now participate in the department’s new employee orientation program and receive information on all applicable department policies and required trainings. • All new employees review commission policies with their supervisor shortly after being hired.
	Seek statutory changes to the fully protected species statutes to allow the incidental take of fully protected species under specified circumstances	<ul style="list-style-type: none"> • N/A

	related to certain management activities as defined by DFG.	
	Evaluate potential statutory changes to the California Endangered Species Act (CESA) to improve the permitting process consistent with existing protections: Uniformity in permitting process, efficiency in permitting, consistency in the application of CESA standards, and opportunity for applicants to appeal DFG decisions.	<ul style="list-style-type: none"> • N/A
Permitting	Establish an inter-agency coordination process to ensure consistency and efficiency in the review of multiple permits, such as CESA incidental take permit applications, streambed alteration agreements, and other appropriate permits and agreements.	<ul style="list-style-type: none"> • N/A
	Make the application review and permit preparation process more consistent and transparent to applicants.	<ul style="list-style-type: none"> • N/A
	Remove permitting barriers to “small-scale” restoration and other appropriate projects.	<ul style="list-style-type: none"> • N/A
	Develop a set of criteria and implementation guidelines for “beneficial” projects.	<ul style="list-style-type: none"> • N/A
	As part of a broader improvement to the permitting process, assist applicants with pre-project planning in advance of submitting a permit application (e.g. state incidental take permits and	<ul style="list-style-type: none"> • N/A

	streambed alteration agreements).	
Enforcement	Ensure successful recruitment and retention of California fish and game wardens.	<ul style="list-style-type: none"> N/A
	Establish a state wildlife crimes prosecutorial task force (including DFG, California Attorney General's Office, California District Attorneys' Association, U.S. Attorney General's Office, etc.) to identify new approaches to shared or specialized adjudication of environmental/wildlife crimes.	<ul style="list-style-type: none"> To encourage greater attention to prosecuting fish and wildlife crimes, the commission created a Prosecutor of the Year award, annually given to a district attorney or deputy district attorney who exemplifies a series of attributes related to prosecuting fish and wildlife crimes; the award is presented at the California District Attorneys Association's annual meeting. In 2016, the commission adopted a Prosecutor of the Year policy to formalize the award.
	Seek statutory changes to create effective deterrents to illegal take.	<ul style="list-style-type: none"> In 2012, new legislation created penalty enhancements for illegal take of several trophy class animals; the commission adopted regulations to define specific characteristics of trophy game mammals and wild turkeys, effective in 2017.
California Fish and Game Commission	Create greater stakeholder input and exchange, and a better understanding of issues by Commission members and all involved prior to formal Commission hearings by expanding the use of committees and holding issue specific public workshops.	<ul style="list-style-type: none"> The commission created the Wildlife Resources, Marine Resources, and Tribal committees and expanded their use to provide an opportunity for greater stakeholder input and exchange, and a better understanding of issues by commission members and the public regarding fish and wildlife resource issues; each committee now meets three times per year and provides a report at regularly scheduled commission meetings. Committees make recommendations to the commission on specific subjects prior to beginning formal hearings where time can be compressed and dialog is limited. Multiple, collaborative stakeholder groups, such as the Fisheries Bycatch Workgroup and the Predator Policy Workgroup, have been convened to confer and develop recommendations related to fish and wildlife issues. Issue-specific workshops and meetings are often used by the commission to facilitate greater understanding of fish and wildlife management issues; examples include coastal fishing communities meetings and the Delta Fisheries Forum. Commission staff are encouraged to attend events or trainings where there is opportunity to engage with or learn more about various commission constituencies (i.e., hunter education) and issues of concern to those constituencies.
Reporting	Request a report from DFG and the Commission to the California State Legislature and governor by June 1, 2013 to identify progress in implementing	<ul style="list-style-type: none"> The department submitted a report in 2013. The department and commission prepared this report in 2017 to identify progress in implementing the recommendations within the strategic vision.

	recommendations within the strategic vision Recommend that the chairs of those legislative committees with jurisdiction over fish and wildlife hold a joint hearing following the release of the report.	
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California Fish and Game Commission

Timing and Process for Developing a Strategic Plan

April 12, 2018

The California Fish and Game Commission's strategic plan is 20 years old and, since it was developed, much has changed with California's fish and wildlife resources, and the responsibilities of the Commission. In addition, the Commission's 150th anniversary is in 2020, a good time to reflect on the Commission's history, mandates and future, and to bring its strategic plan into the 21st Century.

The Commission held its first strategic planning meeting on February 22, 2018, where staff provided information and context about the unique role of the Commission in natural resource management, and many environmental and social changes that have occurred since the 1998 strategic plan was developed. The Commission discussed the overall goals of a new strategic plan and the type of strategic planning process in which to engage. Members of the public also provided input on a planning process, and some reflected on their experiences with the 1998 process.

The Commission determined that it is seeking a streamlined strategic planning process, given that there is significant information and input on which to build a new strategic plan, including the 2012 *California Fish and Wildlife Strategic Vision: Recommendations for Enhancing the State's Fish and Wildlife Management Agencies*. In 2010, under the leadership of Governor Brown and pursuant to AB 2376 (Chapter 424, Statutes of 2010), the California Natural Resources Agency convened an executive committee to develop a strategic vision for the then California Department of Fish and Game (DFG) and the California Fish and Game Commission. The intent was to establish a strategic vision that included, among other things, improving and enhancing capacity and effectiveness in fulfilling public trust responsibilities for protecting and managing the state's fish and wildlife. While many of the strategic vision objectives have been achieved, there remains significant work and the tenets remain applicable to the Commission's strategic planning process.

At its first planning meeting, the Commission discussed the strategic visioning process and products, and progress in achieving the identified strategic vision goals. As part of the current strategic planning process, the Commission has requested an update on success in addressing the recommendations from the 2012 strategic vision. In addition, the Commission requested that an outline of the planning process (this document) be shared with stakeholders who participated in the strategic visioning process to solicit feedback on the Commission's vision for how to move the planning process forward over the next two years. In general, the Commission is pursuing a three-stage planning process.

Stage 1: Commission Mission, Vision and Values

Working with staff, the Commission will begin the strategic planning process by looking more closely at the current mission and vision statements, and to develop a values statement, during the regular in-person Commission meetings scheduled for April, June and August 2018, with the goal of having the statements adopted at the August 2018 meeting.

Stage 2: Data Gathering

Staff will gather the necessary data and information for the Commission to be able to conduct an analysis of strengths, weaknesses, opportunities and threats (SWOT), to identify key issues affecting the work of the Commission and how the organization's strengths can be better utilized to address those issues. Because a SWOT analysis will necessarily involve reaching out to stakeholders and other agencies, many of whom many not be able to attend Commission meetings in person, a facilitator will be retained to assist in the information-gathering process. The Commission plans to complete the SWOT analysis during the October and December 2018 Commission meetings.

Stage 3: Building a New Strategic Plan

To begin building a new strategic plan in 2019, the Commission will seek a contractor to assist staff in the third stage of the planning process, during which the Commission will evaluate the findings of the SWOT analysis to develop goals and the objectives for achieving those goals, and to identify priorities in the coming years. The intent is to complete and adopt a new strategic plan by the Commission's sesquicentennial anniversary of April 2, 2020.

Next Steps

The Commission will have its first Stage 1 strategic planning discussion at its April 18-19, 2018 meeting in Ventura. Commissioners and the public will have an opportunity to review the current mission and vision statements that will serve as a strong foundation for a strategic planning framework, and to discuss current and future values that could be reflected in a values statement. The first stage work will be essential to planning how the Commission stewards its role into the future.

California Fish and Game Commission
Commission Mission and Vision Statements
From 1998 Strategic Plan

Mission Statement

The mission of the California Fish and Game Commission is, on behalf of California citizens, to ensure the long term sustainability of California's fish and wildlife resources by:

- Guiding the ongoing scientific evaluation and assessment of California's fish and wildlife resource
- Setting California's fish and wildlife resource management policies and ensuring these are implemented by DFW
- Establishing appropriate fish and wildlife resource management rules and regulations
- Building active fish and wildlife resource management partnerships with individual landowners, the public and interests groups, and federal, State and local resource management agencies

Vision Statement

The vision of the California Fish and Game Commission, in partnership with the Department of Fish and Game and the public, is to assure California has... "Sustainable Fish and Wildlife Resources. "

**CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE
LAW ENFORCEMENT DIVISION
2017 PROSECUTOR OF THE YEAR AWARD NOMINATION**

***Adrian Kamada
Deputy District Attorney
Humboldt County***

DDA Kamada began working at the Humboldt County District Attorney's Office in 2014, assigned as the lead prosecutor on all of the environmental cases for the county. Kamada, who was raised in Humboldt, appreciates and understands the importance of the county's diverse fish and wildlife species and the habitats that they depend upon. Living in Humboldt County, DDA Kamada saw firsthand the destruction caused by poaching, polluting and the widespread habitat destruction resulting from unlawful cannabis grows throughout the county. As a new DDA, Kamada quickly reached out to the local law enforcement agencies and began working closely with them to understand the investigative challenges they were facing.

In 2015, DDA Kamada formed the Humboldt County Environmental Crimes Task Force, a group of willing state and local agencies that meet several times a year to discuss ongoing environmental crimes, promote interagency communication and problem solving, and allow the various agencies to speak directly with DDA Kamada about cases. DDA Kamada has also accompanied wildlife conservation officers on general patrol and on search warrant services several times a year. This promotes a strong working relationship with the local Wildlife Conservation Officers, allows Kamada to see firsthand the challenges Wildlife Conservation Officers face and to see the egregious nature of the violations associated with the cases that he prosecutes.

During the prosecution of his cases, DDA Kamada encourages judgements that correct environmental damage and prevent it from happening in the future, not just punishing the responsible parties. DDA Kamada has become one of the go-to DA's in the state when it comes to the successful prosecution of cases involving environmental crimes associated with cannabis cultivation. DDA Kamada has taught several seminars on the topic to both attorneys and law enforcement personnel throughout the state. DDA Kamada has shown considerable skill and commitment to the prosecution of fish, wildlife and environmental crime cases as the following small sample of successful cases illustrates:

- In 2015, Wildlife Officers contacted a man near the Eel River after observing him driving on a river bar while shining a high-powered light and discarding litter on the river bar. Wildlife Officers served a search warrant on the subject's residence, where the officers discovered additional evidence of spotlighting and poaching activity. Following the successful prosecution of the case by DDA Kamada, the suspect was sentenced to three years of probation, 200 hours of community service, and a prohibition of hunting, the mandatory completion of the hunter safety program as well as the forfeiture of three firearms, ammunition, knives, and unlawfully possessed deer parts.
- In 2016, following a meeting with the Humboldt County Environmental Crimes Task Force, DDA Kamada asked Wildlife Officers to write a search warrant for a property that had several Fish and Game Code, Humboldt County Code, Public Resource Code and Health and Safety Code violations on it. All of the violations were associated with the

unlawful cultivation of cannabis along the Van Duzen River. The Van Duzen River contains Chinook and coho salmon, as well as steelhead trout. Upon the service of the search warrant, nine violations of Fish and Game Code were documented. Shortly after the service of the search warrant, the property owner died, complicating the case. DDA Kamada continued to fight to fix the egregious conditions documented on the property. DDA Kamada negotiated with attorneys representing the next-of-kin to have them completely restore the property to the satisfaction of CDFW. In 2017, DDA Kamada, a CDFW Wildlife Conservation Officer and a CDFW Senior Environmental Scientist inspected the property, confirming that it was totally restored. The restoration included the complete removal of a building, several unlawful diversions as well as hundreds of pounds of trash and hazardous materials, and thousands of yards of black water pipe. DDA Kamada also attached terms to the agreement that no cannabis cultivation shall occur in the property within 1,000 feet of the river, which, given the steep topography, excludes much of the property from similar, environmentally damaging activity.

- In 2016, a Wildlife Officer attempted to stop a vehicle that was actively spotlighting deer on a remote dirt road in Humboldt County. Upon attempting to initiate a traffic stop, one of the two subjects in the vehicle began shooting at the Wildlife Conservation Officer while the other subject sped away. During the course of the pursuit, ten shots were fired at the officer. The suspects eventually crashed the vehicle, fled into the woods on foot, and evaded capture. Investigators later identified the two subjects. In August 2017, after many months of investigation and surveillance, the suspect who shot at the Wildlife Conservation Officer turned himself in. Upon the successful prosecution of the case by DDA Kamada, the shooter was sentenced to 20 years in prison and the driver was sentenced to a suspended sentence of eight years in prison.

**California Fish and Game Commission
Tribal Committee (TC) Work Plan**

Revised June 2018

Topic	Type	Goals	2018		
			Feb 7	Jun 19	Oct 16
			Sacramento	Sacramento	Fresno
Special Projects					
Co-management	TC workgroup	Development of a vision statement and definition	X/R		
Regulatory/Legislative					
Kelp and algae harvest management	DFW project	Recommendation and guidance			
Emerging Management Issues					
FGC climate policy	FGC policy	Development of a policy for FGC. Looking for recommendations and guidance as we move forward.			
Fishing communities	MRC project	Recommendation and guidance	X		
Management Plans					
Marine Life Management Act (MLMA) Master Plan for Fisheries	Management framework document - part of MRC crosswalk	Updates on DFW process to amend the MLMA Master Plan for Fisheries, and identify areas of interest to tribes			
Elk	DFW				
Informational/Special topics					
Cross-pollination with MRC and WRC	Ongoing FGC committee coordination	Identification of tribal concerns and common themes that overlap between WRC and MRC	X	X	X
Annual tribal planning meeting pursuant to Commission's tribal consultation policy	Annual tribal coordination and consultation	1) Identify process to inform tribes of anticipated regulatory and policy topics to be considered each year; 2) Identify tribal priorities from within topics; 3) Develop collaborative interests; and 4) Contribute to planning logistics for annual meeting	X		
OPC update on tribal participation in the statewide marine protected areas leadership team	OPC project		X		
OPC update on Safeguarding California and Sea Level Rise	OPC project		X		
Request for a presentation and update on the implementation of Prop 64	DFW/LED				
FGC staff to provide a regulatory calendar overview and where tribal interests could provide feedback	FGC		X	X	
New Topics					
Develop operating principals for TC	FGC			X	
Add TC to meeting procedures	FGC			X	

FGC = California Fish and Game Commission MRC = FGC's Marine Resources Committee WRC = FGC's Wildlife Resources Committee

DFW = California Department of Fish and Wildlife LED = DFW's Law Enforcement Division OPC = California Ocean Protection Council

KEY **X** Discussion Scheduled **R** Recommendation developed and moved to FGC

Commissioners
Eric Sklar, President
Saint Helena
Jacque Hostler-Carmesin, Vice President
McKinleyville
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Fish and Game Commission



Wildlife Heritage and Conservation
Since 1870

TRIBAL COMMITTEE

Committee Co-Chairs: Commissioner Hostler-Carmesin and Commissioner Silva

Revised* Meeting Agenda June 19, 2018, 1:30 PM

Natural Resources Building – 12th Floor Conference Room
1416 Ninth Street, Room 1206, Sacramento, CA 95814

This meeting may be audio-recorded.

* This agenda is revised to reflect a new meeting location.

NOTE: See important meeting procedures and information at the end of the agenda. All agenda items are informational and/or discussion only. The Committee develops recommendations to the Commission, but does not have authority to make policy or regulatory decisions on behalf of the Commission.

Call to order

1. **Approve agenda and order of items**
2. **Governor's Tribal Liaison, Christina Snider**
Welcome and introduction to Christina Snider and her role as tribal advisor
3. **Public forum for items not on the agenda**
The Committee may not discuss or take action on any matter raised during this item, except to consider whether to recommend that the matter be added to the agenda of a future meeting.
[Sections 11125, 11125.7(a), Government Code]
4. **Tribal Committee operational practices and meeting procedures**
5. **Staff updates**
 - (A) Activities of other Commission committees
 - I. Marine Resources Committee
 - II. Wildlife Resources Committee
 - (B) Other

6. Agency updates

- (A) California Department of Fish and Wildlife
- (B) California Ocean Protection Council
- (C) Other

7. Review Commission 2018 rulemaking timetable

8. Update on topics previously before the Committee

9. Future agenda topics

- (A) Review work plan agenda topics and timeline
- (B) Potential new agenda topics for Commission consideration

Adjourn

California Fish and Game Commission 2018 Meeting Schedule

Note: As meeting dates and locations can change, please visit www.fgc.ca.gov for the most current list of meeting dates and locations.

Meeting Date	Commission Meeting	Committee Meeting	Other Meetings
June 20-21	Resources Building Auditorium, First Floor 1416 Ninth Street Sacramento, CA 95814		
July 17		Marine Resources California Department of Parks and Recreation Orange Coast District Office Training Room 3030 Avenida del Presidente San Clemente, CA 92672	
August 22-23	River Lodge Conference Center 1800 Riverwalk Drive Fortuna, CA 95540		
September 20		Wildlife Resources Resources Building Auditorium, First Floor 1416 Ninth Street Sacramento, CA 95814	
October 16		Tribal Radisson Fresno Conference Center 1055 Van Ness Avenue Fresno, CA 93721	
October 17-18	Radisson Fresno Conference Center 1055 Van Ness Avenue Fresno, CA 93721		
November 14		Marine Resources Resources Building Auditorium, First Floor 1416 Ninth Street Sacramento, CA 95814	
December 12-13	QLN Conference Center 1938 Avenida del Oro Oceanside, CA 92056		

OTHER 2018 MEETINGS OF INTEREST

Association of Fish and Wildlife Agencies

- September 9-12, Tampa, FL

Pacific Fishery Management Council

- September 5-12, Seattle, WA
- November 1-8, San Diego, CA

Pacific Flyway Council

- September, Flagstaff, AZ

Western Association of Fish and Wildlife Agencies

- July 12-17, Eugene, OR

Wildlife Conservation Board

- August 30, Sacramento, CA
- November 15, Sacramento, CA

IMPORTANT COMMITTEE MEETING PROCEDURES INFORMATION

Welcome to a meeting of the California Fish and Game Commission's Tribal Committee. The Committee is chaired by up to two Commissioners; these assignments are made by the Commission.

The goal of the Committee is to allow greater time to investigate issues before the Commission than would otherwise be possible. Committee meetings are less formal in nature and provide for additional access to the Commission. The Committee follows the noticing requirements of the Bagley-Keene Open Meeting Act. It is important to note that the Committee chairs cannot take action independent of the full Commission; instead, the chairs make recommendations to the full Commission at regularly scheduled meetings.

The Commission's goal is the preservation of our heritage and conservation of our natural resources through informed decision making; Committee meetings are vital in developing recommendations to help the Commission achieve that goal. In that spirit, we provide the following information to be as effective and efficient toward that end. Welcome, and please let us know if you have any questions.

PERSONS WITH DISABILITIES

Persons with disabilities needing reasonable accommodation to participate in public meetings or other Commission activities are invited to contact the Reasonable Accommodation Coordinator at (916) 651-1214. Requests for facility and/or meeting accessibility should be received at least 10 working days prior to the meeting to ensure the request can be accommodated.

SUBMITTING WRITTEN MATERIALS

The public is encouraged to attend Committee meetings and engage in the discussion about items on the agenda; the public is also welcome to comment on agenda items in writing. You may submit your written comments by one of the following methods (only one is necessary): **Email** to fgc@fgc.ca.gov; **deliver** to California Fish and Game Commission, 1416 Ninth Street, Room 1320, Sacramento, CA 95814; or **hand-deliver to a Committee meeting**.

COMMENT DEADLINES

The **Written Comment Deadline** for this meeting is **5:00 p.m. on June 7, 2018**. Written comments received at the Commission office by this deadline will be made available to Commissioners prior to the meeting.

The **Late Comment Deadline** for this meeting is **noon on June 15, 2018**. Comments received by this deadline will be marked "late" and made available to Commissioners at the meeting.

After these deadlines, written comments may be delivered in person to the meeting – please bring five (5) copies of written comments to the meeting.

The Committee **will not** consider comments regarding proposed changes to regulations that have been noticed by the Commission. If you wish to provide comment on a noticed item, please provide your comments during Commission business meetings, via email, or deliver to the commission office.

Materials provided to the Committee may be made available to the general public.

REGULATION CHANGE PETITIONS

As a general rule, requests for regulatory change need to be redirected to the full Commission and submitted on the required petition form, FGC 1, titled "Petition to the California Fish and Game Commission for Regulation Change" (Section 662, Title 14, CCR). However, at the Committee's discretion, the Committee may request that staff follow up on items of potential interest to the Committee and possible recommendation to the Commission.

SPEAKING AT THE MEETING

Committee meetings operate informally and provide opportunity for everyone to comment on agenda items. If you wish to speak on an agenda item, please follow these guidelines:

1. Raise your hand and wait to be recognized by the Committee chair or co-chair(s).
2. Once recognized, please begin by giving your name and affiliation (if any) and the number of people you represent.
3. Time is limited; please keep your comments concise so that everyone has an opportunity to speak.
4. If there are several speakers with the same concerns, please try to appoint a spokesperson and avoid repetitive comments.
5. If you would like to present handouts or written materials to the Committee, please provide five copies to the designated staff member just prior to speaking.
6. If speaking during public forum, the subject matter you present should not be related to any item on the current agenda (public comment on agenda items will be taken at the time the Committee members discuss that item). As a general rule, public forum is an opportunity to bring matters to the attention of the Committee, but you may also do so via email or standard mail. At the discretion of the Committee, staff may be requested to follow up on the subject you raise.

VISUAL PRESENTATIONS/MATERIALS

All electronic presentations must be submitted by the **Late Comment Deadline** and approved by the Commission executive director before the meeting.

1. Electronic presentations must be provided by email by the written materials deadline.
2. All electronic formats must be Windows PC compatible.
3. It is recommended that a print copy of any electronic presentation be submitted in case of technical difficulties.
4. A data projector, laptop and presentation mouse will be available for use at the meeting.

LASER POINTERS may only be used by a speaker during a presentation.

Marine Resources Committee (MRC) 2018 DRAFT Work Plan
Scheduled Topics and Timeline for
Items Referred to MRC from California Fish and Game Commission
Updated for June 2018 meeting

Topic	Category	2018		
		MAR	JUL	NOV
		Santa Rosa	San Clemente	Sacramento
Management Plans				
Abalone FMP / ARMP Update (upon request by FGC)	FMP Development			
Herring FMP Updates	FMP Development	X	X	
Regulations				
Sport Fishing Regulations	Annual	X		
Kelp & Algae Harvest	DFW Project	X		-
Aquaculture - Best Management Practices	DFW Project	X	X / R	
Emerging Management Issues				
Aquaculture - Existing and Future Lease Considerations	Initial Review	X		
Box crab experimental fishing permit program and application criteria	DFW Project		X	
Special Projects				
California’s Fishing Communities	MRC project	X	X / R	
Informational / Special Topics				
Marine Debris and Plastic Pollution	Informational			
Offshore Wind Energy (BOEM Project)	Informational			

KEY: **X** Discussion scheduled **X/R** Recommendation developed and moved to FGC

2018 APR -6 AM 11:02

Memorandum

Date: April 4, 2018

To: Valerie Termini
Executive Director
Fish and Game Commission

From: Charlton H. Bonham
Director



Subject: **Agenda Item for the June 20-21, 2018 Fish and Game Commission Meeting**
Re: Designation of the Harvest of Non-Cancer Crabs as an Emerging Fishery

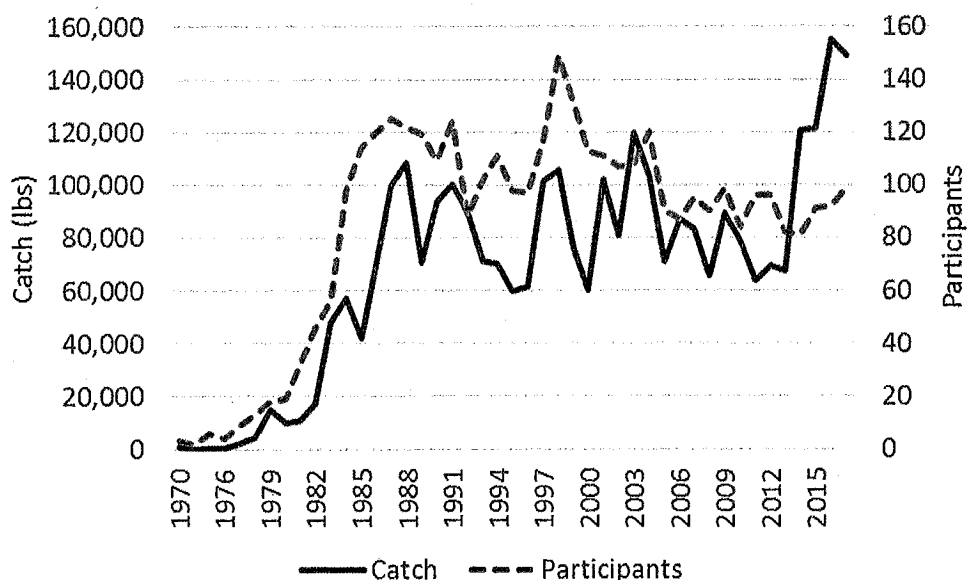
California Fish and Game Code (FGC) §7090 of the Marine Life Management Act (MLMA) requires the Fish and Game Commission (Commission), based upon the advice and recommendations of the Department of Fish and Wildlife (Department), to encourage, manage, and regulate emerging fisheries. Consistent with the criteria outlined in FGC §7090 and Commission policy, the Department has determined that the fishery for non-Cancer crab is an emerging fishery. Based on presented information and discussions regarding brown box crab and California king crab at the Commission's Marine Resource Committee meeting on November 2017, the Commission directed the Department to develop a regulatory proposal to limit allowable incidental take of non-Cancer crab due to rising catch and uncertain sustainability. An emerging fishery designation is necessary for the Commission to exercise the authority to adopt new management measures.

Incidental take of non-Cancer crab (except Tanner crab) is permitted when using traps to target rock crab south of Monterey County (FGC § 8284 (c)), lobster (FGC § 8250.5 (b)), and Dungeness crab (FGC § 8284(a)). Current regulations place no restrictions on the amount of non-Cancer crab that may be taken as long as it is taken incidentally to the target species. Landings of non-Cancer crab reached an all-time high of 155,000 pounds in 2016 (Figure 1). Species the Department tracks include brown box crab (*Lopholithodes foraminatus*), armed box crab (*Platymera gaudichaudii*), California king crab (*Paralithodes californiensis*), and sheep crab (*Loxorhynchus grandis*). The increase in brown box crab (hereafter referred to as box crab) has been most noteworthy. Other species have seen less pronounced and consistent increases, but have also reached previously unseen peaks in catch in recent years. Little biological information exists for these species to determine sustainable levels of harvest.

Box crab and California king crab are relatively deep-water crabs typically inhabiting depths between 150-550 meters. It is likely that the increased landings can be attributed to a combination of a change in fishing behavior (*i.e.*, rock crab fishermen fishing deeper) and developing markets for alternative crab species.

For box crab, current catch levels as well as research surveys indicate a high biomass that may be suitable for exploitation. However, deep-water species are often slow growing and long-lived and therefore cannot sustain high exploitation rates. Additionally, research in British Columbia showed that females produce larvae only every two years.

The Department expects to request the Commission notice a proposed regulation change at its June meeting that would limit possession and landings of incidentally harvested non-Cancer crabs (all species combined) in trap fisheries to no more than 100 pounds. A more restrictive limit for species in the Lithodidae family (box and king crabs) would be set at 25 pounds (*i.e.*, up to 25 pounds of the total 100 may be made up of box crab or king crab). The more restrictive limit for Lithodidae species is necessary due to the rapidly growing interest in these species. Additionally, the Department has been directed by the Commission to pursue development of an experimental gear permit for box crab. Associated plans for collaborative research with fishermen to determine sustainable harvest levels would be hampered by uncontrolled incidental harvest. Species not in the Lithodidae family (*e.g.*, sheep crab) would be subject to a higher, 100 pound limit because this species has sustained relatively higher landings over the past three decades. However, the Department recommends a limit is also important for sheep crab to safeguard against potential future run-away incidental harvest as new markets develop.



Non-Cancer crab commercial landings and number of individuals making landings, 1970 – 2017.

The lack of existing regulations and trend of increasing landings, demonstrate that the incidental take of non-Cancer crabs satisfies the criteria laid out in the MLMA for “Emerging Fisheries”.

The relatively small size of this fishery, limited available data, and lack of fishery provided funds precludes the preparation of a fishery management plan for this species. The Department therefore recommends the Commission continue the approach of developing regulations to address the rising incidental harvest, followed by the use of experimental gear permits to fill information gaps and promote a sustainable fishery.

If you have any questions or need additional information, please contact Dr. Craig Shuman, Marine Regional Manager, at (916) 445-6459.

cc: Stafford Lehr, Deputy Director
Wildlife and Fisheries Division
Stafford.Lehr@wildlife.ca.gov

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Susan Ashcraft, Marine Advisor
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Susan.Ashcraft@fgc.ca.gov

Memorandum

2018 JUN -8 AM 8:30

Date: June 6, 2018

To: Valerie Termini
Executive Director
Fish and Game Commission

From: Charlton H. Bonham
Director



Subject: **Agenda Item for the June 20 - 21, 2018 Fish and Game Commission Meeting**
Re: Request for Authorization to Publish Notice of Commission's Intent to Add
New Section 126.1, and Amend Subsection 125.1(c)(3) and Section 126,
Specifying Incidental Take Allowances for Crabs other than the Genus Cancer

Attached please find the Initial Statement of Reasons (ISOR), which proposes to add a new Section 126.1 and amend subsection 125.1(c)(3) and Section 126, Title 14, California Code of Regulations, Re: Specifying Incidental Take Allowances for Crabs other than the Genus Cancer. Under current regulations, incidental take of non-Cancer crabs is permitted in the target trap fisheries for rock crab, Dungeness crab, and lobster, with no limit on amount. The Department determined the fishery for non-Cancer crabs to be an emerging fishery in April 2018, and under the Marine Life Management Act, the Department must recommend management measures for the Commission's consideration to ensure sustainability (Fish and Game Code (FGC) § 7090). Proposed limits for box and king crab detailed in the attached ISOR are designed to slow current harvest rates and allow for development of an experimental gear permit for box crab, under authority of FGC § 8606, to investigate the potential for a target fishery. The proposed total allowable catch (TAC) for sheep crab is intended to maintain the current harvest level and prevent potential future runaway incidental harvest.

Currently, Section 126, Title 14, California Code of Regulations governs the commercial harvest of Tanner crab, another non-Cancer species. The title of Section 126 would be changed to "Commercial Take of Crabs not in the Genus Cancer in Trap Gear." Existing regulations for the Tanner crab (*Chioneocetes* spp.) fishery would be shifted to a new Section 126.1. The new Section 126 would contain the following subsections: (a) to define Cancer crabs, (b) to create landing limits for non-Cancer crabs taken incidental to other target species in trap gear, and (c) to require all crabs be landed prior to use as bait. Possession and landing of species in the Lithodidae family (box and king crabs) would be limited to no more than 25 pounds per species. Sheep crab would be subject to a TAC of 95,000 pounds annually. Sheep crab is used as a bait source in fish traps. The requirement to land all crab prior to use as bait is necessary to accurately track the TAC for sheep crab and to assess and craft future management measures for all non-Cancer species.

Valerie Termini
Executive Director
Fish and Game Commission
June 6, 2018
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The attached NOE has been prepared pursuant to Section 15062 of the California Environmental Quality Act (CEQA) Guidelines. Since the NOE is not anticipated to change, this early submission with the ISOR gives the Commission notice of the Department's recommendation to rely on CEQA exemption for the proposed actions.

After review pursuant to CEQA Guidelines Section 15061, the Department concludes that proposed rulemaking falls within the Class 7 categorical exemption (CEQA Guidelines Section 15307). The regulations are intended to reduce the risk of overexploiting the non-Cancer crab species, many of which are poorly understood, in the commercial invertebrate trap fisheries. Staff has also reviewed all of the available information possessed by the Department relevant to the issue and does not believe that the Commission's reliance on the Class 7 categorical exemption is precluded by the exceptions set forth in CEQA Guidelines Section 15300.2.

If you have any questions regarding this item, please contact Dr. Craig Shuman, Regional Manager, Marine Region, at (916) 445-6459. The public notice for this rulemaking should identify Environmental Scientist Julia Coates as the Department's point of contact. Ms. Coates can be reached at (805) 730-1328 or Julia.Coates@wildlife.ca.gov.

Attachment

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June 6, 2018
Page 3

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STATE OF CALIFORNIA
FISH AND GAME COMMISSION

Add Section 126.1 and Amend subsection 125.1(c)(3) and Section 126,
Title 14, California Code of Regulations

- I. Date of Initial Statement of Reasons: May 2, 2018

- ## II. Dates and Locations of Scheduled Hearings:

- (a) Notice Hearing: Date: June 20, 2018
Location: Sacramento, CA
- (b) Adoption Hearing: Date: October 17, 2018
Location: Fresno, CA

- ### III. Description of Regulatory Action:

- (a) Statement of Specific Purpose of Regulation Change and Factual Basis for Determining that Regulation Change is Reasonably Necessary:

Under current law, commercial fishermen may incidentally take unlimited amounts of crabs not in the genus *Cancer* (non-*Cancer* crabs) when targeting rock crab, lobster, and Dungeness crab. The specific statutes and regulations include subdivision 8284(c), Fish and Game Code (FGC), and subsection 125.1(c), Title 14, California Code of Regulations (CCR) for rock crab, subdivision 8250.5(b), FGC, for lobster, and subdivision 8284(a), FGC, for Dungeness crab fisheries. The FGC provides a general definition of bycatch (incidental take) that does not give guidance on acceptable amounts (Section 90.5, FGC), but FGC and CCR sections on specific species and gear types do specify rules for retaining non-target species in some cases.

In recent years the Department of Fish and Wildlife (Department) has documented increasing landings of non-Cancer crabs. These species are intended to be taken only incidentally to the species subject to the permitted fishery. This increase is likely due to a combination of two reasons: 1) some fishermen are actively targeting non-Cancer crabs, and 2) non-Cancer crabs are more commonly retained as new markets and greater demand have developed. Regardless of cause, incidental take is often subject to little

regulatory control. The lack of guidance on appropriate incidental amounts is allowing for increasing numbers of proportionally large landings of the incidental species. Specificity in incidental allowances is necessary to provide clarity and to prohibit the targeting of species for which appropriate safeguards against unsustainable practices have not been developed. Additionally, when these species do not meet the criteria for an “established fishery” defined in Section 7090, FGC, they are considered emerging fisheries, and upon determination from the Department Director, the Fish and Game Commission (Commission) has authority to adopt management measures. The proposed regulations establish limits on the incidental take of non-Cancer crabs in the target invertebrate trap fisheries for which take is allowed.

Landings of non-Cancer crabs reached a level not previously observed of 155,000 pounds in 2016 (Figure 1). The species that the Department tracks include brown box crab (*Lopholithodes foraminatus*), armed box crab (*Platymera gaudichaudii*), California king crab (*Paralithodes californiensis*), and sheep crab (*Loxorhynchus grandis*, also known as spider crab). Little biological information exists for any of these species, making determination of sustainable harvest levels difficult. The increase in brown box crab (hereafter referred to as box crab) has been most noteworthy (Figure 2) and is primarily attributable to take in rock crab traps. However, substantial landings in Dungeness crab traps account for the peak seen in 2001. The Commission has received two formal requests for experimental gear permits (EGP) under authority of Section 8606, FGC, to target box crab and, at its December 2017 meeting, directed the Department to develop a proposal for EGPs. Department staff have also received queries from approximately 25 fishermen interested in applying for EGPs for box crab. As prescribed by the Marine Life Management Act (Sections 7050 et seq., FGC), the Department is obligated to sustainably manage the state’s living marine resources. Therefore, as the landings of incidentally caught species rise to become emerging fisheries, the Department is obligated to collect the necessary information and recommend appropriate regulations to the Commission (Section 7090, FGC). Thus, precautionary limits for all non-Cancer species are proposed, and subsequent research to inform appropriate future management measures will be conducted as resources allow and prioritized by degree of conservation or management concern.

Department landings data for box crab beginning in 1981 show take with a variety of gear types across the state from Crescent City to San Diego. The number of fishermen landing box crabs has only modestly increased, highlighting relatively large landings as responsible for the overall increase (Figure 3). However, interest in targeting box crabs is expanding. Box crab

landings began to increase during a period of record high landings of rock crab (Figure 4), perhaps reflecting development of new markets. Three years of unprecedented high landings in the rock crab fishery were followed by decline in 2016 and 2017. Rock crab fishery participants have communicated that in an effort to improve poor rock crab catch, some in the fishery are setting traps in deeper water than is typical for rock crab, resulting in increased incidental box crab catch.

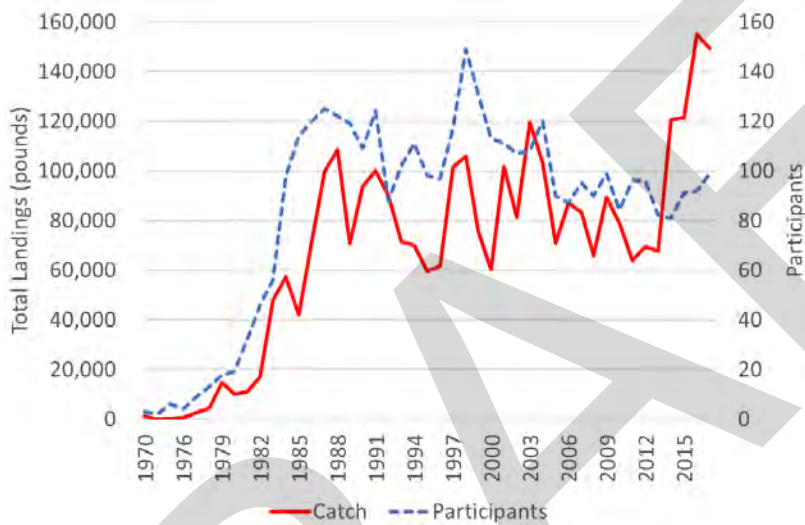


Figure 1. Total landings of non-Cancer crab (Brown box, California king, sheep, armed box) in pounds and number of individuals making landings (participants).

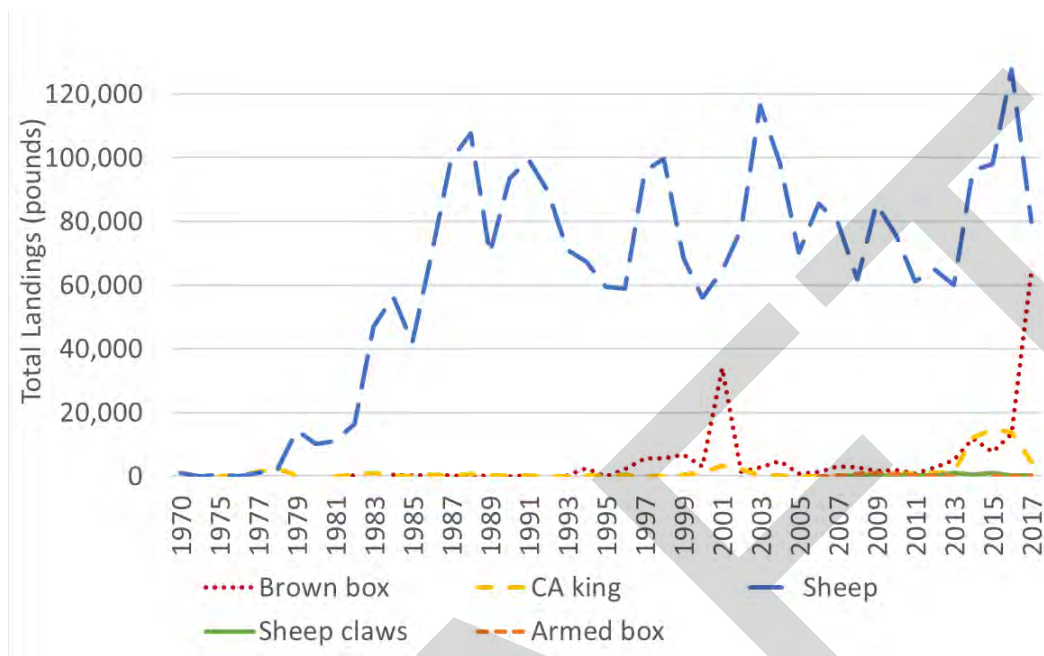


Figure 2. Non-Cancer crab landings by species (pounds).

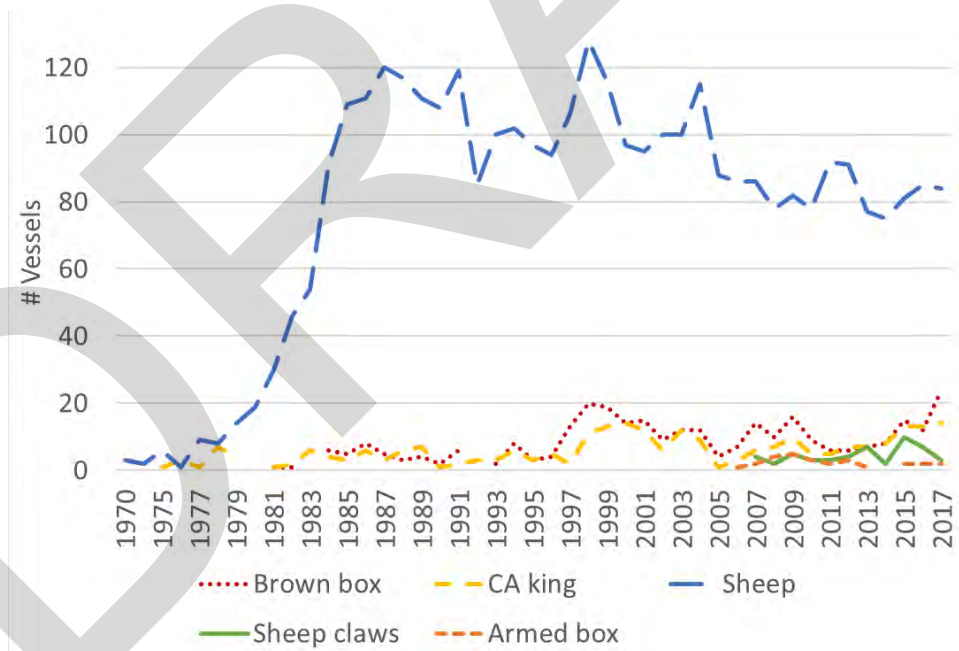


Figure 3. Number of vessels landing non-Cancer crabs by species.

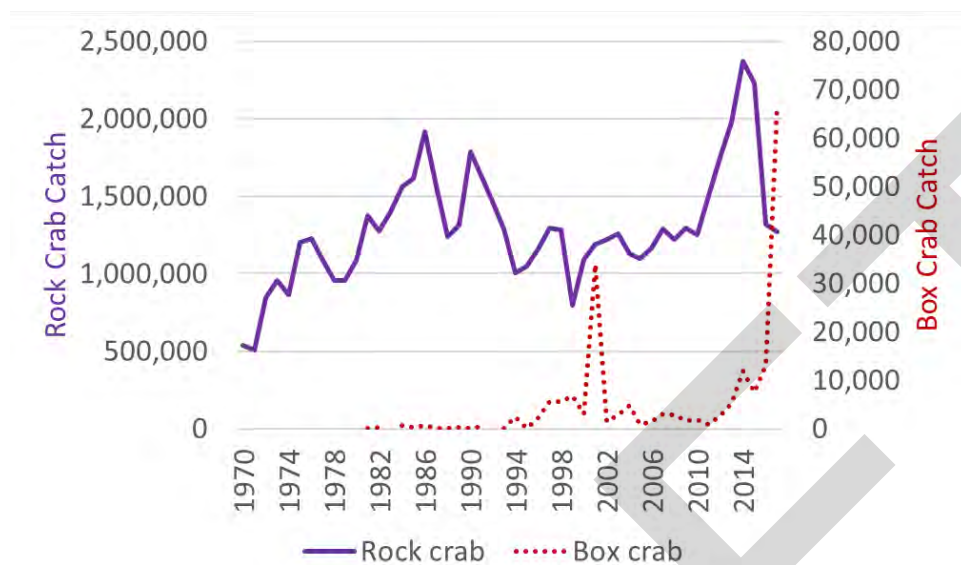


Figure 4. Total landings of rock crab and brown box crab (pounds).

Amend Section 126 and add Section 126.1

Proposed Changes

The proposed regulatory change would amend the existing Section 126, which currently applies to the commercial take of Tanner crab. The title of 126 would be changed to “Commercial Take of Crabs not in the Genus *Cancer* in Trap Gear.” Tanner crab (*Chioneocetes* spp.) are non-Cancer crabs, and existing regulations regarding this fishery would be shifted to new Section 126.1. The new Section 126 would contain the following subsections: (a) to define Cancer crabs, (b) to create landing limits for non-Cancer crabs taken incidental to other target species in trap gear, and (c) to require all crabs be landed prior to use as bait. Possession and landing of species in the Lithodidae family (box and king crabs) would be limited to no more than 25 pounds each. Additionally, when possessing or landing species in the Lithodidae family, an equal or greater amount of the target species (rock crab, lobster, or Dungeness crab) must also be possessed or landed. Sheep crab would be subject to a total allowable catch of 95,000 pounds annually.

Rationale

Catch of box and king crabs has increased in recent years and there is interest among fishermen in development of target fisheries. Little is known

about these species. Therefore, a conservative landing limit is proposed while the feasibility of a target fishery is explored through an EGP program. The limited information available on habitat, past harvest, and reproductive biology also suggests precautionary limits are appropriate. Limiting catch of sheep crab to levels similar to the status quo will allow the Department to improve management and prevent potential future runaway incidental take.

Box and king crabs inhabit relatively deep water and range from Alaska and Monterey, respectively, to at least as far south as the Mexican border. Box crab typically inhabit depths between 550-1600 feet in California (Wicksten 1982), while California king crab inhabits a narrower range within those depths. Experimental fisheries for box crab have been tested in British Columbia and California (reviewed in Zhang (1999)) and in Washington (Daniel Ayres, Washington Department of Fish and Wildlife, personal communication), but none of these efforts developed into a sustained and directed commercial fishery. A limited developmental fishery existed in Oregon until 2009, and presently box crab may only be landed incidentally to Dungeness crab. In Oregon, landings tend to be modest and are driven by the availability of Dungeness crab.

Research in British Columbia waters has shown that females produce larvae only every other year (Duguid and Page 2011). This reproductive schedule may relate to occupation of a relatively deep, low-nutrient habitat. Additionally, female box and king crabs do not store sperm packets from male crabs. In Brachyuran crabs, this ability allows females to mate opportunistically and use the sperm to fertilize her eggs when the eggs are fully developed. In contrast, female box and king crabs must molt, extrude eggs, and mate to fertilize the eggs within a short space of time, requiring that a sufficient density of male crabs is available to ensure mating success. For these reasons, box crab may not represent a good candidate for commercial exploitation and particularly not a male-only fishery. It is possible that the species exhibits an accelerated reproductive schedule in California waters, but the necessary research has not been conducted.

The average landing amount of box crab through 2012 was approximately 100 pounds (Figure 5). A retrospective analysis of total annual landings if a 25-pound limit had been in place dramatically reduces total catch and, therefore, represents a very conservative limit (Figure 5). Box crab are generally in depths that do not overlap with other target invertebrate trap fisheries (i.e. past landings may not have been truly incidental). If a 25-pound limit had been in place, many of these landings may not have occurred at all because this amount would not have compensated for the need to set gear in more remote locations. The addition of a requirement to possess or land an

equal or greater amount of the target species (rock crab, lobster or Dungeness crab) when possessing or landing Lithodid species (box or king crabs) is intended to clarify that take of Lithodid species is only to be incidental to these target species.

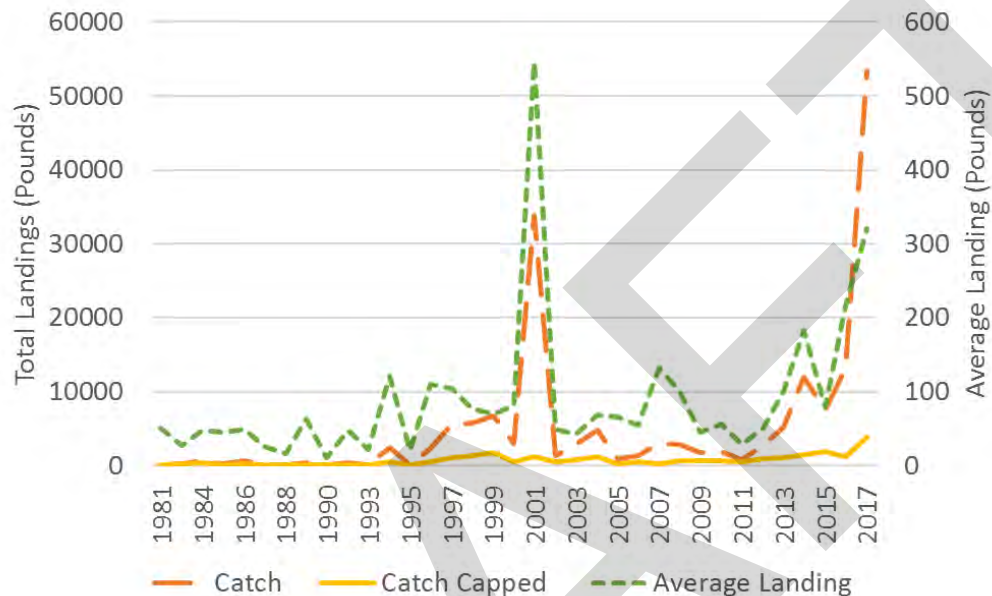


Figure 5. Total box crab catch (orange) and average landing amounts (green). Retrospective analysis of total box crab catch if a limit of 25 pounds per landing (yellow) had been in place.

The conservative limit for Lithodid crabs (box and king) is proposed for several reasons. The Department expects that the number of fishermen wishing to target box and king crab is likely to expand as new markets for the species have recently been developed and may expand further. Additionally, as noted above, little is known about the biology of these species, and organisms in these relatively deep-water habitats often exhibit slow growth and reproductive rates. Despite this, fisheries-independent trawl surveys conducted by NOAA to assess groundfish populations indicate there may be a high biomass of box crab off California that may support targeted take. Research associated with the EGP will be designed to improve biomass estimates and our understanding of life history characteristics. Maximizing allowable directed take of box crab through the EGP while remaining within a precautionary level will require maintaining low levels of incidental take. Following completion of EGP research, allowable targeted and incidental take may be revised.

A total allowable catch (TAC) for sheep crab is intended to allow for higher landings of this species, which may be of less conservation concern. While also only taken as an “incidental” species, relatively large and stable catch levels of sheep crab have been observed since the 1980s (Figure 2). The stability of the catch indicates this level of take may be sustainable, and the shallower habitat of the species may be conducive to greater productivity. Additionally, sheep and rock crab were previously harvested for a combined-species, claw-only market. While the exact poundage of whole sheep crab harvest that may be attributed to that fishery is unknown, it was likely substantial in the 1980s and did not result in reduced productivity for the whole crab market (Figure 2).

The recommended TAC of 95,000 pounds is intended to allow for continued sheep crab catch similar to current levels but to prevent uncontrolled growth. Department landing records show an annual average of approximately 83,000 pounds of sheep crab was landed from 2013 to 2017. A calendar year was chosen for tracking the TAC both for simplicity and because total landings by month are not highly variable but are slightly lower near the end of the year. In some cases, sheep crab are caught at sea and used as bait in finfish traps within the same trip. Sheep crab used in this manner is not required to be landed. Thus, the volume is not reflected in catch records. A 15 percent increase was added to the average landed catch as an estimate of un-landed catch, resulting in a TAC of 95,000 pounds. The 15 percent estimate of un-landed catch used in calculating the 95,000-pound TAC for sheep crab represents the best professional judgement of the department’s invertebrate fisheries staff, providing a reasonable initial metric for adaptive management that can be adjusted as more information becomes available. An accurate understanding of the total amount of sheep crab take will be necessary to implement the proposed TAC for sheep crab and for future efforts to assess and craft management measures for this, as well as all other non-Cancer crab species. Therefore, the Department is proposing a requirement for all non-Cancer crab to be brought ashore in the whole and recorded on landing receipts regardless of intended use. The proposed regulation would require individuals wishing to catch non-Cancer crabs for use as bait to return to port, land the crab, complete a landing receipt pursuant to subdivision 8047(a)(1), FGC, and then use the crab as bait on a subsequent trip. If desired, fishermen have the ability to issue a landing receipt to themselves pursuant to FGC Article 7 (commencing with section 8030) of Chapter 1. For enforcement purposes, fishermen would also be required to keep copies of landing receipts documenting the catch of crabs that are used as bait on the fishing vessel for a minimum of 30 days from the date of landing as listed on the landing receipt.

Amend Subsection 125.1(c)(3)

Proposed Regulations

The proposed regulatory change would amend subsection 125.1(c)(3), which details allowances for incidental take of other species when targeting rock crab. The incidental allowances would remain unchanged except for reference to the new subsection 126(b) specifying a limit on non-Cancer crabs.

Rationale

The addition of a reference to 126(b) is intended to provide clarity regarding non-Cancer crab incidental limits.

(b) Goals and Benefits of the Regulations

The Pacific Ocean and its rich marine living resources are of great environmental, economic, aesthetic, recreational, educational, scientific, nutritional, social, and historic importance to the people of California.

It is the policy of the state to ensure the conservation, sustainable use, and, where feasible, restoration of California's marine living resources for the benefit of all the citizens of the state. The objective of this policy include, but are not limited to, the following:

- Conserve the health and diversity of marine ecosystems and marine living resources.

- Allow and encourage only those activities and uses of marine living resources that are sustainable.

- Recognize the importance to the economy and the culture of California of sustainable sport and commercial fisheries and the development of commercial aquaculture consistent with the marine living resource conservation policies of this part.

The proposed regulation benefits the environment by prohibiting the overexploitation of several non-Cancer crab species before adequate management measures could be developed for dedicated targeted fisheries. The proposed regulation will also allow for development of an experimental gear permit program for box and king crab designed to conduct research on species biology and potential appropriate management measures.

(c) Authority and Reference Sections from Fish and Game Code for Regulation:

Authority: Sections 713, 1050, 5508, 7090, 7857, 8026 and 8282, Fish and Game Code.

Reference: Sections 1050, 1052, 5508, 7050, 7051, 7055, 7056, 7058, 7090, 7850, 7857, 7881, 8026, 8031, 8040, 8041, 8042, 8043, 8046, 8047, 8051, 8250.5, 8275, 8281, 8282, 8284, 8834, 9000, 9001, 9001.7, 9002, 9003, 9004, 9005, 9006, 9007, 9008 and 9011, Fish and Game Code.

(d) Specific Technology or Equipment Required by Regulatory Change:

None.

(e) Identification of Reports or Documents Supporting Regulation Change:

1. Duguid, W. D., & Page, L. R. (2011). Biennial reproduction with embryonic diapause in *Lopholithodes foraminatus* (Anomura: Lithodidae) from British Columbia waters. *Invertebrate Biology*, 130(1), 68-82.
2. Wicksten, M. K. 1982. Crustaceans from baited traps and gill nets off southern California. *Calif. Fish and Game* 68(4): 244-248.
3. Zhang, Z. Y., Workman, G. D., & Phillips, A. C. (1999). A review of the biology and fisheries of the box crab (*Lopholithodes foraminatus* Stimpson) in British Columbia. Fisheries & Oceans Canada, Canadian Stock Assessment Secretariat.
4. Memorandum, April 4, 2018, To: Valerie Termini, Executive Director of the Fish and Game Commission, From: Charlton H. Bonham, Director of the Department of Fish and Wildlife, Subject: Agenda Item for the June 20-21, 2018 Fish and Game Commission Meeting Re: Designation of the Harvest of Non-Cancer Crabs as an Emerging Fishery

(f) Public Discussions of Proposed Regulations Prior to Notice publication:

1. Fish and Game Commission, Marine Resource Committee meeting, November 9, 2017, Marina, CA
2. Meeting with crab and lobster fishery constituents, April 17, 2018, E.P. Foster Library, Ventura, CA

IV. Description of Reasonable Alternatives to Regulatory Action:

(a) Alternatives to Regulation Change:

Possession and landing limit for all non-Cancer species combined

A possession and landing limit for all non-Cancer species combined is a potential alternative to the proposed combination of a possession and landing limit for Lithodid species and a TAC for sheep crab. The Department initially proposed to constituents a 100-pound limit for all non-Cancer species combined and a more restrictive limit of 25 pounds for any Lithodid species within the 100 pounds. The larger limit was based on a long-term average landing amount of 80 pounds for sheep crab and was intended to allow for annual catch of sheep crab to continue within a range similar to previous observations. Crab fishermen noted that sheep crab landings are highly variable and a 100-pound limit may not allow for adequate range around the average which has a standard deviation of plus or minus 116 pounds. Additionally, the Department learned that individual landings amounts in the catch records do not accurately reflect catch amounts as they are brought to the dock. Rather, they may reflect subsets of the catch that are landed in small increments after being held in receivers. Therefore, the true, larger catch amount is obscured from the records. Based on this constituent feedback, the Department recommends a TAC as a less restrictive and more effective tool for maintaining similar annual catches and business practices for fishermen harvesting sheep crab.

No other alternatives were identified by or brought to the attention of Commission staff that would have the same desired regulatory effect.

(b) No Change Alternative

The recent increase in landings of king crab and box crab with little to no management measures in place for these species is potentially damaging to the resource. Limits on incidental take of other non-Cancer crabs are important to prevent future uncontrolled take with insufficient management measures and limited information on these species.

V. Mitigation Measures Required by Regulatory Action:

The proposed regulatory action is expected to have no negative impact on the environment; therefore, no mitigation measures are needed.

VI. Impact of Regulatory Action:

The potential for significant statewide adverse economic impacts that might result from the proposed regulatory action has been assessed, and the following initial determinations relative to the required statutory categories have been made:

(a) Significant Statewide Adverse Economic Impact Directly Affecting Businesses, Including the Ability of California Businesses to Compete with

Businesses in Other States:

The proposed action will not have a significant statewide adverse economic impact directly affecting business, including the ability of California businesses to compete with businesses in other states because the regulatory action will not increase compliance costs and will not substantially affect incidental take quantities.

- (b) Impact on the Creation or Elimination of Jobs Within the State, the Creation of New Businesses or the Elimination of Existing Businesses, or the Expansion of Businesses in California; Benefits of the Regulation to the Health and Welfare of California Residents, Worker Safety, and the State's Environment:

The Commission does not anticipate significant impacts on the creation or elimination of jobs within the state, or the creation of new businesses or the elimination of existing businesses or the expansion of businesses because the proposed action will not significantly increase or reduce incidental take quantities for non-Cancer crab.

The Commission anticipates benefits to the environment in the sustainable management of non-Cancer crab species.

The Commission does not anticipate any benefits to the health and welfare of California residents, or to worker safety.

- (c) Cost Impacts on a Representative Private Person or Business:

The proposed regulations may have adverse cost impacts to king and box crab harvest revenue for a few fishermen who have historically landed more than the proposed 25-pound limit

- (d) Costs or Savings to State Agencies or Costs/Savings in Federal Funding to the State: None.

- (e) Nondiscretionary Costs/Savings to Local Agencies: None.

- (f) Programs Mandated on Local Agencies or School Districts: None.

- (g) Costs Imposed on Any Local Agency or School District that is Required to be Reimbursed Under Part 7 (commencing with Section 17500) of Division 4, Government Code: None.

- (h) Effect on Housing Costs: None.

VII. Economic Impact Assessment:

For background, the commercial Dungeness crab and spiny lobster fisheries account for among the highest ex-vessel values in the state, together constituting over \$72.3 million on average for the last three years. Of the over 700 targeted fisheries permit holders for rock crab, lobster, and Dungeness crab, an average of 76 fishermen over the last ten years have been active in the incidental take of non-Cancer crab species. Of those 76 landing non-Cancer crab, a relatively stable average of 64 fishermen were landing sheep crab. In contrast, the number of fishermen landing king and especially box crab has grown from a ten-year average of 12 to the five-year average of 17 fishermen. The substantial increase in king and box crab landings has been accompanied by an interest among fishermen in their development as target fisheries.

Consideration of the management of these non-Cancer crab species has prompted the proposed possession and landing limits for box and king crabs and a TAC limit for sheep crab, the non-Cancer crab with the highest harvest quantities. The impact of the 95,000 pounds TAC for sheep crab is anticipated to be minimal as the limits fall well within the historical harvest quantities. (More detail on the TAC rationale is available in section III. Description of Regulatory Action.)

A relatively low 25-pound possession and landing limit for box and king crab is proposed while the feasibility of a target fishery is evaluated through an EGP program. The introduction of a 25-pound possession and landing limit for box and king crab may substantially reduce landings for some fishermen.

According to landing receipt data, commercial fishermen landed a five-year average (2013-17) of 104,635 pounds of all non-Cancer crab species with an ex-vessel value of \$189,448. Sheep crab landings, which during this time averaged about 66 percent of the total value, are not anticipated to drop in aggregate value with the proposed TAC limit. The other non-Cancer crab species have grown in the share of catch, especially since the 2017 spike in participation. The proposed 25-pound incidental catch limit is anticipated to bring the king and box crab aggregate ex-vessel landing values down to represent historic levels of incidental take in the target fisheries (see Figure 2. Non-Cancer crab landings by species, on p.3).

For a baseline, the economic impact of the five-year average catch by each non-Cancer crab species is shown in Table 1. Over this 5-year period, non-Cancer crab has contributed annually about \$381,036 in total economic output (direct, indirect, and induced impacts) to the state economy. The harvest of non-Cancer crab species has also contributed about \$65,313 in employee compensation, supporting about 1.6 jobs.

Table 1. Average Annual Economic Impact of Non-Cancer Crab Landings (2013-2017)

Non-Cancer Crab Species	Actual Ex-Vessel Value	Non-Cancer Crab Employment	Employee Compensation	Total Economic Output
Sheep Crab	\$ 109,104	0.9	\$ 37,615	\$ 219,442
Box Crab	\$ 70,152	0.6	\$ 24,185	\$ 141,096
CA King Crab	\$ 10,191	0.1	\$ 3,514	\$ 20,498
CA State Non-Cancer Crab Total	\$ 189,448	1.6	\$ 65,313	\$ 381,036

The proposed sheep crab TAC is estimated to have little change on sheep crab harvest values. However, box and king crab declines are anticipated with the proposed 25-pound possession and landing limits, which could result in an estimated market-wide \$64,425 drop in ex-vessel value for box crab and a \$6,652 drop for king crab as shown in Table 2.

Table 2. Estimated Ex-Vessel Values for Box and King Crab with the Proposed 25-Pound Possession and Landing Limits.

Historical Ex-Vessel Values			Estimated Ex-Vessel Values with Proposed 25 lb Limit	
Year	Box Crab	King Crab	Box	King
2013	\$ 9,404	\$ 3,045	\$ 1,055	\$ 1,139
2014	\$ 26,787	\$ 995	\$ 2,152	\$ 533
2015	\$ 30,606	\$ 4,013	\$ 4,095	\$ 1,240
2016	\$ 92,818	\$ 15,577	\$ 5,425	\$ 6,004
2017	\$ 191,145	\$ 27,327	\$ 15,907	\$ 8,780
5-Year Average	\$ 70,152	\$ 10,191	\$ 5,727	\$ 3,539
Difference with proposed regulatory action			\$ (64,425)	\$ (6,652)

The estimated ex-vessel values with the proposed 25-pound limit are derived from actual historical landings data. The annual ex-vessel value for each year was adjusted by reducing the value from individual landings that exceeded 25 pounds.

In the absence of this harvest value circulating throughout the economy, total

economic output could decline by about \$142,958, which could reduce support for about 0.6 jobs. However, the total economic output estimates are derived with a static linear model that does not include adaptation to change.

Notably, an experimental gear permit (EGP) is being developed concurrently with this rulemaking. The EGP will explore the feasibility of a targeted fishery for box crab in which participating fishermen would not be subject to the 25-pound limit. As fishermen adapt to the new regulations, some may feel 25 pounds is not worth pursuing. Those with permits to target box crab through the EGP could have access to higher harvest quantities under the proposed program, potentially resulting in an increase in total landings beyond those seen in 2017. Catch limits during the EGP program will be adaptive to research findings. If the EGP is successful, the overall ex-vessel value for box crab may actually increase under this program and if findings lead to a recommendation of development of a new fishery, access to box crab permits may become more broadly available.

(a) Effects of the Regulation on the Creation or Elimination of Jobs Within the State:

The Commission anticipates minimal negative impacts on the creation or elimination of jobs within the state because the proposed action is not likely to have substantial widespread reductions in incidental take quantities for king and box crab species, and sheep crab incidental take is anticipated to be relatively unchanged.

(b) Effects of the Regulation on the Creation of New Businesses or the Elimination of Existing Businesses Within the State:

The Commission anticipates no significant impacts on the creation of new businesses or the elimination of existing businesses within the state because the proposed action is not likely to substantially change incidental take quantities enough to stimulate the creation or elimination of businesses.

(c) Effects of the Regulation on the Expansion of Businesses Currently Doing Business Within the State:

The Commission anticipates no significant impacts on the expansion of businesses within the state because the proposed action is not likely to substantially change incidental take quantities.

(d) Benefits of the Regulation to the Health and Welfare of California Residents:

The Commission does not anticipate any benefits to the health and welfare of California residents.

(e) Benefits of the Regulation to Worker Safety:

The Commission does not anticipate any impacts worker safety.

(f) Benefits of the Regulation to the State's Environment:

The Commission anticipates benefits to the State's environment. The proposed regulation benefits the environment by prohibiting the overexploitation of several non-Cancer crab species before adequate management measures could be developed for dedicated targeted fisheries. The proposed regulation will also allow for development of an experimental gear permit program for box and king crab designed to conduct research on species biology and potential appropriate management measures.

Informative Digest/Policy Statement Overview

Summary of the Proposed Amendments

Under current law, commercial fishermen, with a Dungeness crab, rock crab or lobster permit, may incidentally take unlimited amounts of crabs not of the genus *Cancer* (non-Cancer crabs) when targeting Dungeness crab, rock crab, and lobster, with no limit on amount. Laws that specifically allow the incidental take of crab include subdivision 8284(c), Fish and Game Code (FGC), and subsection 125.1(c), Title 14, California Code of Regulations (CCR), which allow the take of non-Cancer crabs when targeting rock crab. Similarly, non-Cancer crabs may be taken incidentally in the lobster (subdivision 8250.5(b), FGC) and Dungeness crab (subdivision 8284(a), FGC) fisheries. The FGC provides a general definition of bycatch (incidental take) that does not give guidance on acceptable amounts (Section 90.5, FGC), but FGC and CCR sections on specific species and gear types do specify rules for retaining non-target species in some cases.

The proposed changes would amend the existing Section 126, which currently applies to the commercial take of Tanner crab. The title of 126 would be changed to “Commercial Take of Crabs not in the Genus *Cancer* in Trap Gear.” Tanner crab (*Chioneocetes* spp.) are non-Cancer crabs, and existing regulations regarding this fishery would be shifted to new Section 126.1. The new Section 126 would provide a definition of crabs of the genus *Cancer* and institute limits to allowable incidental take of non-Cancer crabs when participating in other target invertebrate trap fisheries. Species in the family Lithodidae (box and king crabs) would be subject to a 25-pound possession and landing limit, while the sheep (spider) crab would be subject to a total allowable catch of 95,000 pounds. When possessing or landing species in the Lithodidae family, an equal or greater amount of the target species (rock crab, lobster, or Dungeness crab) must also be possessed or landed. Additionally, a requirement to bring non-Cancer crab, in the whole, ashore to be recorded on a landing receipt would be added.

The proposed regulatory change would amend subsection 125.1(c)(3), which details allowances for incidental take of other species when targeting rock crab. The incidental allowances would remain unchanged except for reference to the new subsection 126(b) specifying a limit on non-Cancer crabs.

Benefit of the Regulation

The proposed regulation will benefit the environment in the sustainable management of non-Cancer crab species by prohibiting the overexploitation of several non-Cancer crab species before adequate management measures could be developed for dedicated targeted fisheries. The proposed regulation will also allow for development of an experimental gear permit program for box and king crab designed to conduct research on species biology and potential appropriate management measures.

The proposed regulations are neither inconsistent nor incompatible with existing State regulations. Statutes and regulations specifically allow the incidental take of crab other

than the genus *Cancer* in commercial fisheries for rock crab (subdivision 8284(c), FGC, and subsection 125.1(c), Title 14, CCR), spiny lobster (subdivision 8250.5(b), FGC), and Dungeness crab (subdivision 8284(a), FGC). The Legislature has delegated authority to the Commission to regulate fisheries that the Director of the California Department of Fish and Wildlife determines are emerging fisheries (Fish and Game Code, Section 7090) as well as the power to regulate the commercial spiny lobster and rock crab trap fisheries (Fish and Game Code Section 8254 and 8282).

Regulatory Language

Section 125.1, Title 14, CCR, is amended to read:

§ 125.1 Commercial Take of Rock Crab; Size Limit; Use of Rock Crab as Bait; Incidental Take Provisions

... *[No changes to subsections (a)-(b)]*

(c) Incidental take. Only the following species may be taken incidentally in rock crab traps being used to take rock crab under authority of a permit issued pursuant to Section 125. All other invertebrates and finfish shall be immediately released to the water.

(1) Kellet's whelk.

(2) Octopus.

(3) Crabs, other than the genus *Cancer*, subject to limits provided in subsection 126 (b).

... *[No changes to subsection (d)]*

Note: Authority cited: Section 8282, Fish and Game Code.

Reference: Sections 8043, 8047, 8250.5, 8275, 8281, 8284, 9001.7 and 9011, Fish and Game Code.

Section 126, Title 14, CCR, is amended to read and add Section 126.1:

§ 126. Commercial Take of Crabs not in the Genus *Cancer* in Trap Gear.

(a) For the purpose of this section, crabs in the genus *Cancer* include Dungeness and rock crab as defined in Fish and Game Code subdivisions 8275(a) and (c).

(b) Incidental take of crabs not listed in subsection (a) is allowed in rock crab, Dungeness crab, and California spiny lobster trap fisheries as follows:

(1) No more than 25 pounds of each crab species in the Lithodidae family (box crab and king crab) may be possessed onboard a vessel, retained or landed at any time. The amount of Lithodidae species possessed onboard a vessel, retained or landed shall not exceed the amount of rock crab, spiny lobster, or Dungeness crab that are legally possessed onboard the vessel, retained or landed at any time.

(2) Crabs in the genus *Chionectes* (Tanner crab) may not be taken except under the authority of a Tanner Crab Trap Vessel Permit.

(3) The total allowable catch of sheep crab (spider crab, *Loxorhynchus grandis*) is 95,000 pounds landed during a calendar year. The department will close the fishery at the time that the catch limit is reached, or is projected to be reached, prior to the end of the calendar year. The department shall give no less than 10 days notice to any individual who has landed sheep crab within the previous five years and post notice of closure on the department's website. The department shall give the public and the commission no less than 10 days notice of the closure via a department news release.

(c) Pursuant to Fish and Game Code Section 9001.7, crabs not in the genus Cancer may be used as bait in finfish traps. All crab shall be brought ashore and accounted for on a landing receipt pursuant to Fish and Game Code Sections 8043 and 8047 prior to being used as bait as follows:

(1) The total pounds of each species to be used as bait from each landing shall be recorded by writing the species common name and pounds within the rows provided and noting "bait use" in the space for price.

(2) Crab used as bait in finfish traps shall be documented on board the vessel by a copy of the landing receipt pursuant to Fish and Game Code Sections 8043 and 8047 demonstrating that the crab to be used as bait has been landed prior to being used as bait. Copies of all landing receipts which document the catch of crabs that are used as bait shall be kept onboard the fishing vessel for a minimum period of 30 calendar days from the date of landing as listed on the landing receipt.

Note: Authority Cited: Section 7090, Fish and Game Code.

Reference: Section 7090, Fish and Game Code.

§ ~~126~~126.1 Commercial Take of Tanner Crab

... [No changes to subsections (a)-(f)]

Note: Authority cited: Sections 713, 1050, 5508, 7090, 7857, 8026 and 8282, Fish and Game Code.

Reference: Sections 1050, 1052, 5508, 7050, 7051, 7055, 7056, 7058, 7850, 7857, 7881, 8026, 8031, 8040, 8041, 8042, 8043, 8046, 8051, 8250.5, 8282, 8284, 8834, 9000, 9001, 9002, 9003, 9004, 9005, 9006, 9007, 9008 and 9011, Fish and Game Code.

Notice of Exemption

Appendix E

To: Office of Planning and Research
P.O. Box 3044, Room 113
Sacramento, CA 95812-3044

County Clerk

County of: N/A

From: (Public Agency): CA Fish and Game Commission
1416 Ninth Street, Suite 1320
Sacramento, CA 95814

(Address)

Project Title: Specifying Incidental Take Allowances for Crabs other than the Genus Cancer

Project Applicant: California Department of Fish and Wildlife

Project Location - Specific:
Statewide

Project Location - City: N/A

Project Location - County: N/A

Description of Nature, Purpose and Beneficiaries of Project:

The proposed project would restrict the incidental take of non-Cancer crabs in the commercial invertebrate trap fisheries. In particular, it would establish a trip limit for king crab and box crab, an annual total allowable catch for sheep crab, and a reporting requirement for the incidental take of non-Cancer crabs.

Name of Public Agency Approving Project: California Fish and Game Commission

Name of Person or Agency Carrying Out Project: California Department of Fish and Wildlife

Exempt Status: (check one):

- ☐ Ministerial (Sec. 21080(b)(1); 15268);
- ☐ Declared Emergency (Sec. 21080(b)(3); 15269(a));
- ☐ Emergency Project (Sec. 21080(b)(4); 15269(b)(c));
- ☒ Categorical Exemption. State type and section number: Cat 7 & 8; 14 CCR 15307 & 15308
- ☐ Statutory Exemptions. State code number: _____

Reasons why project is exempt:

The proposed project would reduce the risk of overexploiting non-Cancer crabs and promote sustainable fisheries for these species.

Lead Agency

Contact Person: Valerie Termini

Area Code/Telephone/Extension: (916) 653-4899

If filed by applicant:

1. Attach certified document of exemption finding.
2. Has a Notice of Exemption been filed by the public agency approving the project? ☐ Yes ☐ No

Signature: _____ Date: _____ Title: Executive Director

☒ Signed by Lead Agency ☐ Signed by Applicant

Authority cited: Sections 21083 and 21110, Public Resources Code.
Reference: Sections 21108, 21152, and 21152.1, Public Resources Code.

Date Received for filing at OPR: _____

October 17, 2018

ATTACHMENT TO NOTICE OF EXEMPTION
Specifying Incidental Take Allowances for Crabs other than the Genus Cancer

The California Fish and Game Commission (Commission) has taken final action under the Fish and Game Code and the Administrative Procedure Act with respect to the proposed rulemaking on October 17, 2018. On June 20, 2018, the Commission authorized notice of its intent to amend subsections 125.1(c)(3) and 126, Title 14, California Code of Regulations (CCR) and add new Section 126.1, to establish restrictions on incidental non-Cancer crab take in invertebrate trap fisheries. The Commission then held a discussion hearing on August 22, 2018, and adopted the proposed rulemaking on October 17, 2018.

Categorical Exemptions to Protect Natural Resources

In compliance with the California Environmental Quality Act (CEQA; Public Resources Code Section 21000 et seq.), the Commission adopted regulations pertaining to the incidental take of crabs not in the genus Cancer (non-Cancer crab) relying on the categorical exemptions contained in CEQA Guidelines Sections 15307 (Action by Regulatory Agencies for Protection of Natural Resources). The exemption applies to agency actions to protect natural resources.

In recent years, the California Department of Fish and Wildlife (Department) has documented increasing landings of non-Cancer crab, which may be harvested incidentally to other target invertebrate trap fisheries. As prescribed by the Marine Life Management Act (Sections 7050 et seq., Fish and Game Code), the Department is obligated to sustainably manage the state's living marine resources. Therefore, as the landings of incidentally caught species rise to become emerging fisheries, the Department is obligated to collect the necessary information and recommend appropriate regulations to the Commission (Section 7090, Fish and Game Code). Thus, proposed precautionary catch limits for all non-Cancer crab species was adopted to reduce the risk of overexploitation while subsequent research to inform appropriate future management measures can be conducted as resources allow and prioritized by degree of conservation or management concern.

The above-described action is undertaken to ensure the sustainability of the species and fisheries and reduce the risk of environmental impacts from a potentially unrestricted fishery. The Commission has determined that there are neither significant cumulative impacts of successive projects of the same type in the same place, nor is there a reasonable possibility the proposed action will have a significant effect on the environment due to unusual circumstances. Accordingly, the Commission concludes that the proposed action is properly subject to the CEQA Class 7 categorical exemption.

Commercial Non-Cancer Crab Incidental Landing Limits



**Dr. Julia Coates, Marine Region, Environmental Scientist
Fish & Game Commission Meeting, Sacramento, June 20, 2018**

Issue history

- Landings increases began 2014
- Experimental gear permit requests began June 2017
- Marine Resource Committee discussion November 2017
- Commission directed Department to develop rulemaking package December 2017
- Survey and constituent meeting April 2018



Species tracked

- Brown box crab
- California king crab
- Sheep/spider crab
- Armed box crab



Ron Hemberger



Kevin Lee



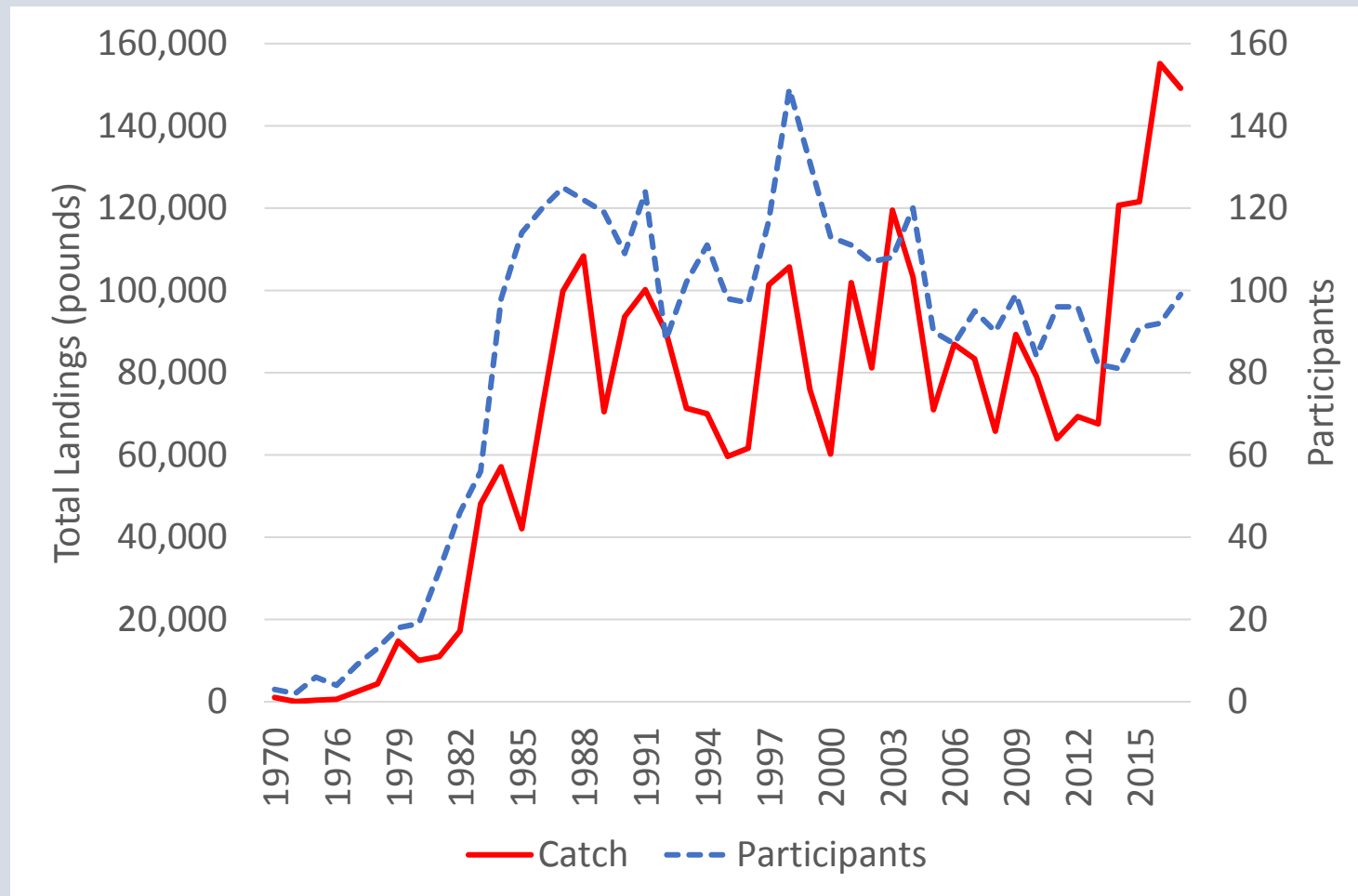
Regulatory status

- Incidental take of non-Cancer crabs expressly permitted
 - Dungeness - FGC 8284(a)
 - Rock crab – FGC 8284(c), CCR 125.1(c)
 - Lobster – FGC 8250.5(b)
 - Trawl (N of Pt Reyes) – FGC 8834.5
- No limit on amount by trap

FGC = Fish and Game Code sections CCR = subsection of Title 14, CA Code of Regulations



All non-Cancer crabs



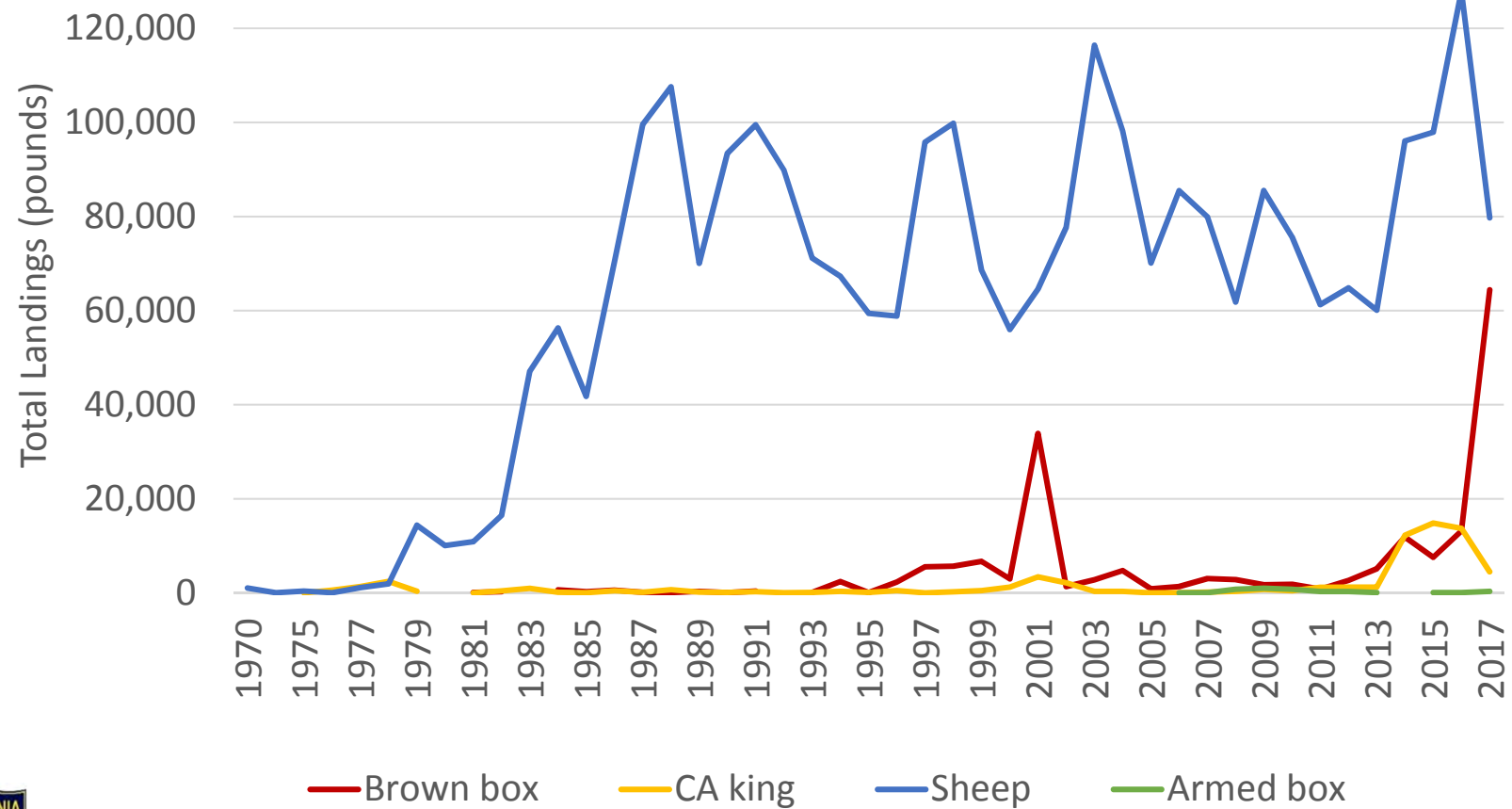
Emerging fishery designation

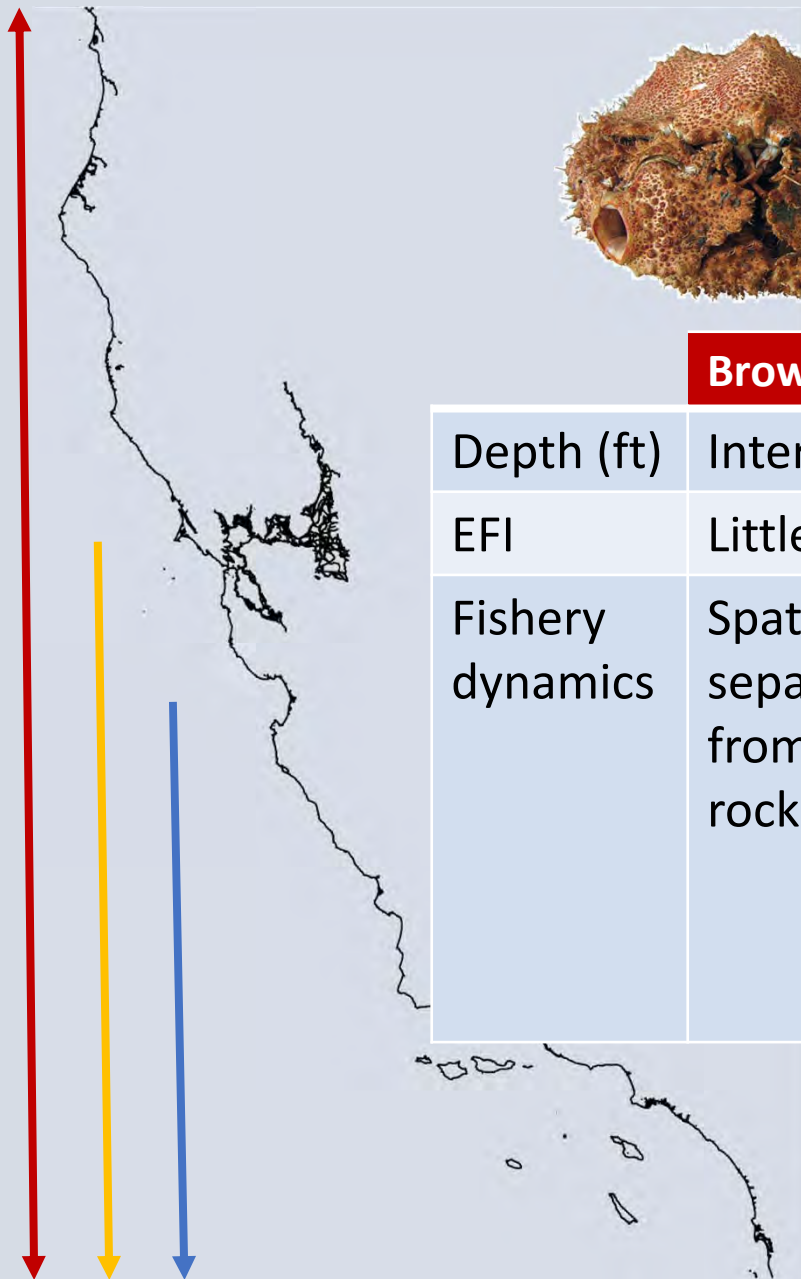
- CDFW Director designation submitted to Commission April 2018
- Commission authority to adopt management measures
- CDFW recommendations
 - Precautionary limits
 - Research & information gathering with experimental gear permits
 - Develop target fisheries or revise limits as appropriate



Derek Stein, CDFW

Landings by species





	Brown Box	CA King	Sheep
Depth (ft)	Intertidal-1800	500-1000	30-400
EFI	Little - None	Little - None	Medium - Little
Fishery dynamics	Spatial separation from lobster & rock crab	Spatial separation from lobster & rock crab	No spatial separation from lobster & rock crab, current levels likely sustainable, nearshore bait

Proposed new rules

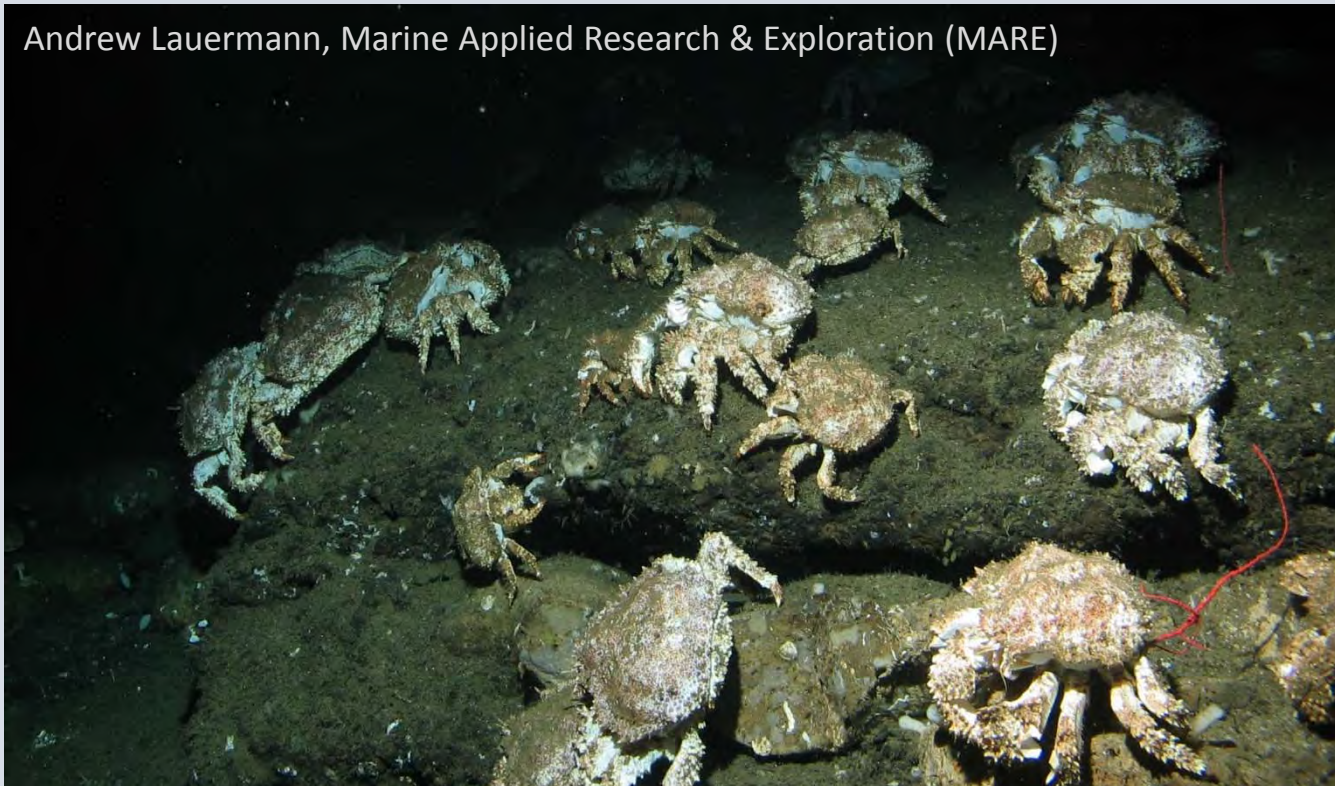
- Family Lithodidae (box and king)
 - Possession and landing limit 25 pounds
- Sheep/spider crab
 - Total allowable catch 95,000 pounds
- Requirement to land crab before use as bait
- New section 126 for non-Cancer crabs in trap



Experimental gear permit for box crab

- Potential underutilized resource
- Requests in October 2018

Andrew Lauermann, Marine Applied Research & Exploration (MARE)



Summary

- Notice hearing today
- Discussion & possible adoption, October 2018, Fresno
- Send comments to Commission by email (fgc@fgc.ca.gov) or mail
- Experimental gear permit requests October or December 2018



Julia.Coates@wildlife.ca.gov



Derek Stein, CDFW

**ECONOMIC AND FISCAL IMPACT STATEMENT
(REGULATIONS AND ORDERS)**

STD. 399 (REV. 12/2013)

Instructions and Code Citations:

SAM Section 6601-6616**ECONOMIC IMPACT STATEMENT**

DEPARTMENT NAME Fish and Game Commission	CONTACT PERSON Margaret Duncan, Economist	EMAIL ADDRESS @wildlife.ca.gov	TELEPHONE NUMBER 916-653-4676
DESCRIPTIVE TITLE FROM NOTICE REGISTER OR FORM 400 Amend §125.1 and §126 and Add §126.1; Title 14 CCR, Re: Incidental Take Allowances for Crab			NOTICE FILE NUMBER Z

A. ESTIMATED PRIVATE SECTOR COST IMPACTS *Include calculations and assumptions in the rulemaking record.*

1. Check the appropriate box(es) below to indicate whether this regulation:

- | | |
|--|---|
| <input checked="" type="checkbox"/> a. Impacts business and/or employees | <input type="checkbox"/> e. Imposes reporting requirements |
| <input checked="" type="checkbox"/> b. Impacts small businesses | <input type="checkbox"/> f. Imposes prescriptive instead of performance |
| <input type="checkbox"/> c. Impacts jobs or occupations | <input type="checkbox"/> g. Impacts individuals |
| <input type="checkbox"/> d. Impacts California competitiveness | <input type="checkbox"/> h. None of the above (Explain below): |

*If any box in Items 1 a through g is checked, complete this Economic Impact Statement.
If box in Item 1.h. is checked, complete the Fiscal Impact Statement as appropriate.*

2. The Fish and Game Commission (FGC) estimates that the economic impact of this regulation (which includes the fiscal impact) is:
(Agency/Department)

- ☒ Below \$10 million
☐ Between \$10 and \$25 million
☐ Between \$25 and \$50 million
☐ Over \$50 million *[If the economic impact is over \$50 million, agencies are required to submit a Standardized Regulatory Impact Assessment as specified in Government Code Section 11346.3(c)]*

3. Enter the total number of businesses impacted: 76Describe the types of businesses (Include nonprofits): Commercial crab and lobster fishing businessesEnter the number or percentage of total businesses impacted that are small businesses: 100%4. Enter the number of businesses that will be created: none anticipated eliminated: none anticipatedExplain: Any reduction in harvest is not widespread enough to significantly impact commercial crab fishing activity.

5. Indicate the geographic extent of impacts: ☐ Statewide
☒ Local or regional (List areas): California marine region

6. Enter the number of jobs created: 0 and eliminated: 0 - 0.6Describe the types of jobs or occupations impacted: Crab boat crew

7. Will the regulation affect the ability of California businesses to compete with other states by making it more costly to produce goods or services here? ☐ YES ☒ NO

If YES, explain briefly:

**ECONOMIC AND FISCAL IMPACT STATEMENT
(REGULATIONS AND ORDERS)**

STD. 399 (REV. 12/2013)

ECONOMIC IMPACT STATEMENT (CONTINUED)**B. ESTIMATED COSTS** *Include calculations and assumptions in the rulemaking record.*

1. What are the total statewide dollar costs that businesses and individuals may incur to comply with this regulation over its lifetime? \$ 0
- a. Initial costs for a small business: \$ N/A Annual ongoing costs: \$ N/A Years: _____
- b. Initial costs for a typical business: \$ N/A Annual ongoing costs: \$ N/A Years: _____
- c. Initial costs for an individual: \$ N/A Annual ongoing costs: \$ N/A Years: _____
- d. Describe other economic costs that may occur: This regulatory action does not introduce any new compliance costs.

2. If multiple industries are impacted, enter the share of total costs for each industry: N/A

3. If the regulation imposes reporting requirements, enter the annual costs a typical business may incur to comply with these requirements. *Include the dollar costs to do programming, record keeping, reporting, and other paperwork, whether or not the paperwork must be submitted.* \$ _____

4. Will this regulation directly impact housing costs? ☐ YES ☒ NO
- If YES, enter the annual dollar cost per housing unit: \$ _____
- Number of units: _____

5. Are there comparable Federal regulations? ☐ YES ☒ NO
- Explain the need for State regulation given the existence or absence of Federal regulations: Legislature mandates resource mgt. with FGC authority
- Enter any additional costs to businesses and/or individuals that may be due to State - Federal differences: \$ N/A

C. ESTIMATED BENEFITS *Estimation of the dollar value of benefits is not specifically required by rulemaking law, but encouraged.*

1. Briefly summarize the benefits of the regulation, which may include among others, the health and welfare of California residents, worker safety and the State's environment: Benefits will accrue to fishermen, processors, and the State's economy in the form of a healthy environment, and maintaining sustainable non-cancer crab resources.

2. Are the benefits the result of: ☐ specific statutory requirements, or ☒ goals developed by the agency based on broad statutory authority?
- Explain: CA legislature mandates sustainable resource mgt. & provides the FGC authority to implement regulations toward that end.

3. What are the total statewide benefits from this regulation over its lifetime? \$ sustainable crab fisheries

4. Briefly describe any expansion of businesses currently doing business within the State of California that would result from this regulation: No expansion of businesses currently doing business is anticipated because this regulatory action pertains to allowances for incidental take, not targeted take.

D. ALTERNATIVES TO THE REGULATION *Include calculations and assumptions in the rulemaking record. Estimation of the dollar value of benefits is not specifically required by rulemaking law, but encouraged.*

1. List alternatives considered and describe them below. If no alternatives were considered, explain why not: 1) Same possession and landing limit for all non-cancer crab species.
- 2) No Change or no limits on incidental take may damage marine resources and the fisheries dependent upon them.

**ECONOMIC AND FISCAL IMPACT STATEMENT
(REGULATIONS AND ORDERS)**

STD. 399 (REV. 12/2013)

Instructions and Code Citations:

SAM Section 6601-6616**ECONOMIC IMPACT STATEMENT (CONTINUED)**

2. Summarize the total statewide costs and benefits from this regulation and each alternative considered:

Regulation: Benefit: \$ sustainability* Cost: \$ 71,077Alternative 1: Benefit: \$ sustainability* Cost: \$ 107,445Alternative 2: Benefit: \$ 0 Cost: \$ overfish risk3. Briefly discuss any quantification issues that are relevant to a comparison of estimated costs and benefits for this regulation or alternatives: *The short-term landings limits are intended to allow for moreresearch to develop an experimental gear program to then establish a new targeted fishery. See attachment.4. Rulemaking law requires agencies to consider performance standards as an alternative, if a regulation mandates the use of specific technologies or equipment, or prescribes specific actions or procedures. Were performance standards considered to lower compliance costs? ☐ YES ☒ NO

Explain: _____

E. MAJOR REGULATIONS *Include calculations and assumptions in the rulemaking record.**California Environmental Protection Agency (Cal/EPA) boards, offices and departments are required to submit the following (per Health and Safety Code section 57005). Otherwise, skip to E4.*1. Will the estimated costs of this regulation to California business enterprises exceed \$10 million? ☐ YES ☒ NO*If YES, complete E2. and E3**If NO, skip to E4*

2. Briefly describe each alternative, or combination of alternatives, for which a cost-effectiveness analysis was performed:

Alternative 1: _____

Alternative 2: _____

(Attach additional pages for other alternatives)

3. For the regulation, and each alternative just described, enter the estimated total cost and overall cost-effectiveness ratio:

Regulation: Total Cost \$ _____ Cost-effectiveness ratio: \$ _____

Alternative 1: Total Cost \$ _____ Cost-effectiveness ratio: \$ _____

Alternative 2: Total Cost \$ _____ Cost-effectiveness ratio: \$ _____

4. Will the regulation subject to OAL review have an estimated economic impact to business enterprises and individuals located in or doing business in California exceeding \$50 million in any 12-month period between the date the major regulation is estimated to be filed with the Secretary of State through 12 months after the major regulation is estimated to be fully implemented?

☐ YES ☒ NO*If YES, agencies are required to submit a Standardized Regulatory Impact Assessment (SRIA) as specified in Government Code Section 11346.3(c) and to include the SRIA in the Initial Statement of Reasons.*

5. Briefly describe the following:

The increase or decrease of investment in the State: _____

The incentive for innovation in products, materials or processes: _____

The benefits of the regulations, including, but not limited to, benefits to the health, safety, and welfare of California residents, worker safety, and the state's environment and quality of life, among any other benefits identified by the agency: _____

**ECONOMIC AND FISCAL IMPACT STATEMENT
(REGULATIONS AND ORDERS)**

STD. 399 (REV. 12/2013)

FISCAL IMPACT STATEMENT**A. FISCAL EFFECT ON LOCAL GOVERNMENT** *Indicate appropriate boxes 1 through 6 and attach calculations and assumptions of fiscal impact for the current year and two subsequent Fiscal Years.*

- ☐ 1. Additional expenditures in the current State Fiscal Year which are reimbursable by the State. (Approximate)
(Pursuant to Section 6 of Article XIII B of the California Constitution and Sections 17500 et seq. of the Government Code).

\$ _____

- ☐ a. Funding provided in _____

Budget Act of _____ or Chapter _____, Statutes of _____

- ☐ b. Funding will be requested in the Governor's Budget Act of _____

Fiscal Year: _____

- ☐ 2. Additional expenditures in the current State Fiscal Year which are NOT reimbursable by the State. (Approximate)
(Pursuant to Section 6 of Article XIII B of the California Constitution and Sections 17500 et seq. of the Government Code).

\$ _____

Check reason(s) this regulation is not reimbursable and provide the appropriate information:

- ☐ a. Implements the Federal mandate contained in _____

- ☐ b. Implements the court mandate set forth by the _____ Court.

Case of: _____ vs. _____

- ☐ c. Implements a mandate of the people of this State expressed in their approval of Proposition No. _____

Date of Election: _____

- ☐ d. Issued only in response to a specific request from affected local entity(s).

Local entity(s) affected: _____

- ☐ e. Will be fully financed from the fees, revenue, etc. from: _____

Authorized by Section: _____ of the _____ Code;

- ☐ f. Provides for savings to each affected unit of local government which will, at a minimum, offset any additional costs to each;

- ☐ g. Creates, eliminates, or changes the penalty for a new crime or infraction contained in _____

- ☐ 3. Annual Savings. (approximate)

\$ _____

- ☐ 4. No additional costs or savings. This regulation makes only technical, non-substantive or clarifying changes to current law regulations.

- ☒ 5. No fiscal impact exists. This regulation does not affect any local entity or program.

- ☐ 6. Other. Explain _____

**ECONOMIC AND FISCAL IMPACT STATEMENT
(REGULATIONS AND ORDERS)**

STD. 399 (REV. 12/2013)

Instructions and Code Citations:

SAM Section 6601-6616**FISCAL IMPACT STATEMENT (CONTINUED)****B. FISCAL EFFECT ON STATE GOVERNMENT** *Indicate appropriate boxes 1 through 4 and attach calculations and assumptions of fiscal impact for the current year and two subsequent Fiscal Years.*☐ 1. Additional expenditures in the current State Fiscal Year. (Approximate)

\$ _____

It is anticipated that State agencies will:☐ a. Absorb these additional costs within their existing budgets and resources.☐ b. Increase the currently authorized budget level for the _____ Fiscal Year☐ 2. Savings in the current State Fiscal Year. (Approximate)

\$ _____

☒ 3. No fiscal impact exists. This regulation does not affect any State agency or program.☐ 4. Other. Explain _____**C. FISCAL EFFECT ON FEDERAL FUNDING OF STATE PROGRAMS** *Indicate appropriate boxes 1 through 4 and attach calculations and assumptions of fiscal impact for the current year and two subsequent Fiscal Years.*☐ 1. Additional expenditures in the current State Fiscal Year. (Approximate)

\$ _____

☐ 2. Savings in the current State Fiscal Year. (Approximate)

\$ _____

☒ 3. No fiscal impact exists. This regulation does not affect any federally funded State agency or program.☐ 4. Other. Explain _____

FISCAL OFFICER SIGNATURE



DATE

5/22/18

The signature attests that the agency has completed the STD. 399 according to the instructions in SAM sections 6601-6616, and understands the impacts of the proposed rulemaking. State boards, offices, or departments not under an Agency Secretary must have the form signed by the highest ranking official in the organization.

AGENCY SECRETARY



DATE

Finance approval and signature is required when SAM sections 6601-6616 require completion of Fiscal Impact Statement in the STD. 399.

DEPARTMENT OF FINANCE PROGRAM BUDGET MANAGER



DATE

California Fish and Game Commission

Attachment to Std. 399 Economic and Fiscal Impact Statement for Commercial Non-cancer Crab Incidental Take in Trap Fisheries

Economic Impact Statement

Section D. Alternatives to the Regulation

2. Summarize the total statewide costs and benefits from this regulation and each alternative considered.

Regulation cost of \$71,077: These are *potential* cost impacts on individuals or businesses; these are minimal impacts to king and box crab harvest revenue (landed ex-vessel value) for a few fishermen who have historically harvested more than the proposed 25-pound limit.

Alternative 1 cost of \$107,445: These are *potential* cost impacts on individuals or businesses; these are minimal impacts to king, box and sheep crab harvest revenue (landed ex-vessel value) for a few fishermen who have historically harvested more than the alternate 100-pound limit for all non-cancer crab species.

Nearshore Fishery Sheepcrab Management

John E. Law <wildwestfish@gmail.com>

Mon 6/4/2018 4:44 AM

To:FGC <FGC@fgc.ca.gov>;

1 attachments (22 KB)

Nearshore Fishery Sheepcrab Management.pdf;

Please consider the enclosed attachment to this email to be public comment for agenda item #11.

Thank you for reviewing our comments.

John Law - participant and representing San Diego's Nearshore trap fishery.

--

John Law // Marine Resource Harvester, San Diego //
www.wildwestfish.net // www.localseafood.org //
858-633-3389 (vm-txt) // wildwestfish @ gmail. com
[Submit your email for Real Time Local Seafood Updates](#) from Wild West!

Nearshore Fishery Sheepcrab Management

John E. Law <wildwestfish@gmail.com>

Sun 6/3/2018 9:03 PM

To:FGC <FGC@fgc.ca.gov>;

1 attachments (22 KB)

Nearshore Fishery Sheepcrab Management.pdf;

----- Forwarded message -----

From: John E. Law <wildwestfish@gmail.com>

Date: Sun, Jun 3, 2018, 11:44 AM

Subject: Nearshore Fishery Sheepcrab Management

To: John E. Law <wildwestfish@gmail.com>

--

John Law // Marine Resource Harvester, San Diego //

www.wildwestfish.net // www.localseafood.org //

858-633-3389 (vm-txt) // [wildwestfish @ gmail. com](mailto:wildwestfish@gmail.com)

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PROPOSED MANAGEMENT OF SHEEP CRAB.

**PUBLIC COMMENT FROM THE SAN DIEGO AREA
SOUTHCOAST NEARSHORE TRAP FISHERMEN.**

Sheepcrab, (A.K.A. "Spidercrab") are an abundant shallow water crab that has been used as bait throughout the entire history of the Southcoast Nearshore Trap Fishery.

The Southcoast Nearshore Trap Fishery is one of California's most tightly regulated fisheries. Management has created a fishery that has been so successful that both the Department of Fish and Wildlife and the Commission recently voted to discontinue measures that would have downsized the fishery through a two-for-one transfer system. Seven major safeguards are in place to ensure the health and long term viability of the fishery;

- 1) Fixed number of participants with transferable permits.
- 2) Annual two month closed period.
- 3) Equal allowable take for each participant.
- 4) Five separate trip periods with maximum allowable take per period.
- 6) Yearly total allowable catch.
- 7) Trap limits.

Landings of California Sheephead over the last decade have remained consistent, with an average of 71321 LBS per year. Each season has been within 10,000 LBS of this average except for the expected increase during 2014, at the start of the most recent El Nino cycle, when landings reached 91445 LBS.

SHEEPCRAB ARE A VITAL COMPONENT IN THE NEARSHORE FISHERY.

As mentioned, the Southcoast Nearshore Fishery is governed by rigid boundaries that go unchanged year to year. There is no possibility for effort to exceed the controls in place. Effort is capped which helps maintain a well balanced fishery. Bait used in traps is also kept at a constant level. All of the guidelines in place keep the amount of bait used at a constant level year after year. There is no way for the amount of bait to exceed the amount of opportunity allowed by the Nearshore management measures. Placing specific levels on allowable use of Sheepcrabs may upset the balance of this well managed fishery. Although the exact amount of bait used is unknown, it should be considered that the consistent harvest levels of fish would indicate a similar sustainable use of Sheepcrab as bait.

The Department is asking for all Sheepcrab used for bait be landed and counted against an unacceptably low 95,000 LB Total Allowable Catch. How this would be enacted is a question that DFW will have to address. There are currently no mechanisms in place that allow an individual fisherman to land the catch. Does this mean that each fisherman who takes Sheepcrab for bait will be required to become a fish receiver or fisherman retailer? Is there an alternate system planned that will allow up to 120 crab fisherman access to landing receipt books and training to use the new ETIX system? This attempt seems like an excessive amount of rule making and regulation to control the use of Sheepcrab for bait use in a fishery that already has sufficient controls in place.

San Diego's Nearshore Trap Fishermen are asking the Commission to exempt the Southcoast Nearshore Fishery from any new regulations regarding the use of Sheepcrab as bait. Our opinion is that the controls in place within the fishery are enough to protect both the Nearshore fishery and the Sheepcrab used as bait.

San Diego Nearshore Trap Fishermen.

Memorandum

2018 MAR 20 AM 8:43

Date: March 13, 2018

To: Valerie Termini
Executive Director
Fish and Game Commission

From: Charlton H. Bonham
Director



Subject: **Submission of Initial Statement of Reasons to Amend Section 632, Title 14, California Code of Regulations, Re: Marine Protected Areas – Tribal Take**

The Department of Fish and Wildlife (Department) requests the Fish and Game Commission (Commission) authorize publishing notice of its intent to amend subsections (b)(33), (34), (97), (98), (112) and (117) of Section 632 of Title 14, California Code of Regulations concerning boundary changes for two marine protected areas (MPAs) and tribal take in four MPAs. Authorization of this request to publish notice will allow for discussion and possible adoption at the June 20 and August 22, 2018 Commission meetings, respectively.

The proposed regulation changes fall under two categories: Boundary changes for two MPAs and authorizing tribal take in four MPAs.

1. Boundary Changes. Amend subsections 632(b)(33)(A) and (34)(A), boundaries for Stewarts Point State Marine Conservation Area (SMCA) and Stewarts Point State Marine Reserve (SMR), at the request of the federally recognized Kashia Band of Pomo Indians of the Stewarts Point Rancheria (Kashia Band of Pomo Indians).
2. Authorize Tribal Take. Amend subsections 632(b)(97), (98), (112) and (117), Kashtayit SMCA, Naples SMCA, Point Dume SMCA, and Anacapa Island SMCA, to authorize tribal take for members of the federally recognized Santa Ynez Band of Chumash Indians at Kashtayit SMCA, Naples SMCA, Point Dume SMCA, and Anacapa Island SMCA.

Upon publication of the notice of intent to amend Section 632, Title 14, California Code of Regulations, the California Environmental Quality Act (CEQA) process will commence (Pub. Resources Code § 21080.3.1.). The public comment period for the CEQA document is anticipated to begin in May 2018.

If you have any questions regarding this item, please contact Dr. Craig Shuman, Marine Regional Manager at (916) 445-6459. The public notice for this rulemaking should identify Environmental Scientist, Ms. Elizabeth Pope as the Department's point of contact. Her contact information is (707) 445-5301 or Elizabeth.Pope@wildlife.ca.gov.

Valerie Termini, Executive Director
Fish and Game Commission
March 7, 2018
Page 2

cc: Stafford Lehr, Deputy Director
Wildlife and Fisheries Division
Stafford.Lehr@wildlife.ca.gov

Craig Shuman, Regional Manager
Marine Region
Craig.Shuman@wildlife.ca.gov

Bob Puccinelli, Captain
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Michelle Selmon, Program Manager
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Scott Barrow, Regulations Unit
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Scott.Barrow@wildlife.ca.gov

Susan Ashcraft, Marine Adviser
Fish and Game Commission
Susan.Ashcraft@fgc.ca.gov

Becky Ota, Marine Region
Habitat Program Manager
Becky.Ota@wildlife.ca.gov

Stephen Wertz, Marine Region
Senior Environmental Scientist
Stephen.Wertz@wildlife.ca.gov

Elizabeth Pope, Marine Region
Environmental Scientist
Elizabeth.Pope@wildlife.ca.gov

STATE OF CALIFORNIA
FISH AND GAME COMMISSION
INITIAL STATEMENT OF REASONS FOR REGULATORY ACTION

Amend subsections 632(b)(33), (34), (97), (98), (112) and (117)
Title 14, California Code of Regulations
Re: Marine Protected Areas

I. Date of Initial Statement of Reasons: March 7, 2018

II. Dates and Locations of Scheduled Hearings

- (a) Notice Hearing: Date: April 18, 2018
 Location: Ventura, CA
- (b) Discussion Hearing: Date: June 20, 2018
 Location: Sacramento, CA
- (c) Adoption Hearing: Date: August 22, 2018
 Location: Fortuna, CA

III. Description of Regulatory Action

- (a) Statement of Specific Purpose of Regulation Change and Factual Basis for Determining that Regulation Change is Reasonably Necessary:

Background Information/Current Regulations

The Marine Life Protection Act (MLPA) (Fish and Game Code Sections 2850-2863) established a programmatic framework for designating marine protected areas (MPAs) in the form of a comprehensive statewide network. The Marine Managed Areas Improvement Act (Public Resources Code Sections 36600-36900) standardized and clarified the designations of marine managed areas (MMAs), which include MPAs. The overriding goal of these acts is to protect California's valuable marine resources including natural biodiversity and abundance of marine life, sustaining and rebuilding species of economic value, and improving recreational and educational opportunities in areas subject to minimal human disturbance.

Planning for California's coastal network of MPAs occurred through a sequential series of four regional public planning processes. Following planning within each region, the California Fish and Game Commission (Commission) adopted MPA regulations that were implemented along the coast from 2007 to 2012. Background information from previous rulemaking files for regional MPA planning and implementation is found in the initial statement of reasons for Rulemaking File No. 2012-1005-02s, which is available at <http://www.fgc.ca.gov/regulations/2012/632ncisor.pdf>.

Existing regulations in Section 632, Title 14, California Code of Regulations provide definitions, and site-specific area classifications, boundary descriptions, commercial

and recreational take restrictions, and other restricted/allowed uses, including tribal take regulations for federally recognized tribes [subsection 632(a)(11)].

Proposed Regulation

The proposed regulation changes fall under two categories: Boundary changes for two MPAs and authorizing tribal take in four MPAs.

1. *Boundary Changes. Amend subsections 632(b)(33)(A) and (34)(A), boundaries for Stewarts Point State Marine Conservation Area (SMCA) and Stewarts Point State Marine Reserve (SMR), at the request of the federally recognized Kashia Band of Pomo Indians of the Stewarts Point Rancheria (Kashia Band of Pomo Indians).*

Background

In 2010, the Commission recognized that implementation of the Stewarts Point SMR inadvertently prohibited members of the Kashia Band of Pomo Indians, a federally recognized tribe in Sonoma County, from fishing and gathering for subsistence and ceremonial purposes in their traditional take areas. Thus, the Commission took action to re-designate a portion of the SMR as an SMCA to allow for recreational take of certain species that accommodated the take needs identified by the tribe [subsection (632(b)(33))].

In February 2017, the Kashia Band of Pomo Indians began new discussions with the Commission to modify the existing boundaries of Stewarts Point SMCA and Stewarts Point SMR, in subsections 632(b)(33)(A) and (34)(A), respectively, to align the SMCA more closely with the tribe's traditional take areas. Ultimately, the Kashia Band of Pomo Indians formally petitioned the Commission to adopt boundary modifications to Stewarts Point SMCA and Stewarts Point SMR (Attachment 1). The action would shift the northern boundary of the SMCA southward by approximately 1.5 miles, and shift the southern boundary of the SMCA southward by approximately 1.0 mile (figures 1 and 2).



Figure 1. Existing boundaries, Stewart's Point SMCA and SMR



Figure 2. Proposed boundaries, Stewart's Point SMCA and SMR

Rationale

The proposed boundary shift would align the Stewarts Point SMCA with historical tribal lands recently reacquired by the Kashia Band of Pomo Indians, thus allowing members direct access to culturally significant areas of the shoreline and marine resources for ceremonial, cultural and subsistence purposes. Take regulations for Stewarts Point SMCA and Stewarts Point SMR would remain unchanged from the current regulations in subsections 632(b)(33) and (34).

The proposed boundary modifications would have a negligible effect on existing ecological and habitat protections currently afforded by the Stewarts Point SMR (Attachment 2). The boundary shift would effectively make the SMR approximately 0.1 percent smaller and the SMCA approximately 2.3 percent larger. The alongshore span of the SMR would increase by 0.56 statute mile (measured using a straight line distance), with a corresponding decrease for the SMCA. The SMR still meets scientific guidelines for preferred MPA size and spacing and retains Horseshoe Cove, an area of noted ecological value and biodiversity, within the fully protected SMR. The SMCA only allows shore fishing; thus, deeper offshore habitats currently within the SMR will not experience impacts by the southward shift of the SMCA because offshore take is prohibited.

2. *Authorize Tribal Take. Amend subsections 632(b)(97), (98), (112) and (117), to authorize tribal take for members of the federally recognized Santa Ynez Band of Chumash Indians at Kashtayit SMCA, Naples SMCA, Point Dume SMCA, and Anacapa Island SMCA.*

Background

In December 2010, the Commission adopted MPAs in southern California. In 2011, the Santa Ynez Band of Chumash Indians, a federally recognized tribe located in Santa Barbara County, petitioned the Commission to authorize tribal take in all SMCAs and state marine parks (SMP) in Santa Barbara County (Attachment 3). In June 2012, the Commission adopted subsection 632(a)(11), which defines tribal take within an MPA when authorized under 632(b). In April 2017, the Santa Ynez Band of Chumash Indians submitted a modified final request for the Commission to authorize tribal take within four SMCAs: Kashtayit and Naples (Santa Barbara County), Point Dume (Los Angeles County), and Anacapa Island (Ventura County) (Figures 3-6, respectively). The tribe provided additional documentation of historic use (Attachments 4 and 5). No changes are proposed for subsection 632(b)(111), Anacapa Island Special Closure, which overlaps with Anacapa Island SMCA.

Rationale

For a tribe to be authorized for “tribal take” within specific MPAs, as defined in subsection 632(a)(11), the tribe must be federally recognized. The Commission has requested that tribes submit a factual record that authenticates historical take within the requested MPA geography. The request for tribal take by the federally recognized Santa Ynez Band of Chumash Indians, including its factual record, are found in attachments 3 and 5.

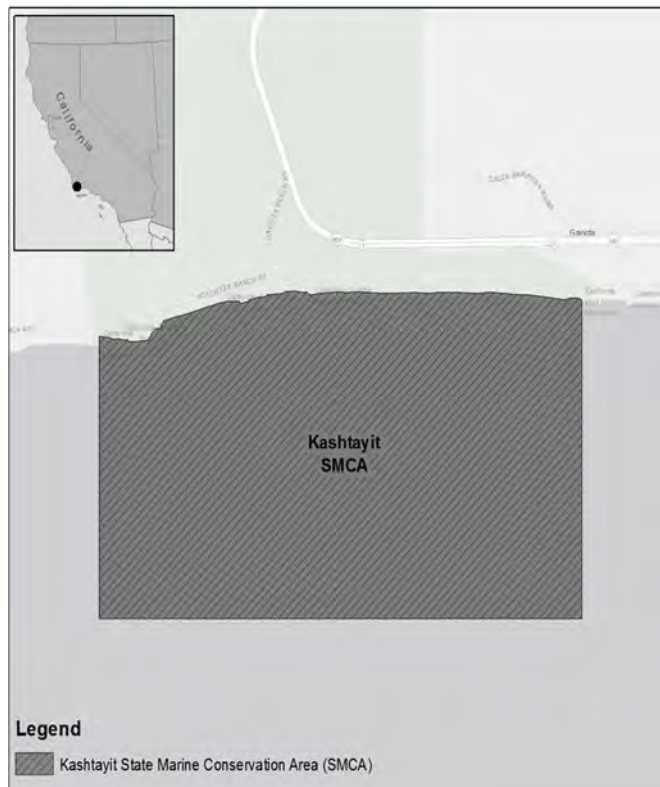


Figure 3. Kashtayit SMCA, Santa Barbara County

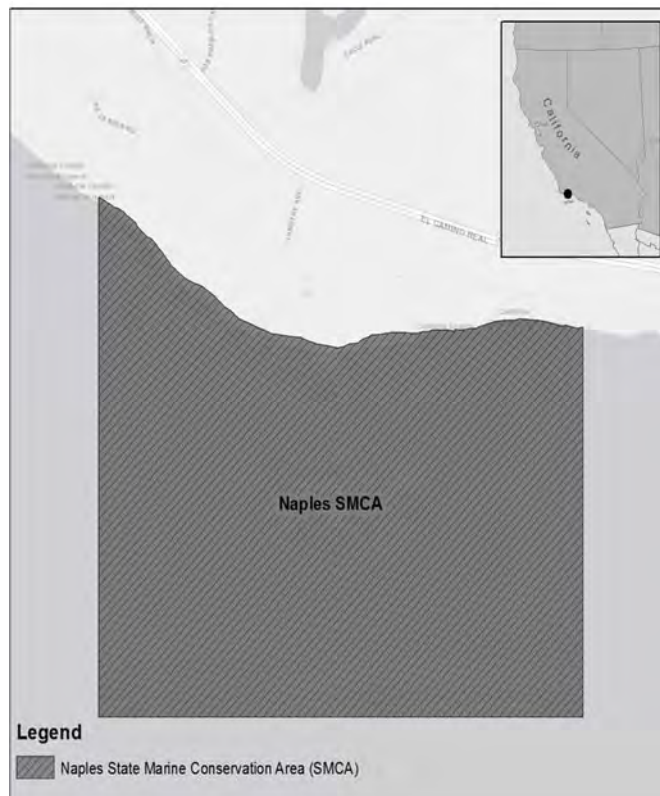


Figure 4. Naples SMCA, Santa Barbara County

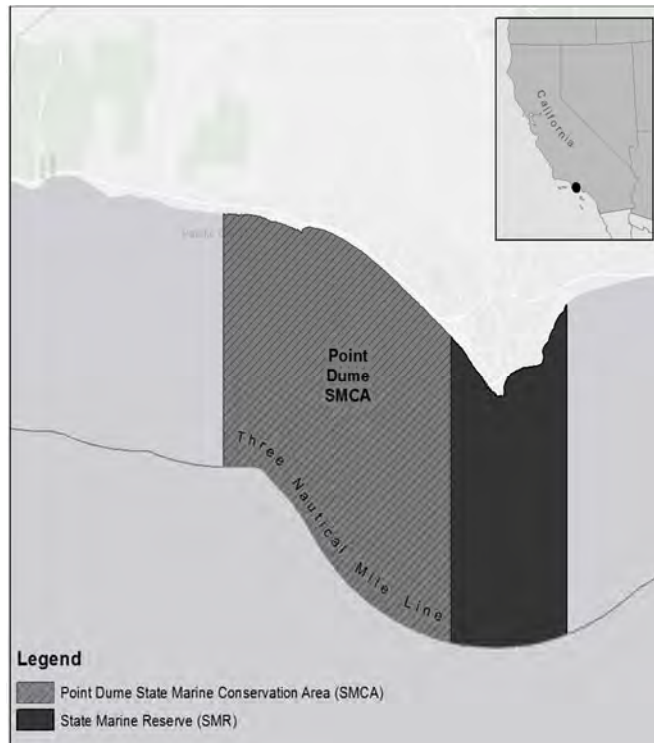


Figure 5. Point Dume SMCA, Los Angeles County

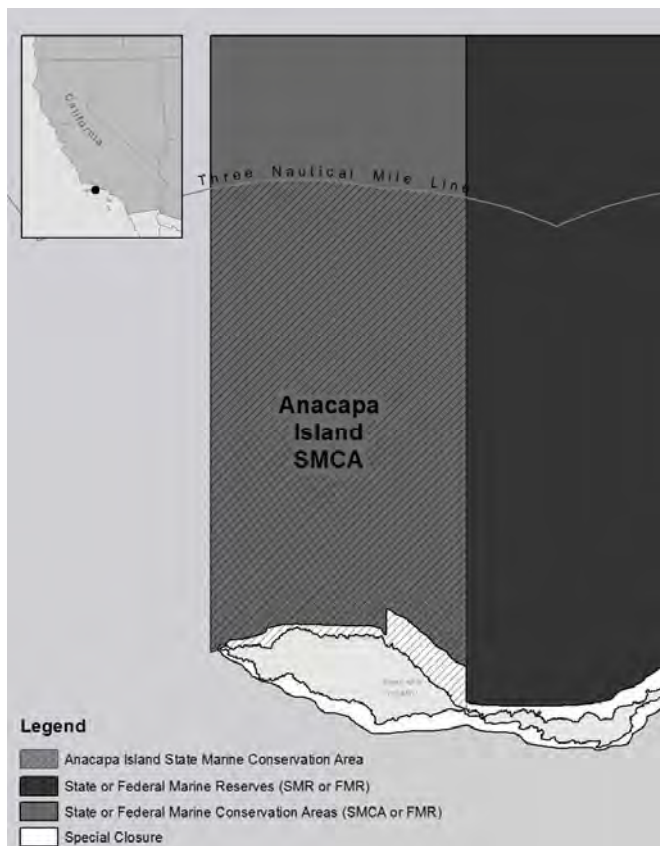


Figure 6. Anacapa Island SMCA, Ventura County

**Proposed tribal take does not apply to Anacapa Island Special Closure*

(b) Goals and Benefits of the Regulation:

1. The Commission took action in 2010 to adopt the Stewarts Point SMCA within the Stewarts Point SMR at the request of the federally recognized Kashia Band of Pomo Indians to allow for recreational take from shore of certain culturally significant species. The proposed boundary modifications would more closely align the Stewarts Point SMCA with historical tribal lands reacquired subsequent to the tribe's 2010 request, thus providing a contiguous connection between terrestrial and marine areas of cultural significance.
2. The proposed regulations will authorize take for members of the federally recognized Santa Ynez Band of Chumash Indians within certain areas of historical use, as supported by the tribe's factual record; in 2012, take within these areas was minimized when certain MPAs were implemented. The proposed regulation for tribal take by the Santa Ynez Band of Chumash Indians is consistent with regulations for federally recognized tribes in north coast MPAs.
3. The proposed action is consistent with the Commission's Tribal Policy which implements the Governor's Executive Order B-10-11 for collaborative government to government consultation with California Indian Tribes to realize sustainably-managed natural resources of mutual interest.

(c) Authority and Reference Sections from Fish and Game Code for Regulation:

Authority: Sections 200, 205(c), 265, 399, 1590, 1591, 2860, 2861 and 6750, Fish and Game Code; and Sections 36725(a) and 36725(e), Public Resources Code.

Reference: Sections 200, 205(c), 265, 399, 2861, 5521, 6653, 8420(e) and 8500, Fish and Game Code; and Sections 36700(e), 36710(e), 36725(a) and 36725(e), Public Resources Code.

(d) Specific Technology or Equipment Required by Regulatory Change: None.

(e) Identification of Reports or Documents Supporting Regulation Change:

Attachment 1: Petition #2017-017 from the Kashia Band of Pomo Indians requesting boundary changes for Stewarts Point State Marine Conservation Area and Stewarts Point State Marine Reserve

Attachment 2: Habitat calculations for Stewarts Point State Marine Conservation Area and Stewarts Point State Marine Reserve

Attachment 3: Letter, dated November 1, 2011, from Santa Ynez Band of Chumash Indians requesting tribal take in SMCAs and SMPs in Santa Barbara County, and transmitting "Factual Record of Current and Historical Uses by the Santa Ynez Band of Chumash Indians within the Proposed State Marine Conservation Areas and Marine Parks of Santa Barbara County"

Attachment 4: Email confirmation to the California Fish and Game Commission's executive director of tribal take request for the Santa Ynez Band of Chumash Indians, February 14, 2017

Attachment 5: April 1, 2017 email message to the California Fish and Game Commission's executive director and document titled "Point Dume and Anacapa Island Chumash Cultural Affiliation to the California State Marine Conservation Areas," dated March 31, 2017

(f) Public Discussions of Proposed Regulations Prior to Notice Publication:

1. The Kashia Band of Pomo Indians conducted outreach to neighboring landowners, including the Sea Ranch housing development and California State Parks, prior to submitting its petition.
2. The Santa Ynez Band of Chumash Indians request for tribal take was included as a discussion item at four meetings of the Commission's Tribal Committee:
 - April 7, 2015 (Santa Rosa)
 - June 9, 2015 (Mammoth Lakes)
 - October 6, 2015 (Los Angeles)
 - February 7, 2017 (Rohnert Park)

The request was also discussed at six Commission meetings:

- October 7-8, 2015 (Los Angeles)
- February 10-11, 2016 (Sacramento)
- April 13-14, 2016 (Santa Rosa)
- June 22-23, 2016 (Bakersfield)
- February 8-9, 2017 (Rohnert Park)
- April 26-27, 2017 (Van Nuys)

In addition, on November 14, 2016, representatives of the Santa Ynez Band of Chumash Indians led a tour of MPAs proposed for tribal take. Commission and California Department of Fish and Wildlife staff, Santa Barbara area non-governmental organization representatives, and a Santa Barbara MPA Collaborative chair participated in the tour. At the Commission's April 26-27, 2017 meeting, tribal representatives provided oral and written comment confirming the final request. (Attachment 4).

IV. Description of Reasonable Alternatives to Regulatory Action

(a) Alternatives to Regulation Change:

At the Commission Tribal Committee's February 7, 2017 meeting, the Santa Ynez Band of Chumash Indians requested tribal take at four SMCAs: Kashtayit, Naples,

Campus Point, and Goleta Slough. At its February 8-9, 2017 meeting, the Commission approved the request to include Kashtayit and Naples SMCAs, but did not grant inclusion of Goleta Slough and Campus Point SMCAs because they are designated as no-take MPAs.

In 2011, the Santa Ynez Band of Chumash Indians requested tribal take in all Santa Barbara area MPAs. After clarification from Commission, the request for tribal take was modified by the Santa Ynez Band of Chumash Indians to include the four SMCAs outlined in this document. Regarding the original 2011 request there are no SMPs in Santa Barbara County and therefore can't be evaluated as a part of the request.

No additional alternatives were identified by or brought to the attention of Commission staff that would have the same desired regulatory effect as the proposed action.

(b) No Change Alternative:

1. The no change alternative would not modify the existing boundaries for Stewarts Point SMCA and Stewarts Point SMR, and would therefore prohibit the federally recognized Kashia Band of Pomo Indians from traditional tribal activities in marine waters adjacent to recently reacquired tribal lands.
2. The no-change alternative would exclude tribal take, as defined in subsection 632(a)(11), for the federally recognized Santa Ynez Band of Chumash Indians within four SMCAs: Kashtayit, Naples, Point Dume, and Anacapa Island and is inconsistent with the tribal take provision in Title 14, Section 632(a)(11).

V. Mitigation Measures Required by Regulatory Action

For the purpose of this initial statement of reasons, adopting the proposed boundary modification as proposed by the Kashia Band of Pomo Indians would have nominal impact to area protections because take regulations remain unchanged within Stewarts Point SMCA [subsection 632(b)(33)]. There are no anticipated negative impacts on the environment from the proposed regulation amendments proposed by the Santa Ynez Band of Chumash Indians; therefore, no mitigation measures are necessary.

VI. Impact of Regulatory Action

The potential for significant statewide adverse economic impacts that might result from the proposed regulatory action has been assessed, and the following initial determinations relative to the required statutory categories have been made:

- (a) Significant Statewide Adverse Economic Impact Directly Affecting Businesses, Including the Ability of California Businesses to Compete with Businesses in Other States:

The proposed action will not have a significant statewide adverse economic impact directly affecting business, including the ability of California businesses to compete

with businesses in other states. Neither aspect of this proposed rulemaking constitutes a significant change in proposed take of or access to resources, nor to business activities relating to such resources.

- (b) Impact on the Creation or Elimination of Jobs Within the State, the Creation of New Businesses or the Elimination of Existing Businesses, or the Expansion of Businesses in California; Benefits of the Regulation to the Health and Welfare of California Residents, Worker Safety, and the State's Environment:

The Commission does not anticipate any impacts on creation or elimination of jobs, the creation of new businesses, the elimination of existing businesses or the expansion of businesses in California because these changes will neither increase nor decrease recreational or commercial opportunities within the state of California.

The Commission does not anticipate benefits to the health and welfare of California residents, generally; however, the Commission anticipates benefits to the health and welfare of tribal members by authorizing take of living marine resources from MPAs with specific take restrictions. The proposed amendments do not have foreseeable benefits to worker safety because the regulations do not affect working conditions. Benefits to the environment will remain consistent with the current protections provided by the MPA network as a whole.

- (c) Cost Impacts on a Representative Private Person or Business:

The Commission is not aware of any cost impacts that a representative private person or business would necessarily incur in reasonable compliance with the proposed action.

- (d) Costs or Savings to State Agencies or Costs/Savings in Federal Funding to the State: None.
- (e) Nondiscretionary Costs/Savings to Local Agencies: None.
- (f) Programs Mandated on Local Agencies or School Districts: None.
- (g) Costs Imposed on Any Local Agency or School District that is Required to be Reimbursed Under Part 7 (commencing with Section 17500) of Division 4, Government Code: None.
- (h) Effect on Housing Costs: None.

VII. Economic Impact Assessment

- (a) Effects of the Regulation on the Creation or Elimination of Jobs Within the State:

The proposed amendments will not create any new jobs or eliminate existing jobs because the proposed regulations will neither substantially increase nor decrease recreational or commercial opportunities within the state of California.

- (b) Effects of the Regulation on the Creation of New Businesses or the Elimination of Existing Businesses Within the State:

The proposed amendments will not create any new businesses or eliminate existing businesses because the proposed regulations will neither substantially increase nor decrease recreational or commercial opportunities within the state of California.

- (c) Effects of the Regulation on the Expansion of Businesses Currently Doing Business Within the State:

The proposed amendment is not expected to result in the expansion of businesses currently doing business within the state because the proposed regulations will neither increase nor decrease recreational or commercial opportunities within California.

- (d) Benefits of the Regulation to the Health and Welfare of California Residents:

The Commission does not anticipate benefits to the health and welfare of California residents, generally; however, both components of the proposed action will provide benefits to the health and welfare of tribal members with the opening of access to areas of traditional ceremonial and subsistence take that were lost due to MPA restrictions.

- (e) Benefits of the Regulation to Worker Safety:

The proposed amendments do not have foreseeable benefits to worker safety because the regulations do not affect working conditions.

- (f) Benefits of the Regulation to the State's Environment:

The Commission does not anticipate benefits to the State's environment because the regulatory action only affects tribal take of marine species by members of the specified tribes pursuant to current season, bag, possession, gear and size limits. Benefits to the environment will remain consistent with the protections provided by the MPA network as a whole.

- (g) Other Benefits of the Regulation:

The proposed amendments allow both the Kashia Band of Pomo Indians and the Santa Ynez Band of Chumash Indians opportunities to reconnect with marine areas of historical tribal take for traditional subsistence and ceremonial purposes.

Informative Digest/Policy Statement Overview

The Marine Life Protection Act (MLPA) (Fish and Game Code Sections 2850-2863) established a programmatic framework for designating marine protected areas (MPAs) in the form of a comprehensive statewide network. The Marine Managed Areas Improvement Act (Public Resources Code Sections 36600-36900) standardized and clarified the designations of marine managed areas (MMAs), which include MPAs. The overriding goal of these acts is to protect California's valuable marine resources including natural biodiversity and abundance of marine life, sustaining and rebuilding species of economic value, and improving recreational and educational opportunities in areas subject to minimal human disturbance.

Planning for California's coastal network of MPAs occurred through a sequential series of four regional public planning processes. Following planning within each region, the California Fish and Game Commission (Commission) adopted MPA regulations that were implemented along the coast from 2007 to 2012. Background information from previous rulemaking files for regional MPA planning and implementation is found in the initial statement of reasons for Rulemaking File No. 2012-1005-02s, which is available at <http://www.fgc.ca.gov/regulations/2012/632ncisor.pdf>.

Existing regulations in Section 632, Title 14, California Code of Regulations provide definitions, and site-specific area classifications, boundary descriptions, commercial and recreational take restrictions, and other restricted/allowed uses, including tribal take regulations for federally recognized tribes [subsection 632(a)(11)].

Proposed Regulation

1. Boundary Changes. Amend subsections 632(b)(33)(A) and (34)(A) boundaries for Stewarts Point State Marine Conservation Area (SMCA) and Stewarts Point State Marine Reserve (SMR) at the request of the federally recognized Kashia Band of Pomo Indians of the Stewarts Point Rancheria (Kashia Band of Pomo Indians).

Background

In 2010, the Commission recognized that implementation of the Stewarts Point SMR inadvertently prohibited members of the Kashia Band of Pomo Indians, a federally recognized tribe in Sonoma County, from fishing and gathering for subsistence and ceremonial purposes in their traditional take areas. Thus, the Commission took action to re-designate a portion of the SMR as an SMCA to allow for recreational take of certain species that accommodated the take needs identified by the tribe [subsection (632(b)(33))].

In February 2017, the Kashia Band of Pomo Indians began new discussions with the Commission to modify the existing boundaries of Stewarts Point SMCA and Stewarts Point SMR, in subsections 632(b)(33)(A) and (34)(A), respectively, to align the SMCA more closely with the tribe's traditional take areas. Ultimately, the Kashia Band of Pomo Indians formally petitioned the Commission to adopt boundary modifications to Stewarts Point SMCA and Stewarts Point SMR (Attachment 1). The action would shift the northern boundary of the SMCA southward by approximately 1.5 miles, and shift the southern boundary of the SMCA southward by approximately 1.0 mile (figures 1 and 2).

2. Authorize Tribal Take. Amend subsections 632(b)(97), (98), (112) and (117), to authorize tribal take for members of the federally recognized Santa Ynez Band of Chumash Indians at Kashtayit SMCA, Naples SMCA, Point Dume SMCA, and Anacapa Island SMCA.

Background

In December 2010, the Commission adopted MPAs in southern California. In 2011, the Santa Ynez Band of Chumash Indians, a federally recognized tribe located in Santa Barbara County, petitioned the Commission to authorize tribal take in all SMCAs and state marine parks (SMP) in Santa Barbara County (Attachment 3). In June 2012, the Commission adopted subsection 632(a)(11), which defines tribal take within an MPA when authorized under 632(b). In April 2017, the Santa Ynez Band of Chumash Indians submitted a modified final request for the Commission to authorize tribal take within four SMCAs: Kashtayit and Naples (Santa Barbara County), Point Dume (Los Angeles County), and Anacapa Island (Ventura County) (Figures 3-6, respectively). The tribe provided additional documentation of historic use (Attachments 4 and 5). No changes are proposed for subsection 632(b)(111), Anacapa Island Special Closure, which overlaps with Anacapa Island SMCA.

Goals and Benefits

1. The Commission took action in 2010 to adopt the Stewarts Point SMCA within the Stewarts Point SMR at the request of the federally recognized Kashia Band of Pomo Indians to allow for recreational take from shore of certain culturally significant species. The proposed boundary modifications would more closely align the Stewarts Point SMCA with historical tribal lands reacquired subsequent to the tribe's 2010 request, thus providing a contiguous connection between terrestrial and marine areas of cultural significance.
2. The proposed regulations will authorize take for members of the federally recognized Santa Ynez Band of Chumash Indians within certain areas of historical use, as supported by the tribe's factual record; in 2012, take within these areas was minimized when certain MPAs were implemented. The proposed regulation for tribal take by the Santa Ynez Band of Chumash Indians is consistent with regulations for federally recognized tribes in north coast MPAs.
3. The proposed action is consistent with the Commission's Tribal Policy which implements the Governor's Executive Order B-10-11 for collaborative government to government consultation with California Indian Tribes to realize sustainably-managed natural resources of mutual interest.

Consistency with Existing State Regulations

The proposed regulations are neither inconsistent nor incompatible with existing State regulations. The Commission has reviewed its own regulations and finds that the proposed regulations are neither inconsistent nor incompatible with existing State regulations. The Commission has searched the California Code of Regulations and finds no other State agency regulations pertaining to Stewarts Point SMCA, Stewarts Point SMR, Kashtayit SMCA, Naples SMCA, Point Dume SMCA, or Anacapa Island SMCA.

Proposed Regulatory Language

Section 632, Title 14, CCR, is amended to read:

§ 632. Marine Protected Areas (MPAs), Marine Managed Areas (MMAs), and Special Closures.

(a) General Rules and Regulations:

The areas specified in this section have been declared by the commission to be marine protected areas, marine managed areas, or special closures. Public use of marine protected areas, marine managed areas, or special closures shall be compatible with the primary purposes of such areas. MPAs, MMAs, and special closures are subject to the following general rules and regulations in addition to existing Fish and Game Code statutes and regulations of the commission, except as otherwise provided for in subsection 632(b), areas and special regulations for use. Nothing in this section expressly or implicitly precludes, restricts or requires modification of current or future uses of the waters identified as marine protected areas, special closures, or the lands or waters adjacent to these designated areas by the Department of Defense, its allies or agents.

[No changes to subsections (a)(1) through (a)(10)]

[Subsection (a)(11) is provided for context only and no changes are proposed]

(11) Tribal Take. For purposes of this regulation, “federally recognized tribe” means any tribe on the *List of Indian Entities Recognized and Eligible to Receive Services from the United States Bureau of Indian Affairs*, published annually in the Federal Register. Any member of a federally recognized tribe authorized to take living marine resources from an area with area-specific take restrictions in subsection 632(b), when engaging in take within an authorized area shall possess on his person, in his immediate possession, or where otherwise specifically required by law to be kept, any valid license, report card, tag, stamp, validation, permit, or any other entitlement that is required in the Fish and Game Code, or required by other state, federal, or local entities, in order to take living marine resources. Members shall possess a valid photo identification card issued by a federally recognized tribe that contains expiration date, tribal name, tribal member number, name, signature, date of birth, height, color of eyes, color of hair, weight, and sex; and display any of the items listed above upon demand to any peace officer. Members taking living marine resources under this provision are subject to current seasonal, bag, possession, gear and size limits in existing Fish and Game Code statutes and regulations of the commission, except as otherwise provided for in subsection 632(b). No member, while taking living marine resources pursuant to this section, may be assisted by any person who does not possess a valid tribal identification card and is not properly licensed to take living marine resources. Nothing in the regulation is intended to conflict with, or supersede, any state or federal law regarding the take of protected, threatened or endangered species.

[Subsection (a)(12) is provided for context only and no changes are proposed]

(12) Shore Fishing. Take from shore, or shore fishing, for purposes of this section, means take of living marine resources from shore, including beaches, banks, piers, jetties, breakwaters, docks, and other man-made structures connected to the shore. Unless specifically authorized in subsection 632(b), no vessel, watercraft (motorized or non-motorized), or floating device may be used to assist in the take, transport or possession of species taken while shore fishing, except that a float tube or similar flotation device may be used when taking abalone only.

(b) Areas and Special Regulations for Use. Pursuant to the commission's authority in Fish and Game Code Section 2860 to regulate commercial and recreational fishing and any other taking of marine species in MPAs, Fish and Game Code Sections 10500(f), 10500(g), 10502.5, 10502.6, 10502.7, 10502.8, 10655, 10655.5, 10656, 10657, 10657.5, 10658, 10660, 10661, 10664, 10666, 10667, 10711, 10801, 10900, 10901, 10902, 10903, 10904, 10905, 10906, 10907, 10908, 10909, 10910, 10911, 10912, 10913, and 10932 are superseded as they apply to designations in Subsection 632(b). All geographic coordinates listed use the North American Datum 1983 (NAD83) reference datum:

[No changes to current regulatory text in subsections 632(b)(1) through (b)(32)]

(33) Stewarts Point State Marine Conservation Area.

(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed:

~~38° 40.500 ' N. lat. 123° 25.345 ' W. long.;~~

~~38° 40.500 ' N. lat. 123° 25.500 ' W. long.;~~

~~38° 37.500 ' N. lat. 123° 23.500 ' W. long.;~~

~~38° 37.543 ' N. lat. 123° 22.924 ' W. long.~~

38° 39.527 ' N. lat. 123° 24.483 ' W. long.;

38° 39.527 ' N. lat. 123° 24.851 ' W. long.;

38° 36.958 ' N. lat. 123° 23.139 ' W. long; and

38° 36.958 ' N. lat. 123° 22.468 ' W. long.

(B) Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions: the following may be taken recreationally from shore only: marine aquatic plants other than sea palm, marine invertebrates, finfish [subsection 632(a)(2)] by hook and line, surf smelt by beach net, and species authorized in Section 28.80 of these regulations by hand-held dip net.

(34) Stewarts Point State Marine Reserve

(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed except where noted:

~~38° 37.543 ' N. lat. 123° 22.924 ' W. long.~~

~~38° 37.500 ' N. lat. 123° 23.500 ' W. long.;~~

~~38° 40.500 ' N. lat. 123° 25.500 ' W. long.;~~

~~38° 40.500 ' N. lat. 123° 30.243 ' W. long.;~~

~~thence southward along the three nautical mile offshore boundary to~~

~~38° 35.600 ' N. lat. 123° 26.018 ' W. long.; and~~

~~38° 35.600 ' N. lat. 123° 20.800 ' W. long.~~

38° 40.500' N. lat. 123° 25.345' W. long.; and

38° 40.500 ' N. lat. 123° 30.243 ' W. long.;

thence southward along the three nautical mile offshore boundary to

38° 35.600 ' N. lat. 123° 26.018 ' W. long.; and

38° 35.600 ' N. lat. 123° 20.800 ' W. long.,

except that Stewarts Point SMCA as described in subsection 632(b)(33)(A) is excluded.

(B) Area restrictions defined in subsection 632(a)(1)(A) apply.

[No changes to current regulatory text in subsections (b)(35) through (b)(96)]

(97) Kashtayit State Marine Conservation Area.

(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed:

34° 28.130' N. lat. 120° 14.460' W. long.;

34° 27.300' N. lat. 120° 14.460' W. long.;

34° 27.300' N. lat. 120° 12.470' W. long.; and

34° 28.230' N. lat. 120° 12.470' W. long.

(B) Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:

1. The recreational take of finfish [subsection 632(a)(2)], invertebrates except rock scallops and mussels, and giant kelp (*Macrocystis pyrifera*) by hand harvest is allowed.

2. The following federally recognized tribe is exempt from the area and take regulations found in subsection 632(b)(97) and shall comply with all other existing regulations and statutes: Santa Ynez Band of Chumash Indians

3. Take pursuant to activities authorized under subsection 632(b)(97)(C) is allowed.

(C) Maintenance of artificial structures and operation and maintenance of existing facilities is allowed inside the conservation area pursuant to any required federal, state and local permits, or as otherwise authorized by the department.

(98) Naples State Marine Conservation Area.

(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed:

34° 26.517' N. lat. 119° 58.000' W. long.;

34° 25.000' N. lat. 119° 58.000' W. long.;

34° 25.000' N. lat. 119° 56.000' W. long.; and

34° 26.140' N. lat. 119° 56.000' W. long.

(B) Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:

1. The recreational take by spearfishing [Section 1.76] of white seabass and pelagic finfish [subsection 632(a)(3)] is allowed.

2. The commercial take of giant kelp (*Macrocystis pyrifera*) by hand harvest or by mechanical harvest is allowed.

3. The following federally recognized tribe is exempt from the area and take regulations found in subsection 632(b)(98) and shall comply with all other existing regulations and statutes: Santa Ynez Band of Chumash Indians

4. Take pursuant to activities authorized under subsection 632(b)(98)(C) is allowed.

(C) Operation and maintenance of artificial structures inside the conservation area is allowed pursuant to any required federal, state and local permits, or as otherwise authorized by the department.

(D)

[No changes to current regulatory text in subsections (b)(99) through (b)(111)]

(112) Anacapa Island State Marine Conservation Area.

(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed except where noted:

34° 00.828' N. lat. 119° 26.623' W. long.;

34° 00.800' N. lat. 119° 26.700' W. long.;

34° 03.940' N. lat. 119° 26.700' W. long.; thence eastward along the three nautical mile offshore boundary to

34° 04.002' N. lat. 119° 24.600' W. long.; and

34° 00.411' N. lat. 119° 24.600' W. long.

(B) Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:

1. ~~The~~ recreational take of spiny lobster and pelagic finfish [subsection 632(a)(3)] and the commercial take of spiny lobster is allowed.

2. The following federally recognized tribe is exempt from the area and take regulations found in subsection 632(b)(112) and shall comply with all other existing regulations and statutes:

Santa Ynez Band of Chumash Indians

[No changes to subsections (b)(113) through (b)(116)]

(117) Point Dume State Marine Conservation Area.

(A) This area is bounded by the mean high tide line and straight lines connecting the following points in the order listed except where noted:

34° 02.306' N. lat. 118° 53.000' W. long.;

33° 59.140' N. lat. 118° 53.000' W. long.; thence southeastward along the three nautical mile offshore boundary to

33° 56.960' N. lat. 118° 49.200' W. long.; and

34° 00.780' N. lat. 118° 49.200' W. long.

(B) Area restrictions defined in subsection 632(a)(1)(C) apply, with the following specified exceptions:

1. The recreational take by spearfishing [Section 1.76] of white seabass and pelagic finfish [subsection 632(a)(3)] is allowed.

2. The commercial take of swordfish by harpoon [subsection 107(f)(1)]; and coastal pelagic species [Section 1.39] by round haul net [Section 8750, Fish and Game Code], brail gear [Section 53.01(a)], and light boat [Section 53.01(k)] is allowed. Not more than five percent by weight of any commercial coastal pelagic species catch landed or possessed shall be other incidentally taken species.

3. The following federally recognized tribe is exempt from the area and take regulations found in subsection 632(b)(117) and shall comply with all other existing regulations and statutes:

Santa Ynez Band of Chumash Indians

4. Take pursuant to activities authorized under subsection 632(b)(117)(C) is allowed.

(C) Beach nourishment and other sediment management activities are allowed inside the conservation area pursuant to any required federal, state and local permits, or as otherwise authorized by the department.

[No changes to subsections (b)(118) through (b)(147)]

Note: Authority cited: Sections 200, 205(c), 265, 399, 1590, 1591, 2860, 2861 and 6750, Fish and Game Code; and Sections 36725(a) and 36725(e), Public Resources Code. Reference: Sections 200, 205(c), 265, 399, 2861, 5521, 6653, 8420(e) and 8500, Fish and Game Code; and Sections 36700(e), 36710(e), 36725(a) and 36725(e), Public Resources Code.

From: Archer Richardson
Sent: Monday, May 21, 2018 10:38 AM
To: FGC
Cc: Mastrup, Sonke@Wildlife; Ashcraft, Susan@FGC
Subject: Boundary Change Stewarts Point SMCA & SMR for "Kashia Coastal Preserve"

Valerie Termini, Executive Director Fish & Wildlife Commission

May 21 2018

REF: Kashia Coastal Preserve

Eric Sklar, President and Commissioners

I have reviewed the proposal before the Commission concerning the relating to the boundary changes of the "Stewarts Point SMCA & SMR" in Sonoma County as proposed by the Kashia Tribe of Pomo Indians. By all means they should have the ability to take in waters boarding the new "Kashia Coastal Preserve". This part of the ribbon was overlooked when the ribbon was proposed years ago. So how about just moving the Southern boundary to accommodate the needs of the Kashia tribe.

I think you also have to consider and realize that moving the Northern boundary 1.5 miles South as proposed would effect 14 property in the Northern section of the SMCA & SMR. The closure of 12 probertites at The Sea Ranch, 1 mile long ranch and 1 small private acre. I believe you should consider just moving the Southern boundary as requested in the proposal There is no great gain by moving the Northern boundary. The 14 properties in question have been great stewards of he SMCA as it stands today., so why change it? The harvest/take adjoining these properties have been minimal. And yes it could affect their property values. Out of the 14 properties at The Sea Ranch, I believe only 2 have bluff access to the waters. I would highly recommend just moving the Southern boundary. I think you will find that my idea/proposal would take less to implement, as you are only moving one line...the Southern boundary of the SMCA. Your decision and concern should be the best for the MLPAL and all property owners effected.

I'm not new to the MLPAL process, as I attended most of the meeting in the North Central Coast section and speaking at all I could, 2007-2010 The information I brought before the Commission and Stakeholder groups was humors, factual and informative, as I have lived in this part of the coast all of my 71 years. I supported the Kashia Tribe of Pomo Indians throughout the process...as I grew up with them, knowing their needs, wants and ways. And spoke on their behalf at every meeting. My history here in Stewarts Point consist of being a Sonoma County Reserve Deputy Sherriff, a sheep rancher, a fisherman, both commercial and sports and a business owner, the Stewarts Point Store, serving the Kashia tribe by 4 generations of Richardson's. So I feel that my knowledge of this part of the coast is far greater than most. I believe if you ask Sonke Mastrip or Susan Ashcraft you will find out that I supported the MLPAL with facts and the truth during decision making for the North Central Coast section of the MLPAL. Hopefully they will vouch for my honesty and ideas within the process and with upcoming changes.

I sincerely hope you take my proposal into consideration, seriously I feel that it is the best for all. Less paper work, less map changes and no drastic change...which means less enforcement problems.

Archer J "Arch" Richardson



June 6, 2018

Delivered by electronic mail to: fgc@fgc.ca.gov

President Eric Sklar
Members of the California Fish and Game Commission
P.O. Box 944209
Sacramento, CA 94244-2090

Re: Proposed amendments to regulations concerning tribal take in marine protected areas (Subsections 632(b)(33), (b)(34), (b)(97), (b)(98), (b)(112) and (b)(117), Title 14, CCR)

Dear President Eric Sklar and Members of the California Fish and Game Commission:

On behalf of the undersigned organizations, we submit the following letter of support for proposed amendments to existing regulations in Section 632, Title 14, California Code of Regulations regarding the boundaries of for Stewarts Point State Marine Conservation Area (SMCA) and Stewarts Point State Marine Reserve (SMR) and to authorize tribal take for members of the federally recognized Santa Ynez Band of Chumash Indians at Kashtayit SMCA, Naples SMCA, Point Dume SMCA, and Anacapa Island SMCA.

Our organizations were directly involved in the stakeholder driven, science-based process to establish California's landmark network of marine protected areas (MPAs) between 2004 and 2012, and we remain engaged in a wide range of stewardship and community science programs to support effective MPA implementation statewide.

We strongly support the conservation goals of the Marine Life Protection Act and the science guidelines relied upon to help design the state's MPA network and view adherence to these goals and guidelines as critical to the long term effectiveness of the MPA network and its ability to help provide resilience to marine ecosystems in the face of a rapidly changing ocean. Our organizations also recognize and respect the deep cultural and spiritual connections between California tribal communities and the marine and coastal environment that have existed since time immemorial. We believe that the conservation goals of the MLPA and tribal cultural practices can be mutually compatible.

We appreciate the extensive efforts of the Department of Fish and Wildlife and Fish and Game Commission staff to work closely with representatives of the Kashia Band of Pomo Indians and the Santa Ynez Band of Chumash Indians to develop a set of specific proposed regulatory amendments that are carefully crafted to both maximize conservation and consistency with science guidelines, to address critical tribal concerns, and to treat federally recognized tribes throughout the state equitably.

Thank you for your consideration.

Sincerely,

Jennifer Savage
Surfrider Foundation

Zachary Plopper
WILDCOAST

Michael Quill
Los Angeles Waterkeeper

Ray Hiemstra
Orange County Waterkeeper

Morgan Patton
Environmental Action Committee

Dennis Long
California Marine Sanctuary Foundation

Elizabeth Murdoch
Natural Resources Defense Council

STAFF SUMMARY FOR APRIL 18-19, 2018

10. TRIBAL TAKE IN MPAS**Today's Item****Information** ☐**Action** ☒

Authorization to publish notice of intent to change marine protected area (MPA) regulations.

Summary of Previous/Future Actions

- | | |
|----------------------------------|---------------------------------|
| • Discussions of Chumash request | Apr 2015-Apr 2017, TC and FGC |
| • Received Petition 2017-017 | Dec 6-7, 2017, San Diego |
| • Granted Petition 2017-017 | Feb 7-8, 2018, Sacramento |
| • Today's notice hearing | Apr 18-19, 2018; Ventura |
| • Discussion hearing | Jun 20-21, 2018; Sacramento |
| • Adoption hearing | Aug 22-23, 2018; Fortuna |

Background

In Aug 2009, FGC adopted Stewarts Point State Marine Reserve (SMR) along the north central coast. In 2010, FGC recognized that implementation of the Stewarts Point SMR inadvertently prohibited members of the Kashia Band of Pomo Indians, a federally recognized tribe in Sonoma County, from fishing and gathering for subsistence and ceremonial purposes in their traditional take areas. Thus, FGC took action to re-designate a portion of the SMR as Stewarts Point State Marine Conservation Area (SMCA) to allow for recreational take of certain species that accommodated the take needs identified by the tribe.

In Dec 2010, FGC adopted MPAs in southern California, including Kashtayit, Naples, Point Dume, and Anacapa Island SMCAs. In 2011, the Santa Ynez Band of Chumash Indians, a federally recognized tribe located in Santa Barbara County, petitioned FGC to authorize tribal take in all SMCAs and state marine parks in Santa Barbara County. However, at that time, there were no regulations allowing for tribal take, other than regulations established for the general public.

In Jun 2012, FGC adopted regulations establishing tribal take provisions in subsection 632(a)(11). For a tribe to be authorized for "tribal take" within specific MPAs, the tribe must be federally recognized. FGC has requested that tribes submit a factual record that authenticates historical take within the requested MPA geography.

In this proposed rulemaking, changes to Section 632 would make boundary changes for two MPAs and add tribal take in four MPAs.

1. **Boundary Changes.** Amend subsections 632(b)(33)(A) and (34)(A), boundaries for Stewarts Point SMCA and Stewarts Point SMR, at the request of the federally recognized Kashia Band of Pomo Indians of the Stewarts Point Rancheria (Kashia Band).

In 2017, the Kashia Band began discussions with FGC and ultimately submitted Petition 2017-017 to FGC to modify the existing boundaries of Stewarts Point SMCA and Stewarts Point SMR to align the SMCA more closely with the tribe's traditional take areas. The proposed boundary shift would align the Stewarts Point SMCA with historical tribal lands

STAFF SUMMARY FOR APRIL 18-19, 2018

recently reacquired by the Kashia Band, thus allowing members direct access to culturally significant areas of the shoreline and marine resources for ceremonial, cultural and subsistence purposes.

The action would shift the northern boundary of the SMCA southward by approximately 1.5 miles, and shift the southern boundary of the SMCA southward by approximately 1.0 mile.

2. Authorize Tribal Take. Amend subsections 632(b)(97), (98), (112) and (117) to authorize tribal take for members of the federally recognized Santa Ynez Band of Chumash Indians at Kashtayit and Naples SMCAs (Santa Barbara County), Point Dume SMCA (Los Angeles County), and Anacapa Island SMCA (Ventura County).

In Apr 2017, the Santa Ynez Band of Chumash Indians submitted a modified final request for FGC to authorize tribal take within four SMCAs for ceremonial, cultural and subsistence purposes. As requested by FGC, the tribe provided documentation of historic use.

Significant Public Comments (N/A)

Recommendation

FGC staff: Authorize publication of the notice as recommended by DFW.

DFW: Authorize publication of the notice as detailed in the draft initial statement of reasons to change two MPA boundaries and authorize tribal take in four MPAs.

Exhibits

1. DFW memo, received Mar 20, 2018
2. Draft initial statement of reasons
3. Draft economic and fiscal impact statement (Std. 399)
4. DFW presentation

Motion/Direction

Moved by _____ and seconded by _____ that the Commission authorizes publication of a notice of its intent to amend Section 632, related to boundary changes for, and tribal take in, marine protected areas.

Memorandum

2016 MAR -7 PM 4:12

Date: February 28, 2018

To: Valerie Termini
Executive Director
Fish and Wildlife Commission

From: Charlton H. Bonham
Director



Subject: **Submission of Initial Statement of Reasons to Amend Section 632, Title 14, California Code of Regulations, Re: Rockport Rocks Special Closure**

The Department of Fish and Wildlife (Department) requests the Fish and Game Commission (Commission) authorize publishing notice of its intent to amend subsection (b)(17) of Section 632 of Title 14, California Code of Regulations concerning the repeal of Rockport Rocks Special Closure. Authorization of this request to publish notice will allow for discussion and possible adoption at the June 20 and August 22, 2018 Commission meetings, respectively.

At the time of adoption by the Commission June 6, 2012, Rockport Rocks Special Closure was unknowingly implemented around the privately held lands of the Mendocino Redwood Company, LLC, (MRC). Based on review of the petition, supporting documents, and land ownership history, the Department recommends the repeal of Rockport Rocks Special Closure from regulation. All aspects of the special closure are proposed for repeal, except for modification of the name from "Rockport Rocks Special Closure" to "Repealed: Rockport Rocks Special Closure".

If you have any questions regarding this item, please contact Dr. Craig Shuman, Marine Regional Manager at (916) 445-6459. The public notice for this rulemaking should identify Environmental Scientist, Ms. Amanda Van Diggelen as the Department's point of contact. Her contact information is (562) 342-7176 or Amanda.VanDiggelen@wildlife.ca.gov.

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February 28, 2018
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STATE OF CALIFORNIA
FISH AND GAME COMMISSION
INITIAL STATEMENT OF REASONS FOR PROPOSED REGULATORY ACTION

Amend subsection (b)(17) of Section 632
Title 14, California Code of Regulations
Re: Marine Protected Areas

I. Date of Initial Statement of Reasons: February 2, 2018

II. Dates and Locations of Scheduled Hearings:

- | | | |
|-------------------------|-----------|-----------------|
| (a) Notice Hearing: | Date: | April 18, 2018 |
| | Location: | Ventura, CA |
| (b) Discussion Hearing: | Date: | June 20, 2018 |
| | Location: | Sacramento, CA |
| (c) Adoption Hearing: | Date: | August 22, 2018 |
| | Location: | Fortuna, CA |

III. Description of Regulatory Action:

- (a) Statement of Specific Purpose of Regulation Change and Factual Basis for Determining that Regulation Change is Reasonably Necessary:

Background Information

The Marine Life Protection Act (MLPA) (Fish and Game Code sections 2850-2863) established a programmatic framework for designating marine protected areas (MPAs) in the form of a statewide network. During this designation process, relatively small special closures were used as a management tool to protect seabird rookeries and marine mammal haul-out sites by restricting ocean-based access to these areas seasonally or year-round (Attachment 1).

On June 6, 2012, the Fish and Game Commission (Commission) adopted regulations establishing Rockport Rocks Special Closure along with six other special closures, 15 MPAs and one marine managed area, and amending regulations for four existing MPAs along California's North Coast MPA region [Section 632, Title 14, California Code of Regulations (CCR)]. The Rockport Rocks Special Closure was enacted to seasonally protect breeding and nesting seabirds from disturbance by prohibiting visitor access closer than 300 feet March 1 to August 31 [Subsection 632(b)(17)] (Figure 1).



Figure 1. Map of Rockport Rocks Special Closure

In 2015, the Mendocino Redwood Company, LLC, (MRC) submitted a petition to the Commission requesting the repeal of the Rockport Rocks Special Closure regulations. The petition alleges the Rockport Rocks Special Closure prohibits MRC from accessing its private property (Attachment 2).

After reviewing the MRC petition and supporting documents (attachments 3-6) the California Department of Fish and Wildlife (Department) in consultation with the State Lands Commission and US Bureau of Land Management (BLM), confirmed that in 1927 the BLM had patented the area referred to as Rockport Rocks, and deeded ownership to Edgar T. Dusenbury. In 1927, Dusenbury sold the area to Finkbine-Guild Lumber Company, which in 1998, and then known as L-P Redwood, LLC, sold the area to MRC (Attachment 4).

Proposed Amendment to Subsection 632(b)(17):

Subsection 632(b)(17) defines a geographic area surrounding Rockport Rocks as a special closure prohibiting seasonal access to the area from March 1 to August 31. This subsection is proposed for amendment by repealing all aspects of the special closure. The subsection heading will be modified from “Rockport Rocks Special Closure” to “Repealed: Rockport Rocks Special Closure”;

thereby ensuring historical tracking of enforcement citations statewide, avoiding costs of reprinting outreach materials, and avoiding an amendment of every MPA serial number in subsection 632(b).

Necessity and Rationale:

The current regulation inadvertently restricts access to privately owned land. A 2008 Department memorandum about private land ownership and MPAs stated that “the MPA designation process must take into account existing California State Lands Commission leases, California Fish and Game Commission state water bottom and kelp leases, tide and submerged lands grants, private tidelands, and any other legal entitlements” (Attachment 3). Repeal of the Rockport Rocks Special Closure regulations will address the original intent of the MLPA design criteria to not impact private land ownership.

(b) Goals and Benefits of the Regulation:

The proposed regulations will make the MPA network consistent with original planning criteria regarding private land ownership and MPA implementation.

(c) Authority and Reference Sections from Fish and Game Code for Regulation:

Authority: Sections 200, 205(c), 265, 399, 1590, 1591, 2860, 2861, and 6750, Fish and Game Code; and Sections 36725(a) and 36725(e), Public Resources Code.

Reference: Sections 200, 205(c), 265, 399, 2861, 5521, 6653, 8420(e), and 8500, Fish and Game Code; and Sections 36700(e), 36710(e), 36725(a) and 36725(e), Public Resources Code.

(d) Specific Technology or Equipment Required by Regulatory Change:

None

(e) Identification of Reports or Documents Supporting Regulation Change:

Attachment 1: Department Memorandum, dated November 1, 2007 - Special Closures as they apply to the Marine Life Protection Act (MLMA)

Attachment 2: Petition No. 2015-006 Remove special closure regulations for Rockport Rocks in 14 CCR § 632(b)(17)

Attachment 3: Department Memorandum, dated January 31, 2008 - Private Land Ownership and Marine Protected Areas

Attachment 4: MRC Land Ownership History

- Patent # 999463 as recorded in Book 22, page 54, of the

- Mendocino County Book of Records
 - Record of Patents, Patent # 999463
 - Map of Patent Area, Patent # 999463
 - Grant Deed as recorded in Book 22, page 55, of the Mendocino County Book of Records
 - Pages 1, 92, and 94 of Grant Deed, dated June 24, 1998

Attachment 5: Commission letter, dated July 31, 2017, granting Petition No. 2015-006

Attachment 6: California Marine Life Protection Act North Coast Project – North Coast Special Closure Recommendations, October 26, 2010

(f) Public Discussions of Proposed Regulations Prior to Notice Publication:

MRC presented the petition to the Commission at its December 9, 2015, meeting. At its February 10, 2016, meeting, the Commission referred the petition to the Department, and at its June 22, 2017, meeting, the Commission granted the petition, no other public meetings were held addressing the petition prior to the notice publication. The 45-day comment period provides adequate time for public review of the proposed amendments.

IV. Description of Reasonable Alternatives to Regulatory Action:

(a) Alternatives to Regulation Change:

No alternatives were identified by or brought to the attention of Commission staff that would have the same desired regulatory effect.

(b) No Change Alternative:

The no-change alternative would leave Rockport Rocks Special Closure in its current location, and continue to impact the MRC adversely by limiting legal access to its private land. MRC has stated “the special closure is a potential encumbrance to being able to sell the parcel or sell a conservation easement to an interested party.”

V. Mitigation Measures Required by Regulatory Action:

The proposed regulatory action will have no negative impact on the environment; therefore, no mitigation measures are needed.

VI. Impact of Regulatory Action:

The potential for significant statewide adverse economic impacts that might result from the proposed regulatory action has been assessed, and the following initial determinations relative to the required statutory categories have been made:

- (a) Significant Statewide Adverse Economic Impact Directly Affecting Businesses, Including the Ability of California Businesses to Compete with Businesses in Other States:

The proposed action will not have a significant statewide adverse economic impact directly affecting business, including the ability of California businesses to compete with businesses in other states because the proposed repeal removes an access restriction that may impart limited positive impacts to only one private landowner.

- (b) Impact on the Creation or Elimination of Jobs Within the State, the Creation of New Businesses or the Elimination of Existing Businesses, or the Expansion of Businesses in California; Benefits of the Regulation to the Health and Welfare of California Residents, Worker Safety, and the State's Environment:

The Commission does not anticipate any impacts on creation or elimination of jobs, the creation of new businesses, the elimination of existing businesses or the expansion of businesses in California because these changes will neither increase nor decrease recreational or commercial opportunities within the state of California.

The Commission does not anticipate any benefits to the health and welfare of California residents, worker safety, or the environment.

- (c) Cost Impacts on a Representative Private Person or Business:

The Commission is not aware of any cost impacts that a representative private person or business would necessarily incur in reasonable compliance with the proposed action.

- (d) Costs or Savings to State Agencies or Costs/Savings in Federal Funding to the State: None.

- (e) Nondiscretionary Costs/Savings to Local Agencies: None.

- (f) Programs Mandated on Local Agencies or School Districts: None.

- (g) Costs Imposed on Any Local Agency or School District that is Required to be Reimbursed Under Part 7 (commencing with Section 17500) of Division 4, Government Code: None.

- (h) Effect on Housing Costs: None.

VII. Economic Impact Assessment

- (a) Effects of the Regulation on the Creation or Elimination of Jobs Within the State:

The proposed amendment will not create or eliminate jobs within the state because the proposed repeal removes an access restriction that only affects a private landowner, the MRC. This change will neither increase nor decrease recreational or commercial opportunities within California.

- (b) Effects of the Regulation on the Creation of New Businesses or the Elimination of Existing Businesses Within the State:

The proposed amendment will not create any new businesses or eliminate existing businesses because the proposed repeal will neither increase nor decrease recreational or commercial opportunities within California.

- (c) Effects of the Regulation on the Expansion of Businesses Currently Doing Business Within the State:

The proposed amendment is not expected to result in the expansion of businesses currently doing business within the state because the proposed regulations will neither increase nor decrease recreational or commercial opportunities within California.

- (d) Benefits of the Regulation to the Health and Welfare of California Residents:

The Commission does not anticipate any benefits to the health and welfare of California residents.

- (e) Benefits of the Regulation to Worker Safety:

The proposed amendment does not have foreseeable benefits to worker safety because the regulation does not affect working conditions.

- (f) Benefits of the Regulation to the State's Environment:

The Commission anticipates benefits to the state's environment will remain consistent with the protections provided by the MPA network as a whole.

Informative Digest/Policy Statement Overview

The Marine Life Protection Act (MLPA) (Fish and Game Code sections 2850-2863) established a programmatic framework for designating marine protected areas (MPAs) in the form of a statewide network. During this designation process, relatively small special closures were used as a management tool to protect seabird rookeries and marine mammal haul-out sites by restricting ocean-based access to these areas seasonally or year-round.

The Rockport Rocks Special Closure was enacted in 2012 to seasonally protect breeding and nesting seabirds from disturbance by prohibiting visitor access closer than 300 feet March 1 to August 31 [Subsection 632(b)(17), Title 14, California Code of Regulations (CCR)].

In 2015, the Mendocino Redwood Company, LLC, (MRC) submitted a petition to the Fish and Game Commission (Commission) requesting the repeal of the Rockport Rocks Special Closure regulations. The petition alleges the Rockport Rocks Special Closure prohibits MRC from accessing its private property.

The proposed amendment will repeal all aspects of the special closure, except for modification of the name from “Rockport Rocks Special Closure” to “Repealed: Rockport Rocks Special Closure”.

Benefits of the Proposed Regulation

The proposed amendment to Section 632 corrects inadvertent implementation of regulations that conflict with Department policy to not establish MPAs or special closures that prohibit access to private lands. Retaining the name with a slight modification will ensure historical tracking of enforcement citations for this area as well as all other MPAs and special closures in the statewide network, avoid costs of reprinting statewide materials, and avoid an amendment of every MPA serial number in subsection 632(b).

Consistency and Compatibility with Existing State Regulations

Commission staff has searched the CCR and has found no other regulations concerning Rockport Rock Special Closure and therefore has determined that the proposed regulations are neither inconsistent, nor incompatible, with existing state regulations.

Regulatory Language, May - October, 2018

Subsection (d) of Section 27.80, Title 14, CCR, is amended to read:

§ 27.80. Salmon.

...

(d) Open Fishing Days, Daily Bag Limits, and Minimum Size in effect on or after May 1, ~~2017~~2018.

(1) North of Horse Mountain (40°05'00" N. lat.) and in Humboldt Bay.

(A) ~~Closed to salmon fishing~~Open to salmon fishing June 1 through September 3, 2018.

(B) Daily Bag Limit: 2 salmon per day. See subsection (b) above and subsection (e) below.

(C) Minimum Size: 20 inches total length.

(2) Between Horse Mountain and Point Arena (38°57'30" N. lat.).

(A) Open to salmon fishing ~~May 1 to May 31 and August 15 to November 12, 2017~~June 17 through October 31, 2018. Fishing is authorized 7 days per week.

(B) Daily Bag Limit: 2 salmon per day. See subsection (b) above and subsection (e) below.

(C) Minimum Size: 20 inches total length.

(3) Between Point Arena and Pigeon Point (37°11'00" N. lat.).

(A) Open to salmon fishing ~~May 15 to October 31, 2017~~June 17 through October 31, 2018. Fishing is authorized 7 days per week.

(B) Daily Bag Limit: 2 salmon per day. See subsection (b) above and subsection (e) below.

(C) Minimum Size: 20 inches total length.

(4) Between Pigeon Point and Point Sur (36°18'00" N. lat.).

(A) Open to salmon fishing ~~May 1 to July 15, 2017~~May 1 through July 2, 2018. Fishing is authorized 7 days per week.

(B) Daily Bag Limit: 2 salmon per day. See subsection (b) above and subsection (e) below.

(C) Minimum Size: 24 inches total length.

(5) South of Point Sur.

(A) Open to salmon fishing ~~May 1 to May 31, 2017~~May 1 through July 2, 2018. Fishing is authorized 7 days per week.

(B) Daily Bag Limit: 2 salmon per day. See subsection (b) above and subsection (e) below.

(C) Minimum Size: 24 inches total length.

...

Note: Authority cited: Sections 200, 205, 265, 316.5, 399, 2084 and 7110, Fish and Game Code. Reference: Sections 200, 205, 265, 316.5, 2084 and 7110, Fish and Game Code.

Regulatory Language, April 2019

Subsection (c) of Section 27.80, Title 14, CCR, is amended to read:

§ 27.80. Salmon.

...

(c) Open Fishing Days, Daily Bag Limits, and Minimum Size in effect ~~April 7 through April 30, 2018~~ April 6 through April 30, 2019.

(1) North of Horse Mountain (40°05'00" N. lat.) and in Humboldt Bay.

(A) Closed to salmon fishing.

(2) Between Horse Mountain and Point Arena (38°57'30" N. lat.).

~~(A) Closed to salmon fishing.~~ Open to salmon fishing from April 6 through April 30, 2019. Fishing is authorized 7 days per week.

(B) Daily Bag Limit: 2 salmon per day. See subsection (b) above and subsection (e) below.

(C) Minimum Size: 20 inches total length.

(3) Between Point Arena and Pigeon Point (37°11'00" N. lat.).

~~(A) Closed to salmon fishing.~~ Open to salmon fishing from April 6 through April 30, 2019. Fishing is authorized 7 days per week.

(B) Daily Bag Limit: 2 salmon per day. See subsection (b) above and subsection (e) below.

(C) Minimum Size: 24 inches total length.

(4) Between Pigeon Point and Point Sur (36°18'00" N. lat.).

~~(A) Open to salmon fishing from April 7 through April 30, 2018~~ April 6 through April 30, 2019. Fishing is authorized 7 days per week.

(B) Daily Bag Limit: 2 salmon per day. See subsection (b) above and subsection (e) below.

(C) Minimum Size: 24 inches total length.

(5) South of Point Sur.

~~(A) Open to salmon fishing from April 7 through April 30, 2018~~ April 6 through April 30, 2019. Fishing is authorized 7 days per week.

(B) Daily Bag Limit: 2 salmon per day. See subsection (b) above and subsection (e) below.

(C) Minimum Size: 24 inches total length.

...

Note: Authority cited: Sections 200, 205, 265, 316.5, 399, 2084 and 7110, Fish and Game Code. Reference: Sections 200, 205, 265, 316.5, 2084 and 7110, Fish and Game Code.

STAFF SUMMARY FOR AUGUST 16, 2017

17. FISHERIES AUTOMATIC CONFORMANCE PROCESS**Today's Item**Information ☐Action ☒

Adopt proposed regulation for a process to automatically conform state recreational fishing regulations to federal regulations.

Summary of Previous/Future Actions

- | | |
|-----------------------------------|---------------------------------|
| • Notice hearing | Apr 26-27, 2017; Van Nuys |
| • Discussion hearing | Jun 21-22, 2017; Smith River |
| • Today's adoption hearing | Aug 16, 2017; Sacramento |

Background

For species managed under federal fishery management plans or regulation, FGC usually takes concurrent action to conform State recreational regulations to federal regulations adopted by the National Marine Fisheries Services (NMFS); this dual process is redundant and inefficient. The proposed regulation, Section 1.95, Title 14, will establish a process through which State recreational fishing regulations for salmon and Pacific halibut will automatically conform to federal regulations, unless FGC adopts regulations for said species using the regular rulemaking process.

For annual regulations or corrections to annual regulations for salmon and Pacific halibut, the proposed regulation would require, no later than 10 days after federal regulations are published in the Federal Register, that:

- FGC submit amended State regulations to the Office of Administrative Law for publication in the California Code of Regulations, and file the amended State regulations with the Secretary of State;
- DFW issue a news release announcing the Federal Register in which the federal regulations are published and the effective date of the conformed State regulations;
- FGC mail or email the news release to interested parties;
- To the extent practicable, DFW provide information on any changes to the State regulations via public contact, electronic notification, and online and printed publications.

The proposed regulation would also require that an update on the conformed State regulations be included on the agenda of the next regularly-scheduled FGC meeting.

For in-season changes to regulations for salmon and Pacific halibut, the proposed regulation indicates that State regulations shall conform to the applicable federal regulations publicly noticed through the NMFS ocean salmon hotline and NMFS Area 2A Pacific halibut hotline, respectively.

STAFF SUMMARY FOR AUGUST 16, 2017

Significant Public Comments

1. One oral comment in support of the proposed regulation was received at the Jun 22, 2017 FGC meeting.

Recommendation

FGC staff: Adopt the regulation as proposed.

Exhibits

1. DFW memo, received Apr 11, 2017
2. Initial statement of reasons
3. Draft notice of exemption

Motion/Direction

Moved by _____ and seconded by _____ that the Commission adopts proposed Section 1.95, related to a process to conform State recreational fishing regulations to federal regulations and that the Commission has determined, based on the record, this approval is exempt from the California Environmental Quality Act pursuant to the guidelines in Title 14 sections 15307 and 15308.

California Fish and Game Commission
Meeting Locations for 2014-2019

Month	2019 (Proposed)	2018	2017	2016	2015	2014
January (WRC)	Riverside	Santa Rosa	Redding	Sacramento (cancelled)	West Sacramento	Los Angeles
February (TC & FGC)	Fresno/Bakersfield	Sacramento	Rohnert Park	Sacramento	Sacramento	Sacramento
March (MRC)	Monterey/Marina	Santa Rosa	San Clemente	Los Alamitos	Marina	Santa Rosa
April (FGC)	Redding	Ventura	Van Nuys	Santa Rosa	Santa Rosa	Ventura
May (WRC)	Sacramento	Los Alamitos	Sacramento	West Sacramento	Los Angeles	San Francisco
June (TC & FGC)	Tahoe/Truckee/Sacramento	Sacramento	Smith River	Bakersfield	Mammoth Lakes	Fortuna
July (MRC)	Ventura	San Clemente	Santa Rosa	Petaluma	Trinidad	Moss Landing
August (FGC)	Mammoth/Bishop	Fortuna	Sacramento	Folsom	Fortuna	San Diego
September (WRC)	Santa Rosa	Sacramento	Riverside	Woodland	Fresno	Sacramento
October (TC & FGC)	Los Angeles	Fresno	Atascadero	Eureka	Los Angeles	Mount Shasta
November (MRC)	Sacramento	Sacramento	Marina	Sacramento	Ventura	Los Alamitos
December (FGC)	San Diego	Oceanside	San Diego	San Diego	San Diego	Van Nuys

STAFF SUMMARY FOR FEBRUARY 7-8, 2018

10. MARINE LIFE MANAGEMENT ACT MASTER PLAN

Today's Item

Information ☒Action ☐

Receive DFW draft amended Marine Life Management Act (MLMA) master plan for fisheries.

Summary of Previous/Future Actions

- | | |
|--|----------------------------------|
| • MRC vetting | Nov 2015 – Jul 2017; MRC |
| • MRC recommendation on initial draft plan | Nov 9, 2017; MRC, Marina |
| • Today's receipt of draft 2018 master plan | Feb 7-8, 2018; Sacramento |
| • Discuss draft 2018 master plan | Apr 18-19, 2018; Ventura |
| • Adopt 2018 master plan | Jun 20-21, 2018; Sacramento |

Background

In 2001, FGC adopted *The Master Plan: A Guide for the Development of Fishery Management Plans* (Master Plan), developed by DFW with input from stakeholders, pursuant to the Marine Life Management Act (MLMA). A DFW effort to amend the Master Plan has been underway since Nov 2015, to broaden the policy scope of the document and facilitate moving more fisheries under active management and fishery management plans, as envisioned in the MLMA. Throughout the process, MRC has received overviews and regular updates from DFW on a three-phased amendment approach of (1) information-gathering in 2016; (2) amendment drafting from late 2016 through 2017; and (3) FGC public review process in 2018.

1. Information-gathering phase: Over a dozen cooperative information-gathering projects from investigators and researchers outside DFW provided tools and recommendations to DFW to inform development of a draft amended framework. A unique feature of the effort was inclusion of the MRC's Fisheries Bycatch Workgroup and its recommendations as a stakeholder information-gathering project.

2. Amendment drafting phase: Drafting was informed by input from the information-gathering projects and feedback solicited from tribes, stakeholders, and MRC. To consider stakeholder feedback prior to delivering a draft to FGC, on Oct 10, 2017 DFW released an initial public review draft titled *2018 Master Plan for Fisheries: A guide for Implementation of the Marine Life Management Act* for a one-month public comment period, culminating on Nov 9 with MRC discussion and recommendations.

3. FGC public review phase: In Dec 2017, FGC adopted the MRC recommendations to endorse integration of bycatch workgroup consensus recommendations related to bycatch evaluation in the draft master plan, and to request that DFW, following submittal of the draft to FGC in Feb 2018, develop possible implementation timelines for the plan. Some FGC members also expressed an interest in seeing an overview of the bycatch workgroup's non-consensus recommendations for possible archival within a master plan appendix; staff has prepared a draft for FGC consideration (Exhibit 1).

STAFF SUMMARY FOR FEBRUARY 7-8, 2018

Today, DFW will make a presentation (Exhibit 2) on the draft 2018 amended master plan and commence its formal three-meeting public review process prior to FGC adoption. DFW has integrated input from public review, MRC comments and FGC direction, and will deliver the draft document at the meeting.

Significant Public Comments (N/A)**Recommendation**

FGC staff: Receive public input on the draft 2018 master plan document, and provide direction on whether to archive the bycatch workgroup non-consensus items within the bycatch appendix or maintain those items only within the original bycatch workgroup recommendations report.

Exhibits

1. Draft Appendix L-2: Additional considerations for conducting bycatch evaluation
2. DFW presentation

Motion/Direction (N/A)

2018 JUN 11 PM 2:30

Memorandum

Date: June 11, 2018

To: Valerie Termini
Executive Director
Fish and Game Commission

From: Charlton H. Bonham
Director



Subject: **Agenda Item for the June 20-21, Fish and Game Commission meeting:
Submission of 2018 Marine Life Management Act Master Plan**

The Department of Fish and Wildlife (Department) is submitting the 2018 Marine Life Management Act Master Plan (2018 Master Plan) to the Fish and Game Commission (Commission) for its review and possible adoption. The Department is also submitting a summary of comments received from the public comment period during the Commission review process and the Department's responses to these comments.

Over the past 18 months, the Department and partners have worked with Tribes and tribal communities, stakeholders, and interested members of the public to develop a Master Plan that enhances the sustainability of state-managed fisheries and ecosystems. The 2018 Master Plan outlines a new framework for Marine Life Management Act (MLMA)-based management to achieve the specific objectives of the MLMA and guide its application through an efficient, flexible, and transparent management approach that considers advancements in science, technology, and stakeholder priorities. The 2018 Master Plan is not prescriptive but rather is designed to serve as a roadmap and toolbox for implementation.

In February 2018, the Department submitted a draft 2018 Master Plan to the Commission and initiated a three-meeting process for review, discussion, and possible adoption. The draft 2018 Master Plan incorporated feedback and recommendations from Tribes and stakeholders gained through a Department-led public review process (October- November 2017) and summarized in a response to comments table that was shared with the Commission and public. The 2018 Master Plan incorporates feedback received during the Commission review process.

The Department is grateful for the involvement of Tribes and tribal communities, stakeholders, and interested members of the public over the past 18 months to help ensure the 2018 Master Plan reflects the knowledge, expertise, needs, and priorities of the California ocean community. The Department looks forward to working in close collaboration with the Commission, Legislature, Tribes and tribal communities, stakeholders, and the public to apply the framework for MLMA-based management. Work plans to carry out implementation and identify clear expectations will occur during the implementation phase following the adoption of the 2018 Master Plan and will reflect Department staff capacity and available resources.

Valerie Termini, Executive Director
Fish and Game Commission
June 11, 2018
Page 2

If you have any questions regarding this item, please contact Dr. Craig Shuman, Marine Regional Manager, at (916) 445-6459 or by email at Craig.Shuman@wildlife.ca.gov.

Attachments:

1. 2018 Master Plan
2. Response to comments received on draft 2018 Master Plan

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2018 Master Plan for Fisheries A Guide for Implementation of the Marine Life Management Act

**June 2018
State of California
The Natural Resources Agency
Department of Fish and Wildlife**



Acknowledgements

The Marine Life Management Act (Appendix A) emphasizes the importance of stakeholder engagement in all areas of management, including the development and revision of the Master Plan. The Department thanks and acknowledges Tribes and tribal communities, and stakeholders for the thoughtful input that has been provided in a range of venues and formats throughout the two-year development of this 2018 Master Plan. The Department also appreciates the generous funding from the Ocean Protection Council and the Resources Legacy Fund, and the numerous partners who provided background material and tools for consideration as part of the preparation of the 2018 Master Plan. See Appendix B for a complete list of these partnerships and engagement efforts.

Executive summary

The **Marine Life Management Act (MLMA)** is California's primary fisheries management law. It directs the California Department of Fish and Wildlife (Department) to develop a Master Plan to guide its implementation. The original Master Plan, adopted in 2001, is being updated to reflect new priorities and emerging management strategies for achieving the MLMA's goals, and to better describe the Department's inclusion of MLMA principles in management decisions. The 2018 Master Plan (Master Plan) replaces the original and is re-structured to better meet the specific management objectives identified in the MLMA. It is intended to be both a roadmap and a toolbox for implementation, providing guidance and direction in the following areas:

Prioritization of management efforts

The Master Plan includes an interim list of prioritized species for management action based on the results of a **Productivity and Susceptibility Analysis (PSA)**. It also describes a more comprehensive approach to prioritization within a framework for MLMA-based management (framework) that includes an assessment of the risks fishing poses to a given **stock** and to the **ecosystem**, the extent to which current management is addressing those risks, and the socioeconomic and community opportunities. The goal is to allow the Department to focus limited management resources on the fisheries with the greatest need and opportunities for resource and ecosystem benefits to the state of California.

Meeting stock sustainability objectives

The MLMA identifies the sustainability of fish stocks and the fisheries that depend on them as its primary **fishery** management goal as stated in Fish and Game Code Section (§) 7056. There are new tools and approaches available to help consider and identify the most appropriate management strategies for achieving sustainability. Even when limited information is available, it is possible to be explicit about potential benefits and costs of different management strategies. The Master Plan identifies some of these approaches and provides guidance regarding their use.

Meeting ecosystem objectives

The MLMA also emphasizes the importance of conserving the health of marine ecosystems (§7050(b)(1)), and specifically, the need to consider impacts to **habitat** and **bycatch** species when prioritizing and managing fisheries (§7056(b) and §7085). The Master Plan provides a step-wise approach to consider and address these issues.

Integrating Marine Protected Areas into fisheries management

California has an extensive network of **Marine Protected Areas (MPAs)** that affect fisheries management and **stakeholders**. Accounting for these MPAs when considering how to meet stock and ecosystem-related objectives is a key aspect of MLMA implementation. If successful, integration of the MPA network into fisheries management is expected to provide significant benefits to fisheries and resources alike.

Adapting to climate change

The effects of climate change can pose challenges to fisheries management and underscore the need for adaptive and responsive management that can adjust to changing species distribution and **abundance**, habitat alteration, and impacts to port infrastructure. Targeted research, consideration of multiple **indicators**, and collaborations with stakeholders can help to make management better able to adapt to these shifts. Climate change considerations factor into species prioritization, scaled management, identification of appropriate management strategies, **adaptive management** structures, and understanding the effects of management on fishery economics and communities.

Engaging stakeholders

Engaging the public in management, research, and decision-making is a central tenet of the MLMA. Ensuring that engagement is meaningful, cost-effective, and leads to well-supported management requires strategies for tailoring efforts to the needs of specific situations. The Master Plan provides guidance on considering and crafting potential engagements.

Collaborating with partners

California is home to a diverse suite of academic and research institutions, Tribes and tribal communities, engaged stakeholders, cooperating agencies, and a range of supplemental public and private funding sources. Well-designed collaborations can be an important means of increasing the Department's limited **capacity** and allowing for enhanced management. The Master Plan seeks to identify a range of areas where collaboration may be beneficial and the conditions necessary to ensure collaborations can achieve their objectives.

Advancing socioeconomic and community objectives

The MLMA has sustainability as its primary goal, but it also seeks to promote healthy fisheries (§7056). Understanding the range of stakeholders' economic and community interests is critical to identifying opportunities to enhance profitability during prioritization and create management measures that have the support of those affected. The Master Plan describes key socioeconomic questions and identifies strategies for obtaining related information as part of Master Plan implementation.

Making management adaptive

The ocean is a highly variable environment and climate change may amplify that variability. Adaptive management can help to ensure that harvest strategies reflect current population levels and ocean conditions and are able to effectively respond to future changes to the fishery or resources. Targeted data collection, strategically selected indicators, and responsive decision frameworks can help management be as adaptive and flexible as possible. The Master Plan identifies a range of structures, strategies, and recommendations for meeting the adaptive management objectives of the MLMA.

Using the best available scientific information

The MLMA stipulates that decisions shall be based on the best available scientific information and other relevant information (§7050(b)(6) and §7056(g)) and places significant emphasis on the role of scientific peer review in the development of **Fishery Management Plans (FMPs)**, research protocols, and other documents that have a scientific basis (§7062(a)). The appropriate scope, scale, and timing of scientific peer review, however, needs clarification and guidance to ensure that it is carried out in a consistent way. The Master Plan identifies tiers of potential review and considerations for identifying when each may be appropriate.

Enhancing and scaling Marine Life Management Act-based management

The state's fisheries vary dramatically in terms of their complexity, geographic scope, value, level of participation, and management needs. A comprehensive and complex FMP may not be appropriate for all fisheries. The ability to scale management efforts to the needs and characteristics of a specific fishery is critical to optimizing the use of management resources. While FMPs remain an important tool for achieving the objectives of the MLMA, other tools such as **Enhanced Status Reports (ESRs)**, targeted **rulemakings**, and more streamlined FMPs can also be used. The Master Plan describes a continuum of management intensity and identifies criteria for determining where a given fishery may fall along the continuum. The goal is to make more efficient and effective use of available tools and resources to implement the MLMA across a wider range of California's fisheries.

Ensuring the Master Plan is an effective resource and guide

The MLMA emphasizes the need for transparency in management and the importance of communicating management decisions and the condition of fisheries to the public (§7056(h)). However, planning documents like the Master Plan can become outdated over time. The Master Plan describes the use of a new, online, publicly-accessible and user-friendly “living” library for California’s state-managed fisheries information and the policies and tools of the Master Plan called the California Fisheries Portal. The goal is to organize and share the considerable research and management efforts of the Department and its partners, provide management resources and tools, and implement the new strategies described in the Master Plan.

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- O – Socioeconomic and Community Considerations**
- P – Partnerships**
- Q – Peer Review under the Marine Life Management Act**

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List of acronyms

ACL	Annual Catch Limit
APA	Administrative Procedure Act
B _{MSY}	Population Biomass at Maximum Sustainable Yield
B ₀	Unfished Biomass
BCA	Billfish Conservation Act
BRD	Bycatch Reduction Device
BWG	Bycatch Working Group
CCE	California Current Ecosystem
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
CFR	Collaborative Fisheries Research
CPFV	Commercial Passenger Fishing Vessel
CPUE	Catch Per Unit Effort
CUSUM	Cumulative Sum
DB-SRA	Depletion-Based Stock Reduction Analysis
DCAC	Depletion-Corrected Average Catch
DLMtool	Data-Limited Methods Toolkit
EBFM	Ecosystem-Based Fishery Management
EFI	Essential Fishery Information
EM	Electronic Monitoring
ERA	Ecological Risk Assessment
ESA	Endangered Species Act
ESR	Enhanced Status Report
FAO	Food and Agriculture Organization of the United Nations
FGC	Fish and Game Code
FMP	Fishery Management Plan
HCR	Harvest Control Rule
LED	Light Emitting Device
MBTA	Migratory Bird Treaty Act
MLMA	Marine Life Management Act
MLPA	Marine Life Protection Act
MMA	Marine Managed Area
MMPA	Marine Mammal Protection Act
MPA	Marine Protected Area
MRC	Fish and Game Commission's Marine Resources Committee
MSA	Magnuson-Stevens Fishery Conservation and Management Act
MSY	Maximum Sustainable Yield
MSE	Management Strategy Evaluation

NGO	Non-Government Organization
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NRC	National Research Council
OFL	Overfishing Limit
OPC	Ocean Protection Council
OST	California Ocean Science Trust
OY	Optimum Yield
PFMC	Pacific Fishery Management Council
PSA	Productivity and Susceptibility Analysis
RCA	Rockfish Conservation Area
SMCA	State Marine Conservation Area
SMP	State Marine Park
SMR	State Marine Reserve
SMRMA	State Marine Recreational Management Area
SPR	Spawning Potential Ratio
TAC	Total Allowable Catch
TAE	Total Allowable Effort
TOR	Terms of Reference
VMS	Vessel Monitoring System
WSSCAP	White Seabass Scientific and Constituent Advisory Panel
YPR	Yield Per Recruit

Acronyms and glossary terms are **bolded** upon first use.

Chapter 1 – Introduction

Background

California has a rich fishing culture that is an integral part of the history of the state. The state is also home to vibrant marine ecosystems. The MLMA was designed to safeguard both. Enacted in 1999, the law reshaped the management and conservation of **marine living resources** in California. It identified sustainability of those resources as its primary objective (§7056) and emphasized the need for a comprehensive, ecosystem-based approach to the management of the state’s fisheries (§7050(b)(1)). The MLMA also underscored the importance of informed public involvement in decision-making and science (§7056(h)).

The California Department of Fish and Wildlife (Department) monitors hundreds of species of fish, invertebrates, and algae (Appendix C) across the state’s 1,100 miles of coastline. Actively managing those species that are most abundant in commercial **landings**, recreational **catch**, and subsistence use requires prioritization and strategic use of limited resources. For that reason, the MLMA requires the Department to develop a roadmap for implementation called the Master Plan. The original Master Plan was adopted by the California Fish and Game Commission (Commission) in 2001 and has helped guide MLMA implementation to date. Since that time however, new tools, insights, and priorities have emerged. The 2018 Master Plan (Master Plan) seeks to reflect these changes to enhance implementation of the law.

Section 7073 of the MLMA describes the minimally required elements of the Master Plan. The 2001 Master Plan was largely focused on guidance for the development of FMPs. The amendment process presents an opportunity to consider the full range of the MLMA’s objectives (§7056(a-m)) and identify additional tools and strategies that will help achieve its vision of healthy ecosystems, sustainable fisheries and fishing communities, and transparent and strategic management.

The scope of the Master Plan includes marine species found in California ocean waters that are managed solely under state jurisdiction. The management of federal species and those managed jointly with the **National Marine Fisheries Service (NMFS)** and the **Pacific Fishery Management Council (PFMC)** is not addressed by the Master Plan. Provisions of the MLMA related to specific topics are identified and discussed in the chapters that follow. However, it is useful to first provide a brief overview of the MLMA and its implementation to date.

Sustainability

The MLMA’s overarching policy is to ensure the conservation, **sustainable use**, and, where feasible, restoration of California’s marine living resources (§7050(b)). To achieve this goal, the MLMA calls for allowing only those uses that are sustainable. Section 99.5 defines sustainability as:

- (a) Continuous replacement of resources, taking into account fluctuations in abundance and environmental variability.
- (b) Securing the fullest possible range of present and long-term economic, social, and ecological benefits, maintaining **biological diversity**, and, in the case of fishery management based on **Maximum Sustainable Yield (MSY)**, taking in a fishery that does not exceed **Optimum Yield (OY)**.

The MLMA also emphasizes the importance of **commercial** and **recreational fisheries** to the culture and economy of California and requires that the effects of conservation and management measures be allocated fairly between both **sectors** (§7072(c)).

Principal strategies

To achieve its goals, the MLMA calls for using several basic tools:

- *Fishery Management Plans*: Management should be strategic and comprehensive (§7072).
- *Status of the Fisheries Reports*: The Department will prepare reports on the status of California's fisheries and the effectiveness of management programs (§7065 and §7066(c)).
- *Science*: Management is to be based on the best available scientific information and other relevant information. However, a lack of information should not be the basis for continued inaction. Research protocols should be used to identify and acquire **Essential Fishery Information (EFI)**. To help ensure the scientific soundness of decisions, scientific documents should be peer reviewed by experts (§7050(b)(6)).
- *Constituent involvement*: The MLMA directs the Department and Commission to engage in decision-making that involves all interested parties (§7050(b)(7)).
- *Master Plan*: The Master Plan serves as a roadmap for the implementation of the MLMA by prioritizing management efforts and providing tools to guide them (§7073).

Implementation to date

After more than 15 years, the MLMA still serves as a strong foundation for guiding the management of the state's marine fisheries. The Department has prepared FMPs for White Seabass (2002), 19 species of nearshore finfish (2002), Market Squid (2005), and Spiny Lobster (2016), along with a Recovery and Management Plan for abalone (2005). FMPs for Pacific Herring and the recreational Red Abalone fishery are currently under development. The Rock Crab, California Halibut, and **trawl** fisheries are also expressly required to be managed in ways that are consistent with the MLMA (see §8282, §8494, and §8841, respectively). In addition, the Department has developed stand-alone rulemakings to help achieve sustainability in a wide range of other fisheries including Kellet's Whelk, saltwater basses, Pacific Hagfish, Pacific Herring, and sea urchin. While the Department has integrated the core principles of the MLMA into its fishery management practices, it has not always been able to clearly track and demonstrate adherence to the MLMA for fisheries without FMPs.

Future MLMA implementation can benefit from the accumulated experience of the Commission, Department, and stakeholders as well as from recent developments in fisheries management. It is with these lessons, experiences, and innovations in mind that the 2018 Master Plan sets out the goals and strategies below.

Orientation to the 2018 Master Plan

To enhance MLMA implementation, the following goals, objectives and approach have been identified:

Goals

- Enhance the sustainability of the state's ocean fisheries.
- Elevate ecosystem health in decision-making.
- Help promote more efficient, effective, and streamlined fisheries management.
- Establish a clear pathway for improving the management of individual fisheries.
- Set clear expectations for managers and the public.
- Foster transparency and flexibility in fisheries management with Tribes and tribal communities, stakeholders, and interested members of the public.

Objectives

- Provide a clear and consistent framework for MLMA-based management (framework) that conveys how the MLMA is to be implemented and how key issues will be addressed.
- Establish priorities for fisheries management efforts.
- Consistently apply the MLMA's policies and approaches to a greater number of the state's fisheries.
- Capitalize on new innovations to identify effective fishery management strategies.
- Consistently address the MLMA's **Ecosystem-Based Fishery Management (EBFM)** goals, specifically habitat protection, bycatch management, consideration of forage needs, and the use of **ecosystem indicators**.
- Incorporate consideration of the benefits of MPAs for sustainability into how fisheries are prioritized and managed, and how the economic impacts of management are assessed.
- Increase understanding through prioritized and targeted research and data collection.
- Make management more flexible and adaptive in the face of a changing climate.
- Tailor **stakeholder engagement** efforts in a way that makes more efficient and effective use of stakeholder time and expertise.
- Use well-designed collaborations to enhance management capacity, increase buy-in, and improve management.
- Use a more consistent and efficient approach to scientific peer review.
- Design and maintain the Master Plan so that it functions as an adaptive and living guide for MLMA implementation.
- Identify resources needed for effective implementation and design management that is cost effective and reflective of available resources.

Framework for MLMA-based Management

Providing a cohesive approach for applying the strategies above is an essential role of the Master Plan. An overarching framework describes how management efforts should proceed and where specific MLMA policies should be addressed during implementation (Figure 1). The framework is based on the objectives of the MLMA that are referenced at each step. Full application of this framework will require sufficient resources and a collaborative effort among the Department, Commission, Legislature, Tribes and tribal communities, stakeholders, and public.

The Master Plan provides details on the framework's components and guidance for its application. Chapter 2 outlines the approach to prioritization, Chapter 3 describes a continuum of levels of management, and Chapter 4 discusses how stakeholders should be engaged across those levels. Chapters 5-12 provide guidance on how specific issues and MLMA objectives should be addressed in ESRs, FMPs, and management. Chapter 13 outlines the process for updating and amending the Master Plan.

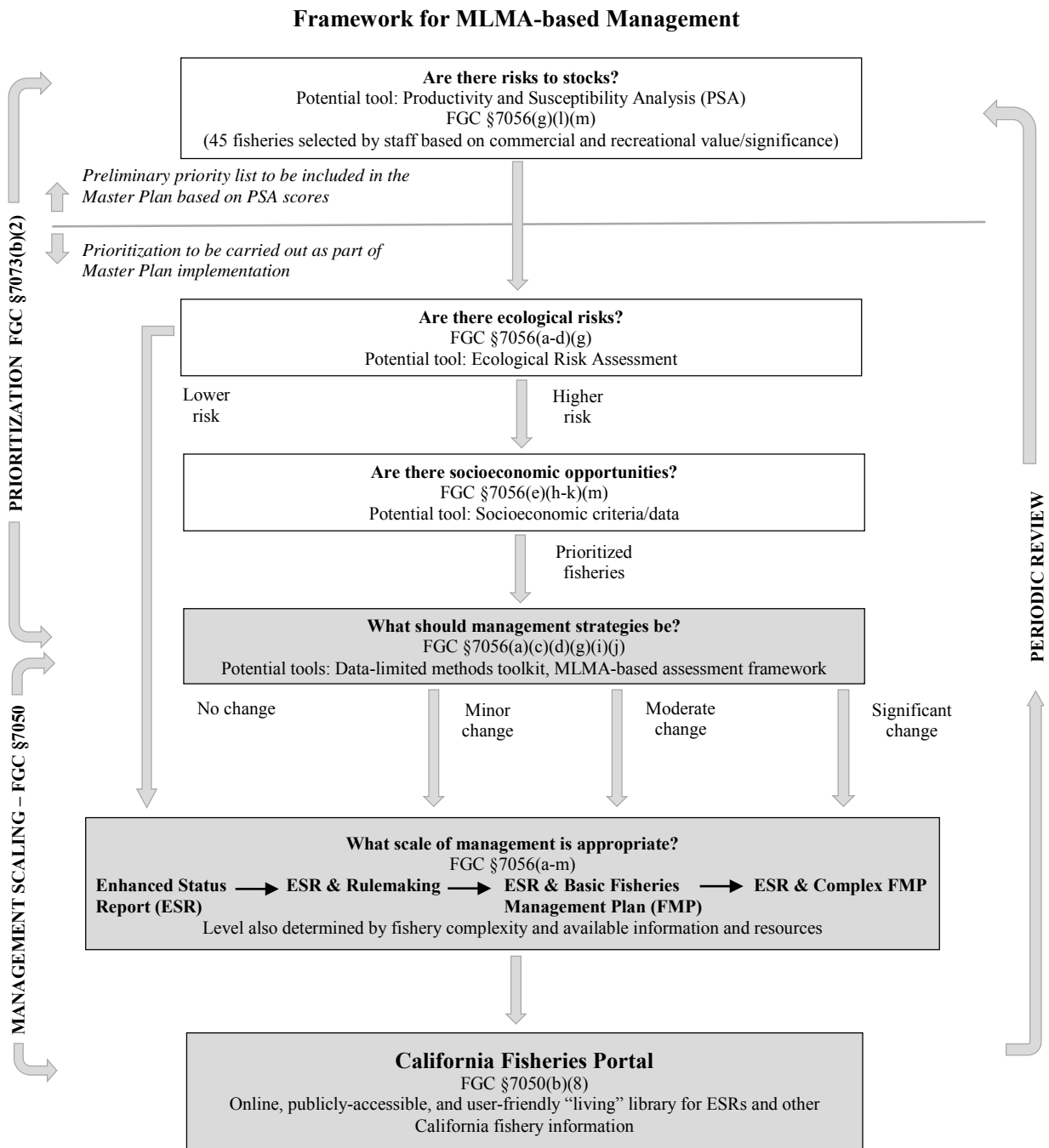


Figure 1. A framework to implement Marine Life Management Act-based management. The top component of the framework (unshaded) constitutes the approach to prioritization, and the bottom component (shaded) represents the approach to scaled management.

Appendices

The Master Plan makes significant use of appendices and web links. The main body of the Master Plan provides a high-level overview of topics. Important details are often in the appendices, which are intended to be an additional resource. For example, the main body discusses the value of data-limited **stock assessment** methods, and the appendices describe these methods. The appendices are designed to be updated as new information becomes available and best practices change (see Chapter 13). This approach seeks to keep the Master Plan digestible and allows for updates to help ensure it remains a valuable resource over time.

Guidance

The Master Plan is not prescriptive and does not stipulate specific actions that will be taken. It does, however, contain a wide range of new directions and guidance to help establish a shared set of expectations for how implementation can occur and to guide the Department's efforts.

Glossary and acronyms

Glossary and acronyms are **bolded** upon first use and detailed definitions are provided in the glossary.

Codes

Unless otherwise specified, the symbol § refers to **Fish and Game Code (FGC)** Sections.

Climate change

The Master Plan is primarily structured around achieving the objectives of the MLMA as described above. However, climate change is a growing challenge that was not evident during the crafting of the MLMA. To effectively address climate change, adaptation and flexibility need to be built into management. Climate change is considered in multiple sections throughout the Master Plan and is the focus of a dedicated chapter on climate change-based impacts and management strategies (see Chapter 11).

Marine Protected Areas

California has a network of MPAs, many of which were created under the **Marine Life Protection Act (MLPA)**. These MPAs (and other closures) have implications for fisheries management in a variety of areas including **data-limited** stock assessments, data collection, maintaining stock sustainability, protecting habitat, fishing **effort** capacity, and socioeconomics. MPAs are discussed throughout the Master Plan where relevant. Due to the specific interest and importance of this issue, the Master Plan also includes a dedicated appendix (see Appendix D) that consolidates these concepts into one location.

Tribal consultation

As discussed in detail in Chapter 12, the Department will work closely with Tribes and tribal communities throughout the implementation of the Master Plan. The Department reached out to Tribes and tribal communities through direct communications and consultation during the MLMA Master Plan amendment process to provide informational updates and solicit input on the draft 2018 Master Plan and amendment process (see Appendix B).

Workplan

The Master Plan does not stipulate how much work or progress is to be accomplished in a specified period. Progress will depend on the resources and capacity that are available for implementation. As part of implementation, the Department will work with the Commission, Tribes and tribal communities, and stakeholders to develop a biennial workplan that will describe what can be accomplished with current resources over a two-year period to help focus effort and establish a shared set of goals and expectations. The workplan will also highlight additional efforts that may be possible with supplemental resources and/or partnerships.

Chapter 2 – Prioritizing management efforts

Given the large number of fisheries under state jurisdiction and limited Department resources, prioritizing management efforts is essential. Section 7073(b) of the MLMA requires the Master Plan to include a priority list of fisheries for the preparation of FMPs. The highest priority is given to fisheries that have the greatest need for changes in management in order to comply with the objectives of the MLMA. The 2001 Master Plan included such a list, however, it proved difficult to focus work solely on priority fisheries. A variety of factors including new and competing mandates, unforeseen events, emergencies, and a changing regulatory landscape hampered the Department's ability to focus efforts exclusively on the priority species. Future prioritization efforts must be made in close coordination with the Commission, Tribes and tribal communities, and stakeholders to ensure there is a shared understanding of how priorities will be addressed and what resources will be required. It will also be important to establish a shared understanding of when it may be necessary, or desirable, to shift focus away from and/or reevaluate the existing list of priorities. Criteria for considering new priorities are provided below.

Potential approaches to prioritization vary in scope and intensity. The 2001 Master Plan used a method that focused on the **vulnerability** of specific stocks to fishing. However, the MLMA includes other objectives related to socioeconomics and the potential impacts of fisheries to habitat and bycatch species that should also be considered when identifying priorities. A prioritization approach that addresses the full range of MLMA objectives should be adopted by the Commission as part of the Master Plan before it is applied. As such, this Master Plan includes both an updated interim priority list to guide near-term Department efforts and to satisfy the requirements of Section §7073, and a framework to implement MLMA-based management to be conducted as the Master Plan is implemented.

To develop the initial priorities described below, the Department identified 36 **finfish** and invertebrate species that are the target of 45 distinct fisheries for initial prioritization. While these 36 species are only a small subset of the hundreds of species under state jurisdiction, the Department selected them for analysis because they represent the vast majority of commercial **landings** value, as well as commercial and recreational participation. These 45 fisheries include specific gear types targeting a single species. For example, the halibut trawl fishery is considered separately from the halibut **gill net** fishery. This is because different gear types are often deployed in different areas and with varying impacts. Note that to focus the initial analysis, not all gear types targeting the selected species were included. Once these initial fisheries have been addressed through the prioritization approach within the framework depicted in Figure 1, additional fisheries may be selected for analysis.

Interim priority list

The 45 fisheries were evaluated using a PSA, which identifies the relative risk fishing may pose to each fishery (Patrick et al. 2009). Relative risk was assessed first by a consultant (MRAG Americas) and then reviewed and adjusted by Department subject matter experts, using relative scaling scores ranging from 1 to 3 for two sets of attributes. The first set of attributes measures the **productivity** of the species, which is derived from life-history characteristics such as age at maturity and trophic level. The second set of attributes measures the **susceptibility** of the species, which includes, for example, overlap of a species' distribution with fishing effort. This second set is designed to assess the species' response to fishing pressure. The PSA metrics are combined to calculate the relative vulnerability of each fishery to other state-managed fisheries using a prescribed formula. The PSA also includes an index that scores the quality of information and the level of confidence in each attribute. A PSA does not provide information on the current status of a stock and does not specify harvest guidelines or management actions. Instead, the main purpose of the PSA is to identify fisheries that are likely to be more vulnerable to a particular method of fishing. It also identifies fisheries with more data gaps than others through the inclusion of a data quality factor.

The full results of the PSA and additional details on the methodology are available at http://www.oceansciencetrust.org/wp-content/uploads/2017/07/CDFW-PSA-Report-on-Select-CA-Fisheries_Final-.pdf. These relative PSA scores were used to bin the 45 fisheries into low, medium, and high priority and generate an interim list of priority fisheries (see Appendix E) that will be used to help guide Department efforts while the comprehensive prioritization approach described below is implemented.

Comprehensive prioritization approach

Prioritizing fisheries based on a fuller suite of MLMA objectives will require looking beyond an assessment of just risks to target stocks. To advance the objectives identified in the MLMA, the prioritization approach should:

- Provide a clear and systematic means of utilizing best available science and other relevant information to guide use of limited Department resources in managing the state's fisheries consistent with the MLMA.
- Identify target populations and/or ecosystem features at relatively greater risk from fishing.
- Identify where current management is inconsistent with the policies and requirements of the MLMA, and how those inconsistencies overlap with the ecological risks that have been identified.
- Advance socioeconomic and community objectives in a manner consistent with the MLMA's definition of sustainability.
- Be robust and clear enough for stakeholders to understand and for the Department to implement.
- Provide a strategic means of addressing emerging fisheries without unduly displacing existing priorities.
- Allow for re-evaluation when deemed necessary, or at least every five years.

In addition to the sustainability of the target stock, the MLMA is concerned with impacts to habitat and bycatch species. Section 7084 and 7085 are aimed at minimizing the impacts to habitat and bycatch, respectively. New tools have been developed in the years since the original Master Plan was adopted that can help to address these objectives.

Ecological Risk Assessment

A diversity of **Ecological Risk Assessment (ERA)** frameworks have been developed and used to prioritize management efforts across the globe. These frameworks consider a broader range of risks than a PSA. Specifically, they can examine the following:

- The impact from fishing activity to **target species** (similar to a PSA).
- The risk from fishing activity to bycatch species.
- The risk from fishing activity to habitats which it encounters.
- Aspects such as the potential benefits to the resource and the fishery from California's network of MPAs.

ERAs are similar to PSAs in concept but may use a broader range of attributes. The **California Ocean Science Trust (OST)** conducted a review of available ERA frameworks worldwide and considered certain approaches appropriate for California. Drawing from this experience, the Department will integrate the PSA and ERA tools into the prioritization approach in a way that capitalizes on their respective strengths. Specifically, the Department will use the PSA scores with the addition of four

attributes from the target species component of the ERA (estimated fishing **mortality** rate, population connectivity, temporal intensity of fishing, and potential benefits from MPAs) to assess potential risk to target fisheries. For habitat and bycatch, the Department will use the ERA as developed and piloted by OST, and as modified by Department and stakeholder input. The pilot ERA process scored 9 of the 45 fisheries that were previously analyzed using PSA. Once the four additional target attributes and bycatch and habitat ERAs are completed for the remaining 36 fisheries, scores will be presented as three groups (low, medium, and high relative risk). Additional details and considerations associated with the ERA can be found at <http://www.oceansciencetrust.org/projects/era/>.

Application of this approach should provide the opportunity for stakeholder input and the results should be used to categorize fisheries into low, medium, and high risk from a biological and ecological perspective. Low-risk fisheries will not require further evaluation or new conservation measures, and current management can simply be characterized through an ESR as described in Chapter 3. Medium and high-risk fisheries will be further prioritized based on socioeconomic opportunity as described below (see also Figure 1). If an FMP-managed species is identified as high risk, an FMP amendment may be necessary to address those risks.

Climate change

In California and elsewhere, efforts are underway to develop and evaluate tools that assess species' vulnerability and that incorporate risk from climate change into ERAs. Results from such assessments will provide valuable information for categorizing fisheries' level of risk. Until such results are available, the Department will consider augmenting the ERA results with information garnered through other efforts (e.g., federal climate vulnerability assessments of similar species).

Socioeconomics

Among the fisheries that are identified as high priority from an ecological and biological perspective, management efforts should first be directed towards those where ensuring sustainability has the highest economic value to the state. These will generally be fisheries with high commercial value and participation, and/or high recreational participation. However, an approach based on just value and participation could result in missed opportunities for the Department to achieve socioeconomic goals. Therefore, the Department will consider augmenting value and participation data with its own understanding of the socioeconomic goals of the fisheries. Additionally, consideration of community vulnerability indices and other human dimensions indicators such as those generated by the **National Oceanic and Atmospheric Administration (NOAA)** on the West Coast, can help identify vulnerable ports and regions and provide additional insight into where management action may have the most benefit (see: <https://swfsc.noaa.gov/publications/CR/2014/2014Breslow.pdf>).

Priority list

Provided that adequate resources and/or funding are available, the Department will apply the comprehensive prioritization approach described, generate a priority list of fisheries, and provide it to the Commission within one year of Mast Plan adoption. The priority list should be evaluated no less than every five years, and if necessary, the prioritization approach should be re-applied.

The information gathered through the PSA, ERA, and socioeconomic analyses described above can also help to inform management action for specific fisheries. Regardless of the form that management action takes, these analyses can help to provide background information, identify data gaps, and highlight aspects of a fishery that may need management attention. Therefore, as these analyses are conducted, information will be generated, structured, and retained with the additional goal of informing management action in mind.

Consideration of emerging and emergency issues when implementing priorities

The priorities that are established through the process described above will help guide implementation efforts. However, changes in fisheries may occur that require special attention and a departure from these priorities. For the priority list of fisheries to be meaningful, new or emerging issues should be considered in light of existing priorities, staffing, and other resources. Emergency issues (as defined by Government Code §11346.1(b) and Fish and Game Code §5523, §5654, and §7710) requiring immediate attention will inevitably arise. However, the Department and Commission should evaluate more discretionary efforts based on the following:

- Does the proposed new priority require immediate action in order to address sustainability or conservation concerns? If so, how?
- Does the proposed new priority require immediate action in order to address serious economic hardship to fishery **participants**? If so, how?
- Do current conditions create a unique or one-time opportunity to address the proposed new priority? If so, how?
- Does the fishery that is the subject of the proposed new priority appear on the current prioritization list? If so, where does it rank?
- Do available data allow for effective decision-making on the proposed new priority?
- How does the proposed new priority advance the goals of the MLMA?
- Are partnership opportunities available to help address the issue and reduce Department resource requirements?
- What is required to accomplish the proposed new priority (FMP, rule promulgation, research, etc.), and what are the requirements for staff, time, and other resources?
- What existing priorities on the Department's workplan would have to be eliminated or postponed in order to address the new priority?

Whether it is the Department, Commission, Tribes and tribal communities, or stakeholders that are proposing the new priority, the proposal or directive to address the new priority should be accompanied by responses to these inquiries. This will help to ensure that any deviations from the existing priority list are deliberate, strategic, and serve to advance the goals of the MLMA.

Chapter 3 – Scaled management

Four FMPs have been prepared and implemented since the MLMA was adopted: White Seabass, nearshore finfish (19 species), Market Squid, and Spiny Lobster. FMPs for Pacific Herring and the recreational take of Red Abalone are currently under development. Controversy and complexity in these fisheries led to intense FMP development efforts and high demands on the Department. Each took three to five years to complete, and cost between an estimated 1 million and 11 million dollars. As a result of these intensive processes focused on a few species, most of the state's fisheries have not fully benefited from all the provisions of the MLMA. There is a clear need to identify additional cost-effective approaches to apply the appropriate level of MLMA-based management more broadly and consistently across California's fisheries.

To develop and implement cost-effective FMPs in the future, management approaches and the scope of the public process used to develop them will need to be scaled to the specific fishery. Traditional, resource-intensive FMPs will remain an important tool and an effective way to address the management needs of high-risk or complex fisheries. However, it may not be appropriate or necessary to undergo a complex and comprehensive FMP process for a single-sector fishery whose current management framework already meets the sustainability provisions of the MLMA. Management scaling can extend the MLMA's benefits to a greater number of fisheries in a way that is consistent and explicit.

Current management

In addition to the Master Plan, there are two principal documents that the MLMA identifies for implementing its policies and managing fisheries: Status of the Fishery Reports (status reports) and FMPs. Status reports are overviews of a fishery that include information on annual landings or catch, the species' biology, and current management, **monitoring**, and assessment efforts. The MLMA requires the Department to prepare these reports for state-managed sport and commercial marine fisheries and encourages the Department to partner with outside experts to generate them (§7065(b)). The first status report covering all of California's state-managed living marine resources was published in 2001 and updates were published in 2003, 2006, 2008, and 2011 for some fisheries (see: <https://www.wildlife.ca.gov/Conservation/Marine/Status>).

In addition to developing status reports and FMPs, the Department also engages in regular rulemakings to address specific issues. Rulemakings and accompanying analyses are currently required to meet the provisions of the **Administrative Procedure Act (APA)** and the **California Environmental Quality Act (CEQA)**, and efforts are made to address the applicable goals and requirements of the MLMA for the specific regulatory action being taken.

Design principles for management scaling

The current approach to status reports and FMPs can be adapted to apply the MLMA more explicitly to a greater number of the state's fisheries. The design principles below are provided to help guide the management scaling approach towards that goal.

The management scaling approach should:

- Match the level of management effort with the needs of the fishery, availability of information useful for management, Department's capacity, and interests of stakeholders and the Commission.
- Increase MLMA-based management and create a foundation for MLMA implementation across a broader number of fisheries.

- Be adaptive and identify potential triggers/conditions for when a fishery may need more or less intensive management.
- Use assessments to identify the potential management needs of fisheries.
- Provide increased transparency regarding current management efforts and gaps in science and management.
- Be focused on the priorities identified in Chapter 2.
- Make strategic use of collaborations and stakeholder engagement.

Defining the management scale

Fisheries vary significantly in terms of the appropriate intensity of management effort. The management scaling approach in Figure 2 reflects this range. Figure 2 depicts the basic levels of management responses that might be appropriate for a given fishery under the MLMA. This ranges from an ESR for relatively low-priority species to a complex FMP for fisheries that are relatively high priority and more complex. The appropriateness of each level is discussed in detail below.

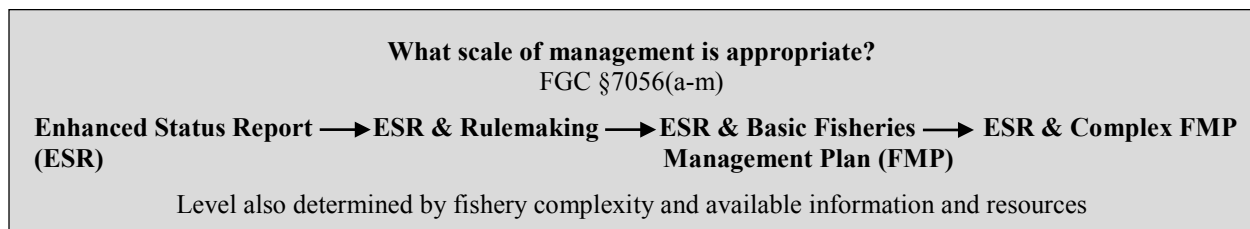


Figure 2. The scaled management continuum, a core component of the management scaling approach within the framework.

Enhanced Status Reports

The base of the continuum is an ESR that systematically addresses the objectives and requirements of the MLMA. Section 7065(b) describes general topics that should be addressed in status reports including “landings, fishing effort, areas where the fishery occurs, and other factors affecting the fishery as determined by the Department and Commission.”

Status reports are currently less effective than they could be in demonstrating management’s consistency with the goals of the MLMA. Within the required subject areas, status reports include varying types of information that are not always relevant to management or stakeholders. Currently, status reports are infrequently updated and are not stored or displayed in a way that maximizes their use or takes advantage of web-based technologies.

ESRs, the revised approach to status reports in the Master Plan, may help to better achieve the goals of the MLMA by being more structured, current, and easily accessed. The revised outline below is based on the MLMA’s required contents for FMPs. The outline includes a summary of the available information with a focus on relevance to management. This revised format helps to ensure transparency by making it clear what is being done and what information is available. It also summarizes all the available EFI for each fishery and makes it readily apparent what is not available.

ESRs should follow the following outline:

Fishery-at-a-Glance

1. The Species

- Natural History (§7080(b))
- Population Status and Dynamics (§7080(b) and §7081(b))
- Habitat (§7080(c))
- Ecosystem Role (§7080(d))
- Effects of Changing Oceanic Conditions (§7080(b))

2. The Fishery

- Location of the Fishery (§7080(a))
- Fishing Effort (§7080(a))
 - Number of Vessels and Participants Over Time
 - Type, Amount, and Selectivity of Gear
- Landings in the Recreational and Commercial Sectors (§7080(a))
- Social and Economic Factors Related to the Fishery (§7080(e))

3. Management

- Past and Current Management Measures
 - Overview and Rationale for the Current Management Framework (§7080(a))
 - Criteria to Identify When Fisheries Are Overfished or Subject to Overfishing, and Measures to Rebuild (§7086)
 - Past and Current Stakeholder Involvement (§7086(b)(7))
 - Target Species
 - Limitations on Fishing for Target Species (§7082(a))
 - Description of and Rationale for Any Restricted Access Approach (§7082(b))
 - Bycatch
 - Amount and Type of Bycatch (Including Discards) (§7085)
 - Assessment of Sustainability and Measures to Reduce Unacceptable Levels of Bycatch (§7085(c))
 - Habitat
 - Description of Threats (§7080(c))
 - Measures to Minimize Any Adverse Effects on Habitat Caused by Fishing (§7084(a))
- Requirements for Person or Vessel Permits and Reasonable Fees (§7082(d))

4. Monitoring and Essential Fishery Information

- Description of Relevant Essential Fishery Information (§7081(b))
- Past and Ongoing Monitoring of the Fishery (§7081(a))

5. Future Management Needs and Directions

- Identification of Information Gaps
- Research and Monitoring
- Opportunities for Management Changes
- Climate Readiness

ESRs can be a repository of information documenting the consistency of a fishery's management with the MLMA. They are an opportunity to articulate the data streams the Department monitors to ensure sustainability along with any established reference points. Given that ESRs serve to focus additional management efforts that may be needed, they should be generated for a fishery before an FMP is developed. Up-to-date ESRs should also be generated and maintained for species managed under FMPs.

The information gathered as part of the prioritization approach described in Chapter 2, as well as through application of the MLMA-based assessment framework described in Appendix F, can be used to populate ESRs. For example, the information on target species that is required by the MLMA overlaps with the information necessary to determine a productivity score as part of the PSA. The required information on the fishery and current management are similar to that needed to determine the susceptibility score of the PSA. Furthermore, the sections of the ESR on ecosystem impacts and bycatch management correspond with the information necessary to complete the ERA. Lastly, the MLMA-based assessment framework can help to inform the ESR sections on future needs and directions. Nevertheless, information will usually be lacking for at least some element of the ESR outline. Missing information should not prevent the development of an ESR for a given species. Gaps in management or understanding should simply be identified as areas needing further attention.

As depicted in Figure 1, ESRs may provide the foundation of the California Fisheries Portal (portal). The portal is intended to be a dynamic web-based tool that organizes and presents all sections of the ESRs in a way that is easy to navigate and allows the Department to easily update as new information becomes available. The portal is also envisioned to eventually provide users with additional tools for data exploration, visualization, and analysis, as well as information on the policies and approaches of the Master Plan.

Enhanced Status Reports plus focused rulemakings

For low-priority fisheries, no additional management activities may be necessary in the near-term and an ESR may be adequate. However, other fisheries may need to adjust management measures to address specific concerns, but at a level that does not warrant a comprehensive overhaul of its management through an FMP (see following section). For these fisheries an ESR plus a focused rulemaking may be an effective combination.

Regulatory documents developed for the rulemakings can be a source of additional material to address some of the FMP elements related to new conservation measures described below. Specifically, these include the elements focused on new management measures and their anticipated effects. When these elements are addressed and integrated into the ESR, the ESR will contain many of the principal components of an FMP.

Scaled Fishery Management Plans

An FMP is appropriate in cases where the degree of management change, fishery complexity, and information needs are high, and a comprehensive management approach is required. In these situations, FMP preparation can be streamlined by using information from the ESR as a foundation. The additional MLMA requirements that pertain specifically to new conservation and management measures (§7082–§7086) will then need to be addressed. Although an FMP is a more involved process, it provides an opportunity to address more complex issues, consider multiple sectors, and allow existing statutes and regulations to be rendered inactive if they conflict with the FMP. FMP development is also an opportunity to consider the appropriateness of various forms of fisheries **co-management** as required by §7059(b)(3).

Below is an FMP outline that builds upon the ESR outline and adds FMP requirements set forth in Chapter 7 of the MLMA. Elements four through seven are additions to, or modifications of, sections in the ESR.

1. The Species (*included in ESR*)
 - Natural History (§7080(b))
 - Population Status and Dynamics (§7080(b) and §7081(b))
 - Habitat (§7080(c))
 - Ecosystem Role (§7080(d))
 - Effects of Changing Oceanic Conditions (§7080(b))
2. The Fishery (*included in ESR*)
 - Location of the Fishery (§7080(a))
 - Fishing Effort (§7080(a))
 - Number of Vessels and Participants Over Time
 - Type, Amount, and Selectivity of Gear
 - Landings in the Recreational and Commercial Sectors (§7080(a))
 - Social and Economic Factors Related to the Fishery (§7080(e))
3. Management (*included in ESR*)
 - Past and Current Management Measures
 - Overview and Rationale for the Current Management Framework (§7080(a))
 - Criteria to Identify When Fisheries Are Overfished or Subject to Overfishing, and Measures to Rebuild (§7086)
 - Past and Current Stakeholder Involvement (§7086(b)(7))
 - Target Species
 - Limitations on Fishing for Target Species (§7082(a))
 - Description of and Rationale for Any Restricted Access Approach (§7082(b))
 - Bycatch
 - Amount and Type of Bycatch (Including Discards) (§7085)
 - Assessment of Sustainability and Measures to Reduce Unacceptable Levels of Bycatch (§7085(c))
 - Habitat
 - Description of Threats (§7080(c))
 - Measures to Minimize Any Adverse Effects on Habitat Caused by Fishing (§7084(a))
 - Requirements for Person or Vessel Permits and Reasonable Fees (§7082(d))
4. Monitoring and Essential Fishery Information (*included in ESR*)
 - Description of Relevant Essential Fishery Information (§7081(b))
 - Past and Ongoing Monitoring of the Fishery (§7081(a))
5. New conservation and management measures (*not included in ESR*)
 - Limitations on fishing for target species (§7082(a))
 - Overfishing criteria and measures (§7086)
 - Measures to reduce unacceptable levels of bycatch (§7085(c))
 - Measures to minimize any adverse effects on habitat caused by fishing (§7084(a))
 - Creation or modification of a restricted access fishery (§7082(b))
 - A procedure to establish and periodically review and revise a catch quota (§7082(c))

- Requirements for person, gear, or vessel permit and reasonable fees (§7082(d))
6. Anticipated effects of additional management measures (not included in ESR)
 - On fish populations (§7083(b))
 - On habitats (§7083(b))
 - On fishery participants (§7083(b))
 - On Tribes and tribal communities, coastal communities, and businesses that rely on the fishery (§7083(b))
 7. Future Management Needs and Directions (as revised from ESR)
 - Identification of Information Gaps
 - Research and Monitoring
 - Considerations Related to Future Management Changes
 - Climate Readiness
 8. Review and amendment procedures (not included in ESR)
 - Procedure for review and amendment of the plan (§7087(a))
 - Types of regulations that the Department may adopt without a plan amendment (§7087(b))

While all FMPs are at the high end of the management continuum, they do not all require the same amount of resources, time, or engagement. The need for a cost-effective way to advance MLMA implementation has led to discussion focused on the concept of streamlined FMPs or “FMP-lites”.

Providing less intensive FMP options is essential, but none of the required elements described in Chapter 7 of the MLMA can be excluded. Nevertheless, the level of detail of the document and the extent of the process needed to develop it can be tailored to match the needs of the fishery. A fishery with multiple sectors will require a more substantial discussion and analysis to address the distinct issues of each sector. Similarly, a fishery facing resource constraints or controversial **allocation** decisions will require an FMP developed through a more significant public process (strategies for that engagement are addressed in Chapter 4).

Determining where a fishery falls on the continuum

There is no clear distinction between what constitutes a basic and a complex FMP. It is a continuum defined by the scope and scale of the document, and the level of public process required. Every fishery will be unique, but considerations for identifying where on the continuum a fishery may fall are provided below.

The management continuum shown in Figure 2 aims to identify a range of MLMA-based management options. Identifying the scale appropriate for a given fishery’s management depends on the degree of management change required to ensure sustainability and improve consistency with the MLMA and the complexity of the fishery. These are addressed separately below.

What degree of management change is needed?

Determining the degree of management change needed involves identifying the range of potential management actions. Several tools can help to inform this determination. First, the results from the PSA and ERA analyses developed through the prioritization process can help to identify areas of relative risk. Second, information on species’ climate vulnerability will provide additional insights regarding risk as it becomes available. Third, frameworks such as the MLMA-based assessment framework described in Appendix F can help to identify where management may be inconsistent with the goals of the MLMA.

Finally, the quantitative assessment tools and approaches described in Chapter 5 can assist in identifying the degree of management change that may be necessary to achieve the sustainability and socioeconomic goals for the fishery. A change in the decision-making framework, or from effort- to catch- based controls, may constitute a major change. Examples of relatively minor changes may include a modification to the gear used in a fishery or to a season or **size limit**. It is important to note that in some contexts addressing management needs may require changing provisions contained in statute. In these situations, the development of an FMP may be appropriate given the unique authority to make a fishery management statute inoperative through FMP implementing regulations (§7071(b)).

How complex is the fishery?

In addition to the anticipated degree of management change, the level of complexity of the fishery will influence the extent of the public process, as well as the scope and scale of the resulting management document. Each fishery will vary in terms of the scope, amount, and form of stakeholder engagement.

Complexity criteria include the following:

- Number of gear types.
- Number of sectors.
- Extent of geographic distribution of the fishery.
- Number of participants.
- Interjurisdictional issues.
- Fishery demographics.
- Competing regional or port perspectives.
- Mobility of the fishery.
- Allocation issues.
- Bycatch issues.
- Stock conditions (healthy, **depressed**, **depleted**).
- Critical ecosystem interactions.
- **Limited entry** or permitting issues.
- Degree of stakeholder interest and variety of stakeholder views.
- Sources and quality of information on which to base management.

Taken together, these factors can be used to help identify where on the continuum a fishery may be most appropriately managed. When an FMP is deemed necessary, these factors can help the Department to understand the level of resources and staff effort that will be needed. Figure 3 provides an overarching view of the management scaling concept.

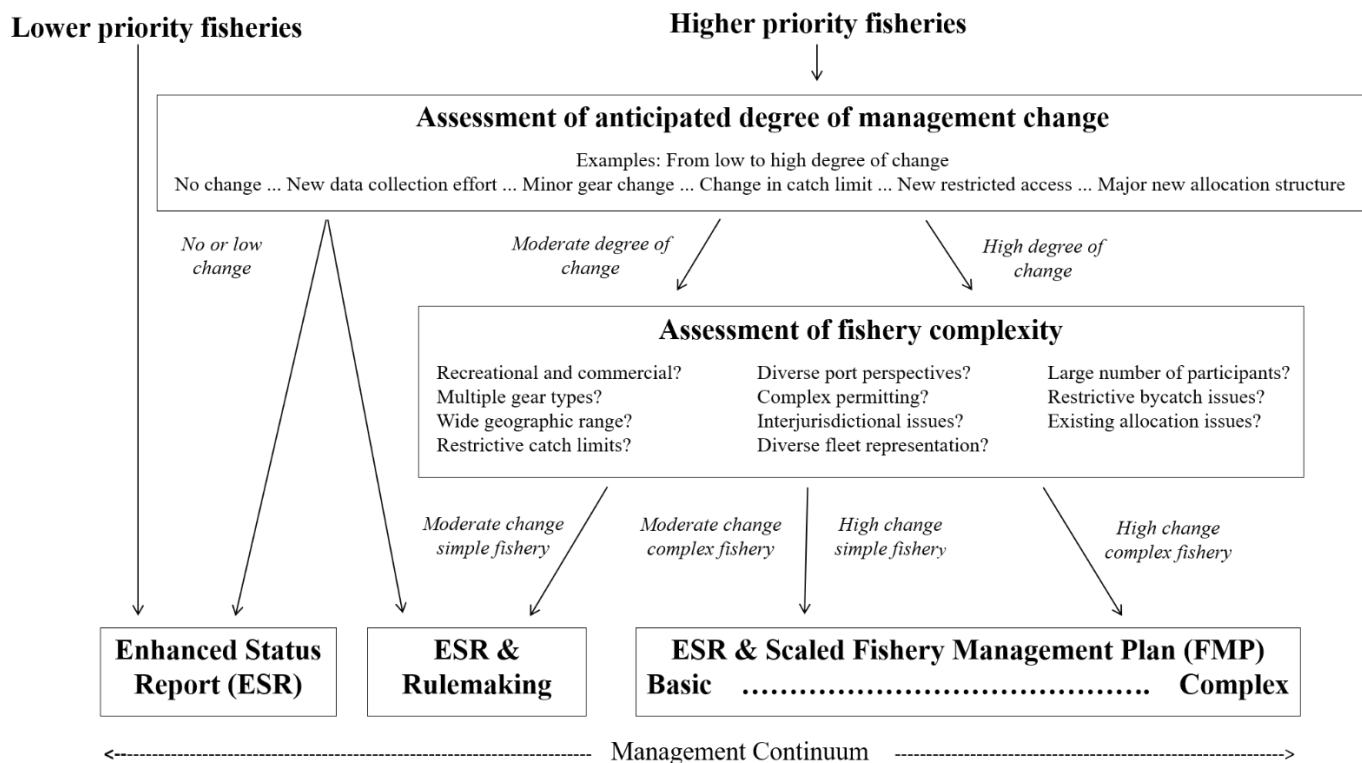


Figure 3. Identifying where a fishery falls along the management continuum.

Increasing efficiency and capacity

Regardless of where on the scale a fishery is, there is an opportunity to improve efficiencies and leverage outside resources. Developing the four existing FMPs was a learning process for the Department, Commission, and stakeholders. After the first three FMPs significantly impacted the Department’s limited resources, there was a move to procure outside funding and outsource individual components of subsequent FMPs while retaining oversight of the processes and products. The FMP processes for Spiny Lobster (completed) and Pacific Herring (in progress) are good examples of leveraging outside funding to advance MLMA implementation while minimizing costs to the Department.

While effective stakeholder engagement is a central goal of the MLMA, it can also be one of the most resource-intensive aspects of the management process. Efficiencies can be gained by carefully focusing engagement on the areas of highest relevance to stakeholders and where their expertise is most informative. Chapter 4 addresses stakeholder engagement in more detail.

There are also opportunities for increasing efficiency through effective process design. For example, creating ESRs as a first step in implementing the Master Plan allows the Department to flag missing EFI in fisheries that have been prioritized for additional management action. This provides an opportunity for the Department to work with outside partners to incentivize the collection of this information. ESRs can also facilitate FMP development efforts by identifying gaps in understanding and management. Finally, strategically focused and timed peer review can provide a solid scientific foundation early in the management process, enabling managers and stakeholders to evaluate management options that are supported by the best available scientific information and other relevant information. Chapter 10 provides guidance on the appropriate scope, scale, and timing of effective scientific peer review under the MLMA.

Chapter 4 – Stakeholder engagement

Engaging stakeholders in the management process is a central theme of the MLMA and can be a critical factor to the long-term success of any management strategy. Effective stakeholder engagement is important to help ensure that stakeholders with relevant local knowledge, and who are most likely to be directly affected by regulatory changes, are provided the opportunity to be involved in the management process. By adhering to core stakeholder engagement principles, the Department and stakeholders can build trust, create resilient relationships, and increase buy-in for—and ultimately **compliance** with—marine resource management decisions. Best practices and considerations associated with the use of various engagement strategies are drawn from an overview of stakeholder engagement strategies developed to inform the Master Plan amendment process (Kearns & West and Center for Ocean Solutions 2017).

Requirements related to stakeholder engagement

In addition to the policies of the MLMA, the Department and Commission are subject to a variety of other procedural and public participation mandates designed to inform and protect the public's interests. These include the CEQA, APA, and Bagley-Keene Open Meeting Act. Among their other provisions, these Acts define a minimum level of stakeholder engagement, primarily focused on advanced notice of public hearings and the process for providing public comment. The MLMA builds on the foundation created by these requirements by directing the Department to engage with stakeholders throughout the decision-making process. Section 7059 places significant emphasis on the importance of collaboration and directs the Department to involve interested parties when developing FMPs, status reports, and research plans. It also states that the Department shall periodically review fishery management efforts with the goal to improve communication, collaboration, and dispute resolution, and should seek advice from interested parties as part of the review.

Key stakeholder engagement principles and guidance

Five overarching principles should be integrated into any stakeholder engagement strategy under the MLMA (Kearns & West and Center for Ocean Solutions 2017):

1. Engage early and often.
2. Set clear goals.
3. Build relationships.
4. Ensure openness.
5. Pursue inclusivity.

The Department will draw on these key principles when selecting and implementing stakeholder engagement strategies. Table 1 provides details on each principle and guidance for application.

Every outreach strategy will involve trade-offs. The challenge is to select the most appropriate approach given engagement goals and timing, stakeholder audiences, and available resources.

Table 1. Five key stakeholder engagement principles and implementation guidance (adapted from Kearns & West and Center for Ocean Solutions 2017).

Principle	Description	Why implement?	Guidance to implement in practice
Engage early and often	Engaging stakeholders early and often identifies the boundaries of stakeholder values and preferences around management issues and strives to ensure that management alternatives remain in the public interest.	Early public involvement can reduce delays in the approval process and the likelihood of issues becoming contentious. Engaging stakeholders early can also nurture trust, expand management options, improve communication, improve process efficiency, enable conflict management, and increase representation.	<ul style="list-style-type: none"> ✓ Involve stakeholders in defining the management problem; decision-making reflects the interests and concerns of stakeholders at that time. ✓ Involve stakeholders before management alternatives are identified and solidified to ensure all viable options are on the table. ✓ Use consistent mechanisms for updating and engaging stakeholders in the decision-making process (e.g., town hall meetings, website is updated regularly). ✓ Employ engagement strategies over a time frame during which stakeholders can feasibly influence the management decision (e.g., stakeholders are contacted 1-2 months ahead of an engagement opportunity that will inform decision-making; stakeholders are engaged before management decisions are made).
Set clear goals	Setting goals helps ensure that managers and stakeholders work towards a common endpoint.	Clear goals, roles, and responsibilities for stakeholder engagement, particularly when established in collaboration with stakeholders, improve clarity around decision-making expectations and opportunities for public participation.	<ul style="list-style-type: none"> ✓ Involve stakeholders in identifying clear long- and short-term planning and agency management goals (measurable, achievable, and specific). ✓ Have clear goals for stakeholder engagement (e.g., goals based on this checklist). ✓ Employ metrics to determine the efficacy of stakeholder engagement and adapt strategies over time based on this evaluation.
Build relationships	Building key relationships can strengthen trust by putting a human face to management actions, connecting agency staff to communities through key communicators, and increasing understanding between managers and stakeholders.	Relationships and agency visibility contribute to public acceptance and allow timely response to pressing stakeholder concerns, creating social resilience around management decision-making.	<ul style="list-style-type: none"> ✓ Respond to or contact stakeholders individually and meet in-person when requested or appropriate. ✓ Acknowledge and recognize stakeholders for their efforts to engage. ✓ Interact with stakeholders informally in community settings.
Ensure openness	Openness ensures the goals, motivations, and activities for management decision-making are communicated publicly, and ensures that engagement processes are clearly documented. The public should be aware of how they can, and cannot, influence outcomes, and how their	Openness around decision-making processes builds trust and interest in contributing. It also helps establish stakeholder expectations and illuminates where interpretation or understanding may differ across stakeholders. Clarity in messaging is	<ul style="list-style-type: none"> ✓ Provide mechanisms for stakeholders to easily identify the status of the decision-making process and how they may engage proactively (website, listservs). ✓ Clearly and openly communicate why and how the management decision is made (i.e., who will make the final decision, what is the role of stakeholders and marine resource users in the decision-making process, what

Principle	Description	Why implement?	Guidance to implement in practice
	perspectives were ultimately considered within decision-making.	critical for reducing public misunderstanding, negative views, and distrust of agency actions.	<p>information was used to influence the decision, how the decision will lead to optimal outcomes for the public as well as the Department).</p> <ul style="list-style-type: none"> ✓ If information is withheld, communicate the reasons for doing so to stakeholders. ✓ Use clear, simple, and accessible language (e.g., language, structure, vocabulary); employ analogies and real-world examples in communications. ✓ If a mistake is made, admit it. Rectify it as soon as possible and establish processes and procedures to help avoid future errors. ✓ Provide clear rationale and need for stakeholder participation (e.g., stakeholders will be able to contribute to management goal-setting, invitations to engage clearly state how participation is in the stakeholders' best interest).
Pursue inclusivity	Ensuring an inclusive and public process is critical for informed decision-making.	The exclusion of voices can limit the information available to inform decision-making and stakeholder buy-in.	<ul style="list-style-type: none"> ✓ Engage a representative cross section of stakeholder interests affected by the management decision and confirm this selection with the affected communities. ✓ Disseminate information in the languages and formats that all potential stakeholders can understand.

Selecting an effective stakeholder engagement approach

Appendix G includes an inventory of potential engagement strategies (i.e., advisory bodies, townhall meetings, listservs, etc.), as well as resources necessary for their use. Identifying which strategy, or combination of strategies, to employ is driven by several factors. These factors include the following:

1. Potential goals of engagement
 - a. *Inform stakeholders*: Educate the affected communities regarding potential or pending regulatory changes or general management efforts.
 - b. *Solicit input*: Understand the perspectives of various stakeholders and capitalize on their expertise.
 - c. *Involve stakeholders in two-way dialogue to inform management decisions*: Collaborate to develop alternatives.
 - d. *Build trust*: Develop a mutual understanding of objectives and transparency regarding the efforts to achieve them.
2. Timing of stakeholder involvement in the planning process (e.g., early, middle, or late phases of the planning, regulatory, or implementation process).
3. Stakeholder characteristics
 - a. Are the stakeholder communities well defined?
 - b. Do organized institutions exist within the fishery?
 - c. What is the relative capacity for engagement?
 - d. Are there leaders within the fishery?
 - e. What is the geographic size and geographical distribution of the fishery?
 - f. Are there any language barriers?
 - g. To what extent do the stakeholder communities use email and social media?
 - h. What is the history of engagement with the stakeholders' communities on regulatory or other issues?

These considerations should also be weighed against additional opportunities and constraints such as the following:

- Whether resources such as funding, staff availability, and necessary skills are available to implement the strategy.
- Whether the legal and regulatory landscape affecting the process may place some constraints on which strategies are appropriate (e.g., litigation associated with the management of a particular marine resource can constrain options for stakeholder engagement).
- The history of past experiences associated with the use of specific engagement strategies in the fishery or resource management area. If the strategy was used in previous efforts and resisted by stakeholders, it may not be appropriate for the next management effort.
- Whether the current management process is contentious. In some cases, highly contentious stakeholder processes are best addressed using in-person strategies.

Engagement strategies for the specific levels of the management continuum

The general considerations provided above have been used to develop some specific recommendations for how to engage stakeholders at the various levels of the management continuum described in Chapter 3. Since the characteristics of specific fisheries will vary, the following discussion is intended to guide the

development of a strategy for engaging stakeholders when generating three types of management documents: ESRs, rulemakings, and FMPs.

Stakeholder engagement for Enhanced Status Reports

While ESRs do not require a public process like FMPs, they do present an important opportunity for stakeholder input. The following process has been identified for their development:

- Stakeholders and outside experts should be consulted, and partnerships should be employed where helpful in the development of draft ESRs.
- ESRs should be living documents maintained by the Department. Once approved, they can be updated without returning to the Commission. Stakeholders and researchers can suggest changes and provide information at any time.
- Each ESR should identify a contact for the public to direct comments.

A primary purpose of ESRs is to identify gaps in research and understanding that researchers and stakeholders can help to fill. ESRs are Department documents, but they are intended to capitalize on the interest and expertise of outside scientific and stakeholder communities.

Stakeholder engagement for Enhanced Status Reports plus focused rulemakings

When an ESR needs to be augmented with a rulemaking, additional public processes are required. In addition to what is legally required, the Department should take further steps to ensure that stakeholders and the public are engaged and involved in decision-making. Every fishery and rulemaking is different and the appropriate course will vary; however, in a typical case the Department should take the following actions:

- Have preliminary discussions with participants in the affected fishery to understand perspectives and underlying issues.
- Brief the **Fish and Game Commission's Marine Resources Committee (MRC)** and the full Commission as directed, on the purpose and need for a rulemaking, and present the Department's approach for engaging stakeholders in the decision-making process.
- Conduct broader outreach to stakeholders likely to be affected to understand their perspectives and ideas regarding potential regulations.
- Discuss proposed regulations with the MRC.
- Refine proposed regulations if possible based on MRC and public input.

Stakeholder engagement for Fishery Management Plans

An FMP may be necessary when more comprehensive management changes are needed (see Chapter 3). While management changes that occur via an FMP may be more substantial, stakeholder engagement should still be as focused and targeted as possible. The development of an ESR as a first step should help to focus the FMP development efforts on the areas where change is needed and on issues of most direct relevance to stakeholders. As with rulemakings, the needs of each FMP development process will vary. The following activities can help ensure effective MLMA-based engagement:

- Engage in direct communication with affected stakeholders, including those participating in the fishery.
- Consider opportunities for attracting funding or other resources and leveraging partnerships.

- Where appropriate, engage fishery participants in the application of **Management Strategy Evaluation (MSE)** (see Chapter 5) as a means of scoping FMP issues and options.
- Brief the MRC on the purpose, need, and proposed scope and scale for an FMP, describe the relationship to the priorities identified through Chapter 2, and identify the plan for engaging stakeholders in decision-making.
- Alert the public to the intent to develop an FMP and the issues to be addressed using the Department website, list serves, social media, and mailings.
- Where possible, conduct targeted outreach to help inform management and understand stakeholder perspectives regarding specific issues.
- Convene ad-hoc advisory group(s) as needed to address issues involving new regulations. (As discussed in Appendix G, these groups can be relatively resource intensive, especially when addressing contentious issues. Their use may be a primary difference between more streamlined and traditional FMPs in terms of stakeholder engagement and process intensity.)
- Hold standing agenda items at MRC meetings during draft development, highlighting key issues and soliciting input where needed.
- Hold public meetings, conference calls, or webinars during draft development, highlighting key issues and soliciting stakeholder input where needed.
- Provide a draft FMP for public review at least 30 days prior to submission to the Commission.

Regardless of the strategy used, the Department should regularly evaluate stakeholder engagement to measure whether current strategies are achieving target outcomes. The most effective approach may change over time, and the Department may need to adapt to better suit the changing needs of marine resources and stakeholders.

Chapter 5 – Stock sustainability objectives

The MLMA declares that it is the policy of the state of California to conserve the health and diversity of marine ecosystems and resources, and to encourage the sustainable use of those resources (§7050(b)). This chapter is focused on the specific objectives regarding the sustainability of fish stocks and the tools and approaches for achieving sustainability across different scales of management. As noted in Chapter 1, the MLMA defines sustainability to mean both the continuous replacement of marine resources, taking into account fluctuations in abundance and environmental variability, and securing the fullest possible range of present and long-term economic, ecological, and social benefits. To achieve this goal, the MLMA states the following:

- Each FMP shall specify criteria for identifying when a fishery is overfished (§7086(a)).
- A depressed fishery is defined as a fishery with a declining population trend occurring over a period appropriate to that fishery, or a fishery with abundance levels below those consistent with MSY (§90.7). A fishery may be depressed due to non-fishing related impacts.
- **Overfished** is defined as a depressed fishery where reduction of take in the fishery is the principal means for rebuilding the population (§97.5).
- **Overfishing** is defined as a rate or level of taking that the best available scientific information, and other relevant information that the Commission or Department possesses or receives, indicates is not sustainable or jeopardizes the capacity of a marine fishery to produce the MSY on a continuing basis (§98).
- If a fishery is overfished or where overfishing is occurring, the FMP shall contain measures to prevent, end, or otherwise address overfishing, and to rebuild the fishery (§7086(b)).
- If a fishery is overfished, FMPs or regulations shall specify a time period for addressing overfishing and **rebuilding** the fishery. The time period should be as short as possible and shall not exceed 10 years except in cases where the biology of the population of fish or other environmental conditions dictate otherwise. Overfishing restrictions and recovery benefits must be allocated fairly and equitably among sectors of the fishery (§7086(c)(2)).
- Every sport and commercial marine fishery shall be managed so that the long-term health of the resource is not sacrificed for short-term benefits. In the case of a fishery managed on the basis of MSY, management shall have OY as its objective (§7056(a)).
- Status reports to the Commission are required to identify any fishery that does not meet the sustainability policies of the MLMA. In the case of a fishery identified as depressed, the reports should indicate the causes of the depressed condition of the fishery, describe the steps being taken to rebuild the fishery, and, to the extent practicable, recommend additional steps to rebuild the fishery (§7066(b)).

Achieving sustainability

The sustainable management of fisheries requires information on the status of a population relative to management targets. This has generally involved developing estimates of abundance and the number of individuals that can be removed without harming the population or ecosystem. To develop these estimates, fisheries scientists have devised increasingly complex statistical **models** that have become a recognized tool in fisheries management. These models typically require long time-series of catch, effort, biological, and survey data. Many California fisheries lack this type of information or have unique biological or ecological characteristics that violate the assumptions of traditional stock assessment models. Such fisheries are often referred to as **data-limited** or **data-poor**. However, a lack of data should not prevent the adoption of management measures. In recent years, alternative approaches have been developed that require less data, rely on basic fishery statistics rather than models, and adjust exploitation

rates based on the level of uncertainty. At the federal level, scientists have developed new techniques for setting **Annual Catch Limits (ACL)** for hundreds of previously unassessed stocks and found that it is possible to develop good management policies using limited data. These new approaches create opportunities to advance the MLMA’s sustainability goals in California’s fisheries as well.

This chapter provides considerations and guidance for traditional and more data-limited approaches to fisheries management at each stage of the fisheries management cycle. It also provides recommendations for making management decisions more consistent and structured through the use of MSE.

The fishery management cycle

The fishery management cycle is composed of the following components (Figure 4, clockwise from top left): 1) data collection on population status, **life history** parameters, and fishing trends and impacts; 2) data analysis to understand stock status; 3) **Harvest Control Rules (HCRs)**; and 4) implementation of management measures as regulations. An orchestrated approach to this cycle represents an ideal scenario that may not be necessary or feasible for some California fisheries with very low economic value or participation. Nevertheless, each component contains strategies that should be considered when managing fisheries. These components are summarized below, and guidance and considerations are identified for each. A more detailed discussion of each stage of the cycle is provided in Appendices H-K.

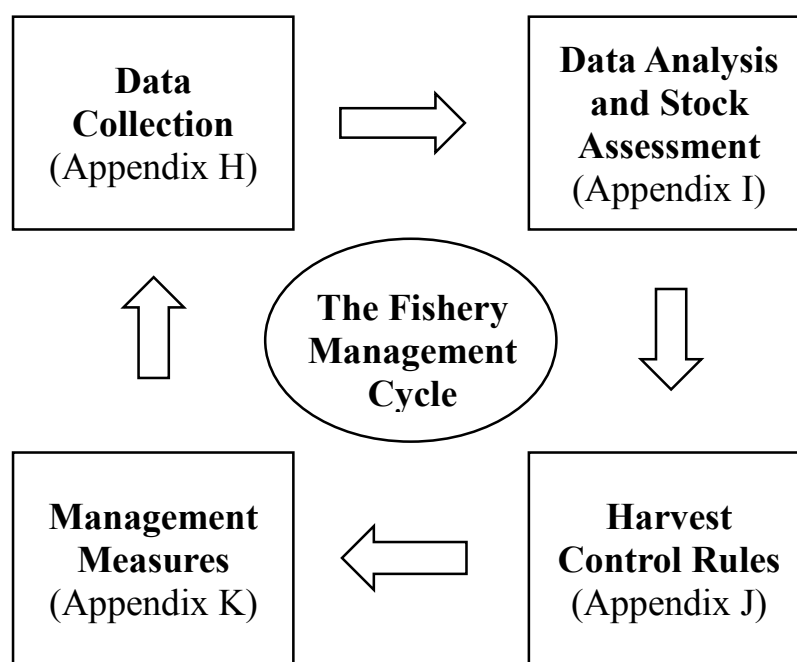


Figure 4. Components of the fishery management cycle.

Data collection

A key component of the adaptive management mandated by the MLMA is a process to use the data collected to understand how the system is responding to management. This monitoring process allows managers to learn more about the system generally and provides inputs for the determination of stock status and the subsequent decision-making process. Fisheries management decisions are traditionally based on knowledge of the **biomass** of the stock. This understanding is typically provided by population models that use high-quality data analyzed by staff with quantitative modeling skills.

ESRs and FMPs should identify EFI for the fishery. EFI is defined as any information related to the biology of a fish species or fishing activities that is necessary to manage the fishery in accordance with the requirements of the MLMA (§93). It includes information on the species' life history, habitat requirements, stock status in terms of abundance and size or age structure, fishing effort, catch levels, and fishery impacts on other marine living resources. The data used to monitor and manage fisheries come from two primary sources: **fishery-dependent** and **fishery-independent** monitoring programs.

The following bullets contain some higher-level considerations in designing and implementing data collection efforts. Appendix H provides details on types of EFI, data collection strategies to support decision-making in both **data-rich** and data-limited fisheries, and an overview of the Department's current data collection efforts.

Key higher-level considerations in identifying data collection strategies include:

- While the Department is the primary agency responsible for collecting EFI, it shall encourage the participation of fishery participants to the maximum extent practicable (§7060(a-c)).
- Fishery-dependent data, which are collected directly from fishing activities, have lower sampling costs, but may be influenced by how and where the fishery operates, unreliable, inadequate, or missing. These problems may be accounted for if management and market changes influencing fishing behavior are carefully documented.
- Fishery-independent data are collected from surveys designed and conducted by Department staff, fishermen, other scientists, and trained volunteers. These data are less biased but costlier to collect.
- In fisheries that lack any data other than landings or catch information, data on abundance, distribution, and basic biology are often the easiest to collect, and can provide initial information regarding stock status.
- Long-established MPAs may represent an opportunity for assessing data-poor fisheries by acting as a reference area, allowing for the comparison of fished and unfished conditions. As monitoring increases understanding of MPA effects on fishery yields, the Department will need to determine an approach to quantitatively assess these impacts.
- Historical information may be available from non-traditional sources such as **processors**/buyers or from stakeholders or researchers with a long history of involvement in the fishery.
- The transition to electronic data collection programs presents key opportunities to standardize and streamline data collection, involve fishermen and processors, and ensure that the data being collected helps to inform management and identify and adapt to climate-related changes.
- The FMP development process also represents an opportunity to ensure that data are collected as part of a research protocol that is designed to support decision-making.

Stock assessments

Stock assessment is a generic term for any type of data analysis that can provide an estimate of the status of a fish stock. These analyses can provide one or more indicators of the stock's present and projected abundance given varying conditions including environmental change and fishing pressure. Most commonly this indicator is an estimate of the size of the fish stock (abundance), but it may also be an estimate of the fishing mortality rate or stock resilience. Stock assessment tools range from very simple estimators that rely on a single data stream to complex models that require many kinds of data and simultaneously analyze those diverse data to find the best overall fit. These complex population models are often referred to as integrated assessments.

Stock assessments can be valuable to the fishery management process. They provide estimates of past and present stock abundance, and of difficult-to-measure processes such as spawner-recruit relationships and annual **recruitment**, which can help managers to understand stock productivity and resilience. Long-term data on the relative abundance of the target species within a network of well-established MPAs may be useful in stock assessments (Wertz et al. 2011). Assessments may also provide a platform for forecasting how the stock is likely to fare under alternative management measures such as changes in season length or size requirements. Finally, these types of assessment models allow managers to calculate **reference points**, which are quantitative benchmarks that capture the management objectives for the fisheries (either desired targets, or limits to be avoided).

Assessments rely on several assumptions, which frequently introduce uncertainty into the process, and their results must be interpreted with an understanding of the nature and degree of uncertainty. In the federal management process, the consideration of uncertainty and evaluation of assumptions and results occurs during a rigorous, multi-day process for stock assessment review before the results are used for management.

Data-limited assessment techniques

There are many reasons why traditional assessment methods may be inappropriate or infeasible for specific fisheries. Small fisheries are often data-limited, and while they may represent important fisheries for their users, their relatively low economic value may make it difficult to justify the allocation of limited resources for monitoring. Fisheries may be in developmental phases, only fished opportunistically given sporadic stock availability, or recovering from collapse or closure. Many nearshore fisheries exhibit high spatial variation within a relatively small area, and this may violate the assumption of uniformity across the stock area required by many traditional assessment methods. For all these reasons, there has been increasing interest in developing assessment methods that use available information in a less complex modeling environment than for integrated assessments. The choice of the right assessment approach is governed by the types of data available as well as other factors, including life history characteristics and management capacity. Data-limited methods have the potential to help advance the MLMA's goals in many of California's data-limited fisheries. Appendix I includes a list and description of data-limited assessment techniques and provides considerations associated with their use. A summary of those considerations is provided below.

Key considerations in selecting assessment strategies:

- Traditional stock assessments often rely on time series of fishery-dependent and fishery-independent data. While they are a recognized tool for fisheries management, they may not be possible to conduct for fisheries with limited data, or because of the considerable expertise, time, and effort needed to conduct such assessments.
- Data-limited assessments are generally easier and faster to conduct than integrated assessments and offer potential for improving management for many of California's fisheries.
- Catch-based methods use historical catch data to attempt to set sustainable **catch limits**. They are most appropriate for management systems that accurately monitor catch and can enforce fishery closures once catch limits are met.
- Some length-based methods use length composition data to estimate key biological processes and the productivity of the stock using a single year of data.
- MPA-based assessment methods compare data collected from inside an MPA in which fishing for the target stock is prohibited to data collected from adjacent fishing grounds outside the MPA. These methods are most reliable when the target species is known to receive significant protection from fishing within the state's network of MPAs, and when the MPAs have been in place for 10+ years, are large relative to the home range of the fish, and are well enforced.

- Empirical indicators do not use an assessment method to calculate stock status. Instead, catch or fishing effort is adjusted up or down depending on where the indicator (such as **Catch Per Unit Effort (CPUE)**) falls compared to a target.

The appropriate assessment and supporting data collection strategy will depend on the goals and acceptable risks. MSE (discussed below) should be used in both data-rich and data-limited fisheries to evaluate which assessment methods are most appropriate given the fishery's characteristics.

Harvest Control Rules and reference points

A key component of many effective harvest strategies is an HCR, which is simply a set of pre-determined and agreed upon rules used for determining a management action in response to changes in indicators of stock status with respect to reference points. In the absence of an HCR and once a stock assessment is conducted, decision makers and stakeholders most often negotiate which management changes are most appropriate. This negotiation process can lead to slow management response times and high levels of controversy between user groups with differing objectives. HCRs improve this process by creating pre-determined decision-making frameworks that reflect management objectives as well as the best available science.

Typically, HCRs compare results from the stock assessment phase (also known as indicators) against reference points. Reference points are metrics that combine several components of fishery performance into a single index. Management actions may be required depending on where the indicator falls relative to the reference point. Reference points are commonly expressed as either a biomass level or fishing mortality rate that would achieve that biomass level under long-term equilibrium fishing conditions. They do not have to take the form of MSY-based biomass thresholds and can also be set with various proxies and triggers, such as declines in CPUE or landings. FMPs are required to contain measures to prevent, end, or otherwise address overfishing, and to rebuild the fishery (§7086(b)). Reference points are essential tools for identifying overfishing and rebuilding overfished stocks.

HCRs explicitly link the outcomes of monitoring and assessment with the management response. This is important because while stock assessments often return estimates of parameters such as fishing mortality and abundance, these parameters cannot be directly controlled by managers. Instead, regulations are established to modify fishing behavior in a way that is expected to result in the desired effect on these parameters. Well-established MPAs may be useful in HCR development and implementation. For example, McGilliard et al. (2011) evaluated the potential use of the ratio of the density of fish outside an MPA to that inside the MPA each year (the density ratio) in a control rule to determine the direction and magnitude of change in allowable fishing effort in the next year. HCRs should be developed in the management planning stage with the involvement of stakeholders. One way to involve stakeholders in the process is to seek their input on the management objectives and performance metrics by which to evaluate possible HCRs.

HCRs should be evaluated to ensure they perform reasonably well under a range of uncertainties in stock status, environmental conditions, harvester behavior, and the ability to implement effective regulations. In systems with more uncertainty, the HCR should be more precautionary. Additionally, as discussed in Chapter 11, climate change will underscore the need for adaptive management and responsive HCRs. Appendix J provides details on the types of HCRs available, use of ecosystem indicators, and considerations for how effective use of HCRs can advance the goals of the MLMA.

Key considerations in selecting HCR strategies include:

- The MLMA requires FMPs to include criteria for determining when a fishery is overfished (§7086(a)). Reference points that are quantitative benchmarks defining zones of fishery

performance (e.g., healthy, subject to overfishing, and critical/overfished zones) can provide a mechanism for defining these criteria. Different management actions are required based on where a fishery indicator falls relative to these reference points.

- HCRs can range in complexity based on the data availability and needs of the fishery. Examples include triggering a management action when a reference point is passed, a “traffic light” system where multiple indicators are monitored simultaneously, a decision tree where reference points are sequentially assessed, or a mathematical formula linking stock status to the following year’s catch or effort level.
- When insufficient information is available to set reference points, proxies for key biological reference points can be used. Often, these proxies are easier to calculate and require less data.

Management measures to regulate fishing activities

Fisheries managers have a suite of possible regulatory mechanisms, known as controls or management measures, available to them. These mechanisms include restrictions on catch, effort, gear, season, size of fish, number of participants, and areas fished. Fishery controls are usually classified as either **output controls** or **input controls** (Morrison 2004). If the control measure directly constrains the catch, it is an output control, and if it constrains fishing effort (by restricting who can fish when, where, and how) it is an input control. An appropriate choice will depend on a variety of factors, including the biology of the species, how the fishery is prosecuted, socioeconomic issues, community objectives, and governance capacity. Input and output controls are not mutually exclusive; some fisheries employ both.

Key considerations in selecting management measures include:

- Input controls are an indirect way to control the number of fish caught by limiting who, when, where, and how fish are captured. They include restrictions on gear type or amount, season, fishery participation, vessel number and size, geographic area, and time spent fishing.
- Output controls are direct limits on the amounts and kinds of fish that can be caught. These include **Total Allowable Catches (TACs)** and limits on size, sex, or species.
- Fisheries management is usually composed of a suite of input and output controls because each control type has different advantages and disadvantages. Each requires different kinds of monitoring and enforcement, and each has different socioeconomic and biological implications.
- As discussed in Chapter 11 and Appendix K, management can enhance fish stocks’ resilience by using measures that maintain and strengthen the reproductive capacity by ensuring a diverse age structure.
- When a fishery is identified as overfished, reduction in the take of the fishery is the principal means for rebuilding the population (§97.5).
- The role of MPAs in helping a fishery to meet management goals should be considered (see Appendix D).
- Working closely with the affected stakeholder community is essential to crafting effective management measures.

Specifics regarding available management measures and the considerations associated with their use are provided in Appendix K.

Management Strategy Evaluation

The fishery management cycle (Figure 4) functions best when each of the components is chosen with the other components in mind. MSE is the generic term used for a class of analyses that test potential combinations of these management procedures and explicitly address the tradeoffs and levels of

uncertainty associated with them. In MSE, the entire fishery management cycle is simulated over a specified time period (i.e., 50 years) to understand how each aspect of the management procedure is likely to perform in both the short- and long-term. The procedure uses many repeated simulations with randomly drawn variables to explore the risk of unwanted outcomes due to uncertainty stemming from natural variation, climate change, lack of knowledge, and imperfect implementation of management measures. MSE allows the identification of what is known and what is unknown, and examination of tradeoffs among alternative management strategies. This examination can include a risk analysis that compares the probability of achieving the desired management result for each potential management strategy.

While MSE is useful for evaluating potential management strategies based upon risk tolerance, it can be complex, and requires extensive time and resources to conduct. In the past, significant quantitative expertise was required to build and run simulation models. Recent advances have made MSE faster, more affordable, and more accessible to a wider range of fisheries, including those with limited data. However, even with these technological advances the behavior of the fishery must be modeled as accurately as possible, and that usually requires gathering information from stakeholders, biologists, and managers who know the fishery best. As such, MSE represents an excellent opportunity to partner with stakeholders, academics, and other outside experts to accurately and comprehensively characterize the fishery and its management goals, determine which performance metrics are most informative, interpret results, and evaluate tradeoffs. Appendix L provides guidance on each step of the MSE process.

Available tools

Fisheries scientists have recently recognized that MSE can be used to compare a wider range of management procedures and can be applied to a number of data-limited scenarios with relatively simple data indicators and iterative HCRs (Carruthers et al. 2014). From this premise, fishery modelers at the University of British Columbia developed the **Data-Limited Methods Toolkit (DLMtool)**. The DLMtool can evaluate a wide variety of potential management approaches and allows users to develop customized management procedures to include in the MSE analysis. The tool can also help managers and stakeholders evaluate methods for stock assessment. For certain high-value, high-volume, or high-risk fisheries, significant investment in management, such as that required to produce an integrated stock assessment, may be warranted, but many stocks can be effectively managed using less data-intensive methods or baseline monitoring. The DLMtool can provide an efficient analytical technique for designing and implementing these types of management procedures. The Department partnered with academic institutions and **Non-Government Organizations (NGOs)** to pilot the tool on a small group of state-managed fisheries (see: <http://www.datalimitedtoolkit.org/wp-content/uploads/2017/07/Applying-MSE-to-CA-Fisheries-Case-Studies-Recommendations.pdf>).

The DLMtool is one of many similar tools that have been developed. In selecting among available tools, a key criterion should be that it is a peer-reviewed and proven approach for the kind of fishery to which it is applied. Application of these tools and their underlying approaches will be a major step towards extending more active and strategic management to a greater proportion of the state's fisheries and achieving the sustainability goals of the MLMA. They will be applied to priority fisheries wherever resources and capacity permit.

Chapter 6 – Ecosystem-based objectives

The MLMA seeks to preserve the health of fish stocks and the ecosystems that support them (§7050). When the law was passed, the concept of EBFM was relatively new, but has since become a common foundation of fisheries law and policy at the state, national, and international level. This chapter focuses on three specific objectives described in the MLMA: 1) limiting bycatch to acceptable types and amounts (§7056(d)); 2) maintaining habitat health (§7056(b)); and 3) conserving ecosystem health and diversity (§7050(b)(1)).

Limiting bycatch to acceptable types and amounts

*NOTE: This section draws largely from the work of the **Bycatch Working Group (BWG)**, a group of stakeholders convened by the Commission in 2015. The BWG was created to help inform the MRC and Commission’s review of bycatch management, specifically through the Department’s effort to amend the Master Plan. The Department used as much of the consensus language from the review as possible in the development of the section on bycatch below.*

Definition of bycatch

During most fishing activity, fishing gear may catch other fish and marine species in addition to the species that is being targeted. For example, commercial and recreational fishermen using **hook-and-line** often cannot tell which species of fish they will catch. There are many terms used to describe this: bycatch, **discards**, non-target, **incidental catch**, and so forth. Sometimes these terms are used interchangeably, but their implications differ subtly.

The Department has historically considered the species or species complex managed by an FMP to be the target of that fishery. The definition of bycatch includes target species that are discarded because they are of undesirable size, sex, or quality, or prohibited due to size, season, catch limit, or sex restrictions, as well as non-target species that are either undesirable or required by law to be discarded (§90.5 and §91). The MLMA mandates that unacceptable amounts or types of bycatch be addressed through conservation and management measures.

This section of the Master Plan focuses on what may constitute unacceptable bycatch and how this bycatch may be addressed. To assist this discussion, the following are definitions of categories of catch and the standards to which they should be managed.

- A target species is defined as any species that is a primary target of the fishery and the principal focus of management efforts. Identification of target species is discussed in Step 2 below. These species are managed to the sustainability standard of the MLMA (see Chapter 5).
- Incidental catch is defined as fish caught incidentally during the pursuit of the primary target species, but legal and desirable to be sold or kept for consumption. Some may define these species as secondary targets or retained bycatch. For purposes of FMP development these species should be accounted for and must be managed either as target species under the sustainability standards outlined in Chapter 5, or as bycatch under the bycatch standard described below. In making this determination, the Department will consult with stakeholders and may consider the criteria associated with identifying emerging fisheries as discussed in detail in Chapter 9. The Department should articulate the basis for its determinations in the relevant FMPs. Identification of incidental species is discussed in Step 2 below.
- Bycatch, as defined by the MLMA, means “fish or other marine life that are taken in a fishery but are not the target of the fishery. Bycatch includes discards” (§90.5). The MLMA provides additional clarification that discard means fish that are taken in a fishery but not retained because

they are of an undesirable species, size, sex, or quality, or because they are required by law not to be retained (§91). This includes the following:

- Discretionary discards:
 - Fish that are legal but undesirable or unmarketable due to species, size, quality, condition, etc.
 - Legal fish that are less desirable than other fish by species or size (high grading), particularly when total take is limited in number or weight by species, species complex, or not retained due to limited storage capacity.
- **Regulatory discards:**
 - Fish that are required by law not to be retained.

As noted in Step 3 below, discarded catch may be returned to the sea alive, dead, or dying, and it is important to assess the mortality rate to evaluate impacts. While all discards are defined as bycatch (§90.5), the discard of live catch may not pose a risk to a bycatch species, and discarding can be an effective management strategy to protect some individuals (e.g., juveniles, sex-specific) in which survival is expected to be high.

Assessing and addressing bycatch impacts

To achieve the goal of minimizing unacceptable bycatch, the MLMA requires that the Department manage every sport and commercial marine fishery in a way that limits bycatch to acceptable types and amounts (§7056(d)).

Consistent with this objective, each FMP must include all the following:

- Information on the amount and type of bycatch (§7085(a)).
- An analysis of the amount and type of bycatch based on the following criteria (§7085(b)):
 - Legality of the bycatch under any relevant law;
 - Degree of threat to the sustainability of the bycatch species;
 - Impacts on fisheries that target the bycatch species; and
 - Ecosystem impacts.
- In the case of unacceptable amounts or types of bycatch, FMPs must include conservation and management measures with the first priority to minimize bycatch and the second priority to minimize mortality of discards that cannot be avoided (§7085(c)).

Section 7085 can be used as the basis for a four-step process to identify bycatch and consider its impacts, as follows:

Step 1. Collection of information on the amount and type of catch.

To determine how to minimize unacceptable bycatch, managers should first gather information on all the species caught in a fishery. Some fisheries require state or federal observers or **Electronic Monitoring (EM)** to record catch data, and some recreational fisheries participate in state observer programs. However, most recreational fisheries and many commercial fisheries operate without such monitoring. If observer data are not available, dockside sampling, **logbooks** and **landing receipts**, Federal Stock Assessment and Fishery Evaluation reports, recreational report cards, creel surveys, directed fishing surveys, or communications with participants can be used to identify the full suite of species caught and the amounts of bycatch.

If information is unavailable or insufficient to understand what is caught in a fishery, the Department can prioritize the collection of these data and clearly state this as a research need in ESRs and FMPs.

Step 2. Distinguishing target, incidental, and bycatch species.

Once information about the type and amount of catch is identified, it is necessary to determine which species are the target of the fishery, which are incidental catch species, and which are bycatch species. In some situations, target or incidental catch species of the wrong size, sex, or condition may be discarded and become bycatch per the MLMA's definition. Differentiating target species from incidental catch and bycatch species is not always obvious (e.g., recreational "catch and release" species). Targets can change over time and vary among participants. Nevertheless, the development of FMPs present opportunities to engage with stakeholders and consider criteria for categorizing catch.

These criteria may include the following:

- The intended target(s) of participants as evidenced by landings data.
- The marketability of landed commercial species or the desirability of recreational species.
- Historical use patterns of the fishery.
- Whether the species is being managed as a target species under another FMP, or under other state or federal law or regulation.

While the MLMA creates a distinction between target species and bycatch, impacts to any species caught must be understood and addressed appropriately regardless of the categorization. In the case of target species, impacts need to be managed so that sustainability is maintained. In the case of bycatch, impacts need to be managed so that they are acceptable as discussed below. Incidental catch species need to be managed to either target or bycatch standards according to the needs of the fishery as determined by the Department. While the statutory language surrounding these two standards is different, their goals are similar and as a practical matter, achieving them may often involve the same strategies and management measures.

Step 3. Determining "acceptable" types and amounts of bycatch (§7085(b)).

The MLMA assesses the acceptability of the amount and type of bycatch using four criteria: 1) legality of the take of bycatch species; 2) degree of threat to the sustainability of the bycatch species; 3) impacts on fisheries that target the bycatch species; and 4) ecosystem impacts (§7085(b)). These criteria have not been further defined in regulation, and it may not be possible to identify a uniform definition of "acceptable" that is appropriate across California's diverse suite of fisheries. However, structured, MLMA-specific inquiries may provide a practical means of conducting fishery-specific analysis of impacts and identifying means for minimizing unacceptable types of bycatch.

If after considering all four criteria the Department determines the amount and type of bycatch to be unacceptable, then further management action is required. The questions provided below for each of the four criteria (§7085(b)(1-4)) can be used to consistently assess what is "acceptable" bycatch within a particular fishery. Responses to these questions are not proposed to be used in a formulaic or prescriptive way, but rather are intended to provide a structured basis for managers to consider the issue and articulate the findings.

(1) Legality of take of bycatch species

This criterion includes any species that might be illegal to take or retain under any relevant state, federal, or international law.

Inquiries:

1. Is the species covered under the **Endangered Species Act (ESA)**, **Marine Mammal Protection Act (MMPA)**, **Migratory Bird Treaty Act (MBTA)**, **Billfish Conservation Act (BCA)**, **Magnuson-Stevens Fishery Conservation and Management Act (MSA)**, Fish and Game Code, Title 14 of the California Code of Regulations, Title 50 of the Code of Federal Regulations, or another FMP?
2. Are there prohibitions against the take of the bycatch species using a specific gear type employed in prosecuting the fishery?
3. Is the species a target species that requires discard of individuals based on size limits, seasons, or gear type restrictions?
4. Is the discard mortality rate known?
5. Are special permits required to retain or interact with the species (such as incidental take permits), does the fishery currently have such permits, and do the levels of bycatch comply with them?
6. Does the species have an incidental catch allowance, ACL, or other restrictions on the amount, size, or sex of catch allowed, and does the catch comply with them?

Recommended actions:

1. If legality is not assessed, this should be conducted.
2. If legality has been assessed and the take is found to be illegal, it may be considered unacceptable and Department action or consultation with responsible state or federal agencies may be necessary.
3. If legally-sanctioned rates of mortality exist, the Department should evaluate if the rate of injury and mortality is being exceeded, potentially through consultations with other responsible state and federal agencies.
 - a. If the rate is within legally-sanctioned injury or mortality rates, then bycatch is likely acceptable in relation to this criterion.
 - b. If the rate exceeds legally-sanctioned injury or mortality rates, the bycatch may be unacceptable and management action may be necessary.

(2) Degree of threat to the sustainability of the bycatch species

This criterion considers the impact of the relative level of bycatch within the fishery on the biological health of a particular bycatch species for which the bycatch is considered to be significant: that is, if the type or amount of bycatch compromises the ability of the population of the bycatch species to maintain a sustainable level. If the particular bycatch species is the target of another managed fishery, it may be possible to refer to a state or federal stock assessment or management plan to understand how the current level of additional catch is likely to impact that species. If there is little information about the status of the stock, the Department should identify a pathway and timeline for determining the fishery's impacts. An initial step could be to conduct a PSA, which may provide insight on the degree of threat to the sustainability of the bycatch species. Understanding the impacts to species that are identified as relatively vulnerable through a PSA could be identified as a research need. A level of take that compromises the sustainability of the population would be unacceptable under the standards of the MLMA.

Inquiries:

1. Has a peer-reviewed risk assessment of the vulnerability of the particular bycatch species to overfishing been conducted (e.g., PSA)?

2. Does a population status estimate or stock assessment exist for this species, and is there confidence in the underlying data such that a reasonable determination can be made if the stock is considered healthy, overfished, or depleted?
3. Are there any existing state and/or federal management measures, and are they effective in ensuring sustainability?
4. Is the bycatch the product of recreational catch-and-release practices?
5. What is the estimated discard mortality rate given the characteristics of the fishery and gear type?
6. Do any post-release studies exist to verify the estimated mortality rate?
7. What is the probability of mortality exceeding levels that have been scientifically determined to be necessary for the continued viability of the species?

Recommended actions:

1. If the level of risk to a state-managed species for which bycatch is significant has not been assessed, the Department should identify this as a research need in the ESR or FMP of the target species.
2. If a risk assessment has been conducted:
 - a. If risk is low, bycatch of the species is likely acceptable for this criterion.
 - b. If risk is high, bycatch of the species may be unacceptable and the Department should consider additional management measures.

(3) Impacts on fisheries that target the bycatch species

This criterion considers whether the current level of bycatch within the fishery negatively impacts the management of another fishery or the fishermen that target the fishery resource. This is particularly an issue for fisheries which may only land the primary target species (e.g., Spot Prawn). Factors to consider may include increasing competition between fleets that target certain species by capturing species managed under federal rebuilding plans or by increasing mortality of juveniles targeted by another fishery.

Inquiries:

1. Does a directed fishery exist for the bycatch species?
2. Has the bycatch and associated discard mortality been accounted for?
3. Is bycatch affecting the directed fishery management strategy (i.e., restrictions on size, sex, or season)?
4. Are the impacts of bycatch considered and made explicit in an ESR or FMP?
5. Is the species constrained under a federal rebuilding plan and will bycatch compete with fleets that target the species?
6. Is there a management allowance for percent of catch or a prohibition on retention?
7. If there is a directed fishery for the species, have there been:
 - Reductions in opportunities or income for participants in fisheries that target the bycatch species?
 - Reductions in fishery quotas or opportunities (e.g., time and area closures) based on bycatch issues?
 - Early closures of a fishery based on higher-than-expected bycatch?
 - Changes in fishing, processing, disposal, and marketing costs due to bycatch?
 - Changes in the social or cultural value of fishing activities due to bycatch?
 - Negative socioeconomic impacts from bycatch on fisheries and/or fishing communities which target or need incidental catch of this species?

- Negative impacts to juveniles of a species targeted by another fishery?

Recommended actions:

1. If socioeconomic impacts of bycatch have not been considered, this should be identified as a research need and integrated into future updates of ESRs or subsequent FMPs.
2. If any impacts under Inquiry 7 above are identified, the Department should consult with fishery participants and others regarding these potential impacts. Depending on the presence and severity of impacts, the Department may find bycatch to be unacceptable, and management measures may be necessary.

(4) Ecosystem impacts

This criterion explores whether the current level of bycatch within the fishery impedes the ability of the bycatch species to fulfill its functional role within the ecosystem. This is difficult to assess for most species, but tools such as ERA may help provide useful guidance and qualitative information, even in data-poor circumstances.

Inquiries:

1. What is the ecosystem role of the bycatch species?
2. Does scientific evidence show the amount of bycatch mortality significantly increases the risk that a bycatch species will be unable to serve its ecosystem role?

Recommended actions:

1. If this information is not available, its collection should be identified as a research need in ESRs and FMPs. Managers should consider collaborations with external marine ecologists and other researchers to collect this information.
2. If species ecosystem function is unlikely to be impeded, then bycatch is likely acceptable under this criterion.
3. If species ecosystem function is likely to be impeded, then bycatch may be unacceptable per this criterion and management measures may be necessary.

Step 4. Addressing unacceptable bycatch (§7085(c)).

If the current type or amount of bycatch is deemed to be unacceptable based on the four criteria above, conservation and management measures are required that minimize the bycatch, and in cases where discards are unavoidable, the mortality of the discards (§7085(c)).

Inquiries:

1. Are measures in place to minimize the impact of the fishery on bycatch species and ensure the fishery does not overfish or hinder the recovery of bycatch species?
2. Are bycatch management measures likely to decrease unintended, non-retainable, and/or dead catch of non-target species?
3. Are bycatch management measures being implemented successfully?
4. Have bycatch management measures been shown to be effective at reducing bycatch and/or bycatch mortality in similar fisheries?
5. What is the economic impact of implementing management measures to reduce bycatch and bycatch mortality to those participating in the fishery in which the bycatch occurs?

There are a number of frequently used strategies for reducing bycatch and discard mortality. These measures and considerations associated with their use are detailed in Appendix M. They include minimum mesh size requirements, escape ports, descending devices, closed areas, depth restrictions,

acoustic pingers, **Light Emitting Device (LED)** lights, and incidental take caps to name a few. However, understanding and implementing the most effective means of reducing bycatch while maintaining economic viability typically requires input from all stakeholders and close collaboration with the fishing industry.

Maintaining habitat health

The MLMA emphasizes the importance of habitat protection as a means of preserving healthy and productive marine resources (§7056(b)). While there are factors external to fishery management that may negatively impact habitat (e.g., storms, climate change, habitat loss due to development, pollution, etc.), protecting habitat from potential fishery impacts is essential to help maintain healthy fisheries, ecosystems, and communities in California. Healthy habitats provide space for the various life history functions of species that are necessary to create sustainable marine populations, including spawning, growth, feeding, and reproduction. Marine habitats are often utilized in different ways by an array of species, so impacts from fishing activities may have cascading effects on the ability of other species of ecological or economic significance to sustain themselves. To achieve the goal of protecting habitats the MLMA requires the Department to:

- Manage every sport and commercial marine fishery with the objective that the health of the fishery habitat is maintained, restored, and where appropriate, enhanced (§7056(b)).
- Include information about the habitat and known threats to the habitat in FMPs (§7080(c)).
- Include measures in FMPs that, to the extent practicable, minimize adverse effects on habitat caused by fishing (§7084(a)).

The following describes steps for assessing and addressing impacts to habitat:

Step 1. Describe the habitat utilized by the target species at each life stage.

ESRs and FMPs should summarize the readily available information regarding the habitats of the target stock (§7080(c)). While ocean waters and their associated salinities, temperature, and nutrients are an important part of marine habitats, most marine habitat management focuses on **benthic** habitats, including habitat-forming plants and invertebrates. Benthic habitats are usually classified by three general types of **substrate**: hard, mixed, and soft. In addition to substrate types, habitats are frequently classified by depth, which influences the amount of light available to the species that live there. Benthic marine communities are often grouped by depth categories such as coastal, continental shelf, continental slope, and abyssal.

ESRs and FMPs should focus on habitats that are particularly sensitive. These include estuaries, sea grass beds, intertidal areas, rocky reef habitats, and kelp forests, which have been found to support a high diversity of species at critical life stages. In addition, these areas are often home to structural or biogenic organisms, which are those species that create habitats for other species. These include some plants, such as Giant Kelp and sea grass, as well as animals such as corals, gorgonians, and sponges.

Marine species may use multiple habitat types during different life stages or for different activities. It is important for managers to describe the habitats utilized for all activities that are crucial to survival and reproduction. If there are some life stages or activities where a species' habitat association is unknown, collecting this information should be identified as an area for future study. ESRs and FMPs should also identify where additional understanding of habitat characteristics, functions, and fluctuations would improve management. See Appendix N for more information on habitat types and their characteristics and sensitivities.

Inquiries and recommended actions:

1. What are the habitat needs of the target stock? How do these needs change throughout its life cycle?
 - a. For each life stage and major activity, identify the habitats utilized.
 - b. If multiple habitats are used, it may be useful to rank the habitats in order of importance to the target stock.
2. What is the spatial distribution of the habitats utilized by the target stock?
 - a. If possible, use existing habitat maps and what is known about the distribution of the stock to determine the spatial distribution of the habitats utilized.
3. Are there particular life stages or activities where the habitat needs of the target stock are unknown or are only partially known?
 - a. Identify life stages and/or major activities where the habitats utilized are unknown as uncertain and requiring additional research.

Step 2. Describe the threats to the habitats utilized.

After describing the habitats utilized by the target species, the threats from both fishing and non-fishing activities to these habitats should be described using available information. For the vast majority of fish habitats, empirical measurements of habitat health over time are unavailable. However, some fishing gears are known to have greater impact than others, and some habitats are more vulnerable to disturbance. Most habitat damage from fishing gears occurs when the fishing gear comes in contact with the seafloor and with biogenic habitats in particular. For this reason, habitat threats from fishing gear are often assessed by considering the gear type, habitat type, and interaction between the two. Appendix M contains additional details regarding these interactions. The presence of MPAs or other spatial restrictions may help reduce a fishery's impacts on habitat and should be explicitly considered when assessing impacts. Abandoned or lost fishing gear can also have negative impacts on habitats. These potential impacts should also be considered and addressed in ESRs and FMPs.

Threats based on non-fishing activities may include climate change, storms, pollution, coastal development, etc. While these threats are for the most part beyond the Department and Commission's authority to regulate, they are required to be characterized (§7080(c)). Other state and federal agencies that do have authority over some of these impacts may be required by statute, regulation, or policy to consult with the Department. Having as complete an understanding as possible of habitat threats will help the Department effectively engage in these consultations and minimize impacts where possible.

Inquiries and recommended actions:

1. What gear types does the fishery utilize? What is the spatial extent and intensity of the use of each gear type?
 - a. Map the approximate spatial extent of the fishery in terms of location, depth, and preferred fishing habitats.
 - b. Map the approximate intensity of fishing gear applied in terms of gear per unit area.
2. Which habitats utilized by the target stock are most vulnerable to fishing gear?
 - a. Characterize the risk each gear type poses. If no local information on habitat impact is available, a resource such as the table in Appendix N may be used to understand the likely impacts of the major gear types.
 - b. Rank the habitats utilized by the target stock in terms of their vulnerability to the gear.
3. Taking MPAs into account, what is the spatial overlap between the footprint of the fishing gear and these vulnerable habitats?

- a. Areas with overlap between high impact gear (or high intensity of moderate impact gear) and vulnerable habitats may need habitat mitigation activities.
4. What other (non-fishery) habitat threats exist?
 - a. Identify and consider anthropogenic threats.

Step 3. Minimize or mitigate adverse effects fishing activity may have on habitat.

There are a number of strategies available to managers to protect habitats, and many of these have already been employed to protect California's most vulnerable marine habitats. The most common strategies include MPAs, and restrictions on the type of gear employed, or how and where a gear type can be used. In some fisheries, fishermen have also developed gear modifications that may lessen the impact of bottom gear on habitat.

Guidance for addressing habitat includes:

- Identify and describe the habitat needs of the target species at all life stages.
- Identify which of the habitats utilized are most vulnerable to threats from fishing gear and non-fishing activities.
- Note areas where there is little to no information available.
- Identify the fishing gear used, spatial extent and intensity of gear, and how gear usage overlaps with vulnerable habitats.
- Work with stakeholders to determine mitigation or protection measures that may be necessary to lessen the impacts of fishing activity in sensitive habitat areas.
- Monitor and evaluate the effectiveness of habitat protection measures.

Conserving ecosystem health and diversity

The MLMA highlights the connection between healthy fisheries and healthy ecosystems and underscores the importance of considering the impact of a fishery on the ecosystem. To preserve the function of an ecosystem, impacts from non-fishery factors such as climate and environmental change should be considered. This reflects a broader recognition worldwide of the need for holistic approaches to fisheries management. However, ecosystems are complex and in constant flux, and the specifics of how they function are not well understood. Making management decisions in this context can be challenging, even in data-rich environments.

Fluctuations in environmental or ecological conditions can have significant impacts on the abundance of target species. The development of ecosystem indicators can be a valuable tool to help ensure that management measures can track and respond to such changing conditions. The discussion of HCRs in Chapter 5 and Appendix J addresses the development and use of ecosystem indicators.

The section below focuses on the impacts of fishing on the ecosystem and provides guidance on ecosystem information to integrate into ESRs and FMPs and how EBFM approaches can be applied using available information and tools.

An ecosystem-based approach to managing fisheries

EBFM requires that ecosystem impacts be considered broadly and consistently in fisheries management. It is a departure from traditional single-species management, in which management decisions consider each species in isolation and do not account for ecosystem dynamics, such as interactions with other species, effects of environmental changes or pollution, and impacts of other stresses on habitat and water quality. While there is widespread recognition of the importance of taking a holistic approach to fisheries

management, implementing such an approach has proven difficult. As with other aspects of fisheries management, a lack of data and information can limit understanding of biological and human dynamics, but need not prevent taking action based on general principles and use of available data and knowledge. It is possible to apply the principles of EBFM when making management decisions even in the absence of the data underpinning complex models of entire ecosystems.

Identification of species that play key roles in the ecosystem

One of the goals of the MLMA is to preserve the ecosystem functions that are essential for sustaining commercial and recreational fishery species over the short- and long-term (§7050). While the literature on ecosystem function continues to evolve, one practical approach to preserving these functions has been to identify the species that play key roles within the ecosystem and their trophic levels, and to ensure that these species are managed sustainably. Conserving the species that play these key roles provides a way to protect the ecosystem functions and services these species play, both directly and indirectly.

Types of key species and their ecosystem roles include the following:

- Keystone species are those that have been shown or are expected to have community-level effects that are disproportionate to their biomass.
- Foundational, structural, or biogenic species are habitat-forming species (e.g., oyster beds, sponges, corals).
- Basal prey species include small **pelagic** forage species such as krill, Pink Shrimp, Pacific Herring, squid, anchovies, and sardines. The high natural variability in the dynamics of these species can have large impacts on their predators and prey.
- Top (or apex) predators are predators for which the removal of a small number of the species could have large or disparate ecosystem effects.

Changes to the structure of these species' populations, which may include changes to the abundance, size structure, genetic structure, or distribution, should be monitored, and management measures should strive to maintain appropriate population structures for species in these roles to the extent possible. For example, the Commission has adopted a policy specifically for the management of **forage fish**, which play a major role in the **California Current Ecosystem (CCE)** (Commission 2012). Forage fish are small pelagic organisms, such as Northern Anchovy, Pacific Sardine, Market Squid, and Pacific Herring that provide an important food source for larger marine organisms. They fill the critical ecosystem role of transferring energy from planktonic plant and animal life to larger fishes, marine mammals, and seabirds. Environmental conditions and climate regimes can have major effects on forage fish distribution and abundance.

Consider management strategies with multiple control measures

Recent studies have found that an integrated management strategy, which is defined as one that involves a combination of management measures (such as size limits, **gear restrictions**, spatial restrictions, effort restrictions, and quotas) to control fishing, is more likely to achieve EBFM objectives than those strategies that rely on a single restriction (Fulton et al. 2014). This is because while a single management measure may maximize catch in a single-species management context, different management controls may provide protection to different aspects of ecosystem function. For example, size limits or restrictions on mesh sizes might help to preserve more natural size and age structures in a population, so that the target species can continue to fulfill its ecological role (i.e., as predator or prey for other species in the ecosystem). Gear and spatial restrictions may reduce habitat and bycatch impacts. Seasonal restrictions may not only allow the target species to spawn, but also reduce bycatch of the species that feed on spawn during that time period. In this way, strategically employing a wider range of management measures may have benefits to the ecosystem as a whole.

Conduct Ecological Risk Assessments to understand which ecological links are most critical

The inherent variability, complexity, and uncertainty in ecological systems makes a complete understanding of ecosystem dynamics impossible. Nevertheless, the MLMA requires that management be based on the best available scientific information (§7050(b)(6)). Some experts have suggested that even a qualitative understanding of these relationships, such as an understanding of “who eats whom”, can be used to make decisions that account for ecosystem interactions (Patrick and Link 2015). In addition, there are analytical tools available, such as the ERA (described in Chapter 2), that can help identify which processes are most likely to impact ecological function, even when only qualitative or semi-quantitative information is available. Understanding the main drivers and major uncertainties of a system is important. This allows precautionary approaches to be applied only where needed, and can help to identify areas for future research.

Inquiries and recommended actions:

1. Has the ecological role of the target species been identified? Does the target species play a key ecosystem role as defined above?
 - a. Describe what is known about the trophic level, predators, and prey of the target stock throughout its life cycle.
 - b. If the ecological role of the target species has not been identified, consider prioritizing the collection of this information as a research need in ESRs and FMPs.
2. Is the target species a basal prey species?
 - a. If so, additional consideration may be necessary to comply with the Commission’s Policy on Forage Species (Commission 2012).
3. Has an ERA been conducted for the target species?
 - a. If so, identify any major ecological threats, and consider applying management measures to mitigate those threats.
 - b. If not, consider conducting an ERA for the fishery.
4. Have the major areas of uncertainty in ecosystem dynamics been identified?
 - a. If not, seek to identify the areas of uncertainty.
 - b. If not, consider additional precaution to reflect the level of uncertainty.
5. Are multiple control measures in place that may help to achieve EBFM objectives?
 - a. If not, consider what, if any, additional measures may be needed to create an integrated management strategy as defined above.
6. Has there been an assessment of how the target stock is likely to be impacted by changing environmental or ecological conditions?
 - a. If not, consider the collection of EFI that can inform the development of environmental or ecological indicators.
 - b. As indicators are developed, integrate into MSE analyses and HCRs as appropriate.

Chapter 7 – Socioeconomic objectives

While sustainability is its primary goal, the MLMA requires that the fishery management system consider the long-term interests of people dependent on fishing for food, livelihood, or recreation, including non-consumptive uses (§7050(b)(3) and §7056(i)). The MLMA also requires that adverse impacts of fishery management on small-scale fisheries, coastal communities, and local economies be minimized. It also highlights a number of fishery management issues such as excess effort and conflict related to allocation and access, which pertain directly to human behavior and social context. Therefore, both the risk to the sustainability of the target stock and its ecosystem, and the impacts of management measures on the people, communities, and economies that depend on those stocks must be considered when developing, evaluating, and adapting management.

The MLMA directs the Department to:

- Manage California’s marine sport and commercial fisheries in a way that ensures the long-term economic, recreational, ecological, cultural, and social benefits of those fisheries (§7055(a)).
- Work to ensure a sufficient resource to support reasonable recreational use (§7055(c)).
- Encourage the growth of commercial fisheries (§7055(d)).
- Allocate management benefits and restrictions fairly among recreational and commercial sectors (§7072(c)).
- When developing FMPs, describe economic and social factors related to the fishery (§7080(e)).
- Minimize the adverse impacts of fishery management on small-scale fisheries, coastal communities, and local economies (§7056(j)).
- Observe the long-term interests of people dependent on fishing for food, livelihood, or recreation (§7056(i)).
- When developing FMPs, summarize anticipated effects of new management measures on fishery participants and on coastal communities and businesses that rely on the fishery (§7083(b)).

The Master Plan separates the MLMA objectives into those that focus on the biological and ecological system and those that focus on the human system. This is due in large part to differences in information needs, data types, sources and analyses, and practicalities related to how these objectives can be effectively considered and addressed. However, the objectives of biological and ecological systems and human systems are linked. For example, management issues such as bycatch and depressed fisheries affect the well-being of people dependent on fishing and have adverse impacts on communities and economies. Solutions to ecological issues can hinge on understanding the source of the problems and identifying practical, feasible options for addressing them. This chapter draws from an overview of socioeconomic considerations under the MLMA developed by the California Sea Grant as part of one of the Information Gathering Projects associated with the Master Plan amendment process.

Types and uses of socioeconomic information

In fisheries, human systems consist of diverse components, relationships, and dynamics. They include the people, practices, institutions, and facilities involved, and their environmental, regulatory, economic, and social context. Fisheries should be managed with a clear understanding of current socioeconomic conditions and the likely impacts of regulatory changes. This includes: 1) direct impacts to resource users; 2) indirect impacts to resource users, such as changes to local employment or community identity and cohesion; and 3) how fishery participants are likely to adapt their operations and relationships to adjust to change. Basic types of socioeconomic EFI relevant to understanding the human dimensions of fisheries are below and additional details are provided in Appendix H.

- *Demographics*: Data relating to a population and groups that comprise it.
- *Practices*: Where, when, and how fishermen participate in fisheries and fishery-related activities.
- *Motivations*: Why people do the things they do.
- *Institutions*: The norms, rules, and strategies that govern peoples' behavior.
- *Relationships*: The social and economic connections among people.
- *Capital*: The natural, human, physical, and financial resources needed and used by participants.
- *Employment*: Jobs in fishing, seafood production, and supporting infrastructure.
- *Expenditures*: Amounts paid by participants for goods and services to participate in the fishery.
- *Revenue*: Payments received for fish landed, handled, processed, and sold.

Integrating socioeconomic information

The various types of socioeconomic EFI described above should be considered together where possible to provide a more complete and meaningful understanding of the human dimensions of fisheries. For example, combining data on demographics, practices, and use patterns can help to evaluate the impacts of management changes on fishery participants, including how impacts are distributed among various groups.

Socioeconomic information must also be considered with environmental factors. Environmental factors such as changing ocean conditions, resource abundance, and resource distribution can affect access to fishery resources. These factors can also affect the distribution of fishery activity and associated social and economic impacts to fishery participants and communities (see Chapter 11). Information about how fishery participants are affected by and respond to environmental factors is useful for interpreting fishery trends, designing management, and distinguishing natural and anthropogenic sources of change.

Collecting socioeconomic information

Much of the information on human dimensions described in Appendix H has not been collected, synthesized, or analyzed for many of California's fisheries and communities. In some cases, this information is collected by the Department through ongoing programs or one-time, targeted efforts. It is also collected by other state and federal agencies and non-agency researchers and can be accessed and analyzed to meet management needs. In other cases, the information may not be readily available, requiring new data collection and analyses. Given the breadth and scope of potential data collection efforts, it is important to identify the information that is most essential to informing management decisions and develop strategies and partnerships for collecting it. Determining an appropriate and realistic approach to data collection will depend on the available resources and capacity.

Using socioeconomic information

ESRs should summarize available socioeconomic information, additional information that is required, and the efforts underway and/or needed to collect it. Rulemakings and FMPs should expand on this by using available information to describe the anticipated impacts of management on participants (§7083(b)). The information described above will help to answer case-specific questions (see Appendix O) regarding those impacts and other considerations related to the management of a particular fishery. The information needed to fully address these questions may not always be available. However, whether preparing ESRs, FMPs, or rulemaking packages, these questions provide a means of systematically considering impacts across a range of potential management actions and of identifying important data gaps.

Chapter 8 – Partnerships

The MLMA emphasizes the importance of collaboration in achieving its objectives as well as the value of capitalizing on the expertise and resources that exist outside of the Department (§7056(k)). Collaboration involves working with interested parties on some aspect of the management process and can vary significantly with respect to responsibility-sharing, structure, and duration. Collaborations can operate across a broad spectrum. On one end of the spectrum is stakeholder engagement, which involves the Department soliciting targeted input on specific management actions. On the other end are partnerships that are more formal, structured, and often intended to be longer-lasting. This chapter focuses on partnerships, their benefits, and the conditions necessary for them to achieve their purposes. It draws from an overview of partnerships in California’s fisheries developed as part of the information gathering phase for the Master Plan amendment process (Wilson et al. 2016). See Appendix P for additional details.

To meet the MLMA’s objectives regarding collaboration, the MLMA encourages the Department to:

- Involve all interested parties in marine living resource management decisions (§7050(b)(7)).
- Manage fisheries in a way that is collaborative and cooperative (§7056(k)).
- Find creative new ways to involve outside experts with the necessary expertise at colleges, universities, private institutions, and other agencies (§7059(a)(2)).
- Use the collaborative process to develop FMPs, research plans, status reports, and other management documents (§7059(a)(3)).
- Periodically review marine life and fishery management operations with a view to improving communication, collaboration, and dispute resolution, seeking advice from interested parties as part of the review (§7059(b)(1)).
- Develop a process for the involvement of interested parties appropriate to each element in the fishery management process (§7059(b)(2)).
- Consider the appropriateness of various forms of fisheries co-management when developing and implementing FMPs (§7059(b)(3)).
- Consider the gear used, the involvement of different commercial, recreational, or processing sectors, and where the fishery is conducted to ensure adequate involvement of fishery participants (§7059(b)(4)).
- Use collaborative approaches to collect EFI (§7060(a)).
- Encourage the participation, collaboration, and cooperation of fishermen in research design and data collection (§7060(c)).
- Consider contracting with qualified individuals or organizations to assist in the preparation of FMPs (§7075(b)).
- Seek advice and assistance from participants in the affected fishery, marine scientists, and other interested parties when developing FMPs (§7076(a)).

Benefits

California is home to engaged fishermen, active NGOs, a wide range of academic and research institutions, Tribes and tribal communities, and public and private funding institutions that are interested in responsible fisheries management and helping the Department and Commission advance the goals of the MLMA. Well-structured partnerships can help to support short- and long-term fishery management goals and enhance and increase the state’s capacity to effectively manage fisheries under the MLMA. In the face of increasingly variable ocean conditions, partnerships can provide an effective mechanism to promote ecological, social, and economic resilience. In addition, partnerships can consider and use varied

skill sets as well as have direct benefits to fisheries managers. For example, **Collaborative Fisheries Research (CFR)** presents a valuable opportunity to engage stakeholders in the identification of research needs, design of research efforts, collection of data through field work, and interpretation of results.

The following are examples of potential benefits of fisheries partnerships (Wilson et al. 2016):

Ecological benefits

- Fisheries maintain sustainable stock levels with long-term stability in abundance and stock health.
- Improved conservation of sensitive habitats, nursery grounds, and spawning grounds.

Economic benefits

- Potential decrease in Department's management cost.
- Potential increase or maintained revenue streams through stabilized landings, and reduced risk of fishery collapse by improving assessments and harvest levels that reflect actual stock sizes.

Political benefits

- A more democratic and participatory system where the interests of government, fishermen, and community members become better aligned.
- Reduced conflict in decision-making.

Benefits to the Department

- Increased support for cost and task sharing opportunities, creating the potential for more efficient and productive management over time.
- Support and buy-in for fisheries management regulations and policies leading to enhanced compliance and better working relationships with industry and NGOs.

Partnership continuum

Fisheries management consists of a wide variety of tasks, each presenting specific opportunities for partnership opportunities. Figure 5 shows categories of common management tasks ordered by the degree of capacity that is needed by partners to effectively engage in a partnership. For these purposes, partner capacity is proposed to consist of three characteristics: 1) how representative the group is of the broader community; 2) the resources the group has available to allocate to the partnership; and 3) how long-standing and durable the partner is.

Partnerships that involve sharing responsibility for more inherently agency-led functions will require more organizational capacity on the part of the partner. While situations will vary, tasks should be closely matched with the partner's capacity to help to ensure a successful partnership. See Appendix P for additional details.

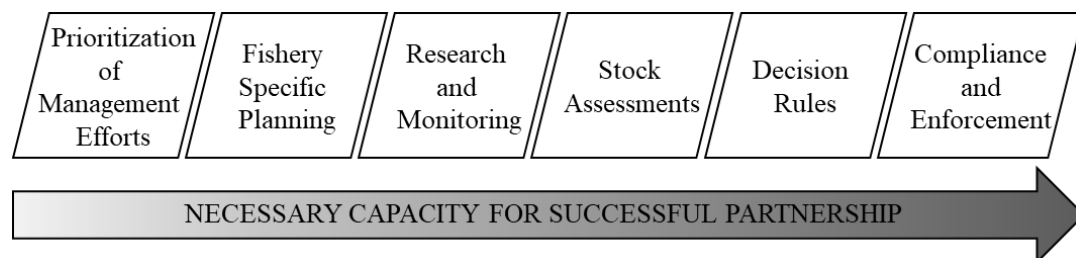


Figure 5. A continuum of partnership-based approaches (adapted from Wilson et al. 2016). The management tasks and types of partnerships are arranged along this continuum in terms of how much organizational capacity, funding and longevity is required for successful partnerships to help meet management objectives or tasks.

Inquiries to assess prospective partnerships

If a partnership is well-designed, it can help to advance the objectives of the MLMA. If not, it can distract from other high-priority activities and frustrate partners. To assess a prospective partnership, the Department should consider the inquiries below. These are not intended to be prescriptive or formulaic; rather they are provided to help managers carefully consider prospective partnerships to help to ensure they advance the goals of the MLMA.

Regarding the partnership

- Will the partnership advance an identified research or management goal?
- Is there trust among partners or the ability to build trust through the partnership?
- Is there an identified source of funding or capacity to support the partnership?
- Will the partnership involve the exchange of knowledge and information necessary to accomplish the goals of the project?
- Will the partnership place a management burden on Department staff disproportionate to its benefits?

Regarding the partner

- What is the partner's motivation to engage?
- Does the partner have effective leadership?
- What is the partner's long-term relationship with the resource or stakeholders who target the resource?
- Does the partner have the necessary capacity to effectively collaborate on the proposed task?
- What unique knowledge or skills regarding the resources does the partner have?
- What is the partner's historical or cultural connection to the resource?
- What is the partner's economic or social reliance on the resource?
- How compatible are the partner's interests and uses with those of other stakeholders?

Engaging in constructive partnerships

Once the decision to engage in a partnership has been made, there are number of best practices that can help to ensure the partnership is productive. These are informed by the Department's own considerable experience with partnerships. Examples include the Department's engagement with the steering committee developing the Pacific Herring FMP, and the efforts to address management needs of the Dungeness Crab fishery by the California Dungeness Crab Task Force.

Guidance

- Develop clear goals, roles, and objectives at the outset of the partnership.
- Ensure regular and effective communication among parties.
- Ensure transparency by informing stakeholders outside of the partnership of its goals.
- Provide stability and direction to partnerships involving multiple groups with diverse perspectives.
- Plan ahead for anticipated funding, resource requirements, and/or uncertainties regarding the partner's longevity to remain engaged.
- Periodically evaluate if the partnership is meeting its goals and how it affects staff workload and the ability to meet other obligations.

The Master Plan was developed through an extensive suite of partnerships that contributed information, tools, and resources. Similarly, full implementation of the Master Plan will require additional capacity and well-designed partnerships to effectively carry out its strategies and achieve its goals.

Chapter 9 – Adaptive management

The MLMA requires that fishery management be adaptive (§7056(g)). Successful adaptive management detects and responds to changing environmental or socioeconomic conditions within an appropriate time scale. The requirement applies across the various issues addressed by the Master Plan, such as determining the appropriate level of management in the continuum, use of MSE, management of bycatch, and approach for adapting to climate change. This chapter seeks to provide a focused discussion of the mechanics of adaptive management, specifically how it should be integrated into ESRs, rulemakings, and FMPs, and how it relates to emerging fisheries.

The MLMA defines adaptive management as a policy that seeks to improve management by viewing management actions as tools for learning, even if they fail (§90.1). The MLMA stipulates that management systems should:

- Ensure that decisions are adaptive and based on the best available scientific information (§7056(g)).
- Ensure that management is proactive and responds quickly to changing environmental conditions and market or other socioeconomic factors, and to the concerns of fishery participants (§7056(l)).
- Periodically review the management system for effectiveness in achieving sustainability goals and for fairness and reasonableness in its interaction with affected stakeholders (§7056(m)).

Adaptive management is a continuous cycle (Figure 6) that applies to any aspect of management, whether the objective is meeting socioeconomic objectives, managing bycatch, or having effective stakeholder engagement. Most often, however, the process is applied to maintaining the sustainability of the target stock.

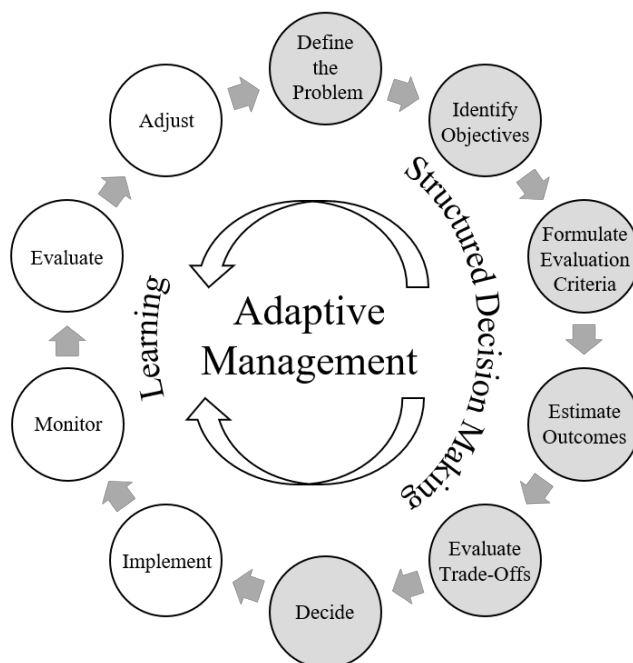


Figure 6. A generalized view of the adaptive management cycle. Gray circles represent the systematic identification of the problem, objectives, and the associated decision-making, while white circles represent the learning associated with implementation (adapted from Birgé et al. 2016).

Adaptive management requires effective stakeholder engagement as outlined in Chapter 4 and well-structured and supportive frameworks described in an ESR or FMP. The following section focuses on the supportive structures and mechanisms that can be included in management documents.

Adaptive management approaches and structures

FMPs require the identification of the goals for the fishery, strategies for achieving those goals, metrics by which management success will be measured, and process for assessing and adjusting strategies over time. Since FMPs afford greater opportunities for stakeholder engagement, they are more conducive to the creation of comprehensive and adaptive management strategies. ESRs can be used to articulate the adaptive nature of current management and research efforts.

Chapter 5 and Appendices H-K and L describe in detail how the use of reference points, HCRs, targeted data collection, and MSE can enable adaptively responding to new information. More generally however, FMPs should identify the following when incorporating adaptive management:

- A research protocol that explains what data will be collected, how observations will be analyzed, and how results of the analysis will be used in management decision-making related to implementation of the selected management strategy.
- The process for strategic review to update understanding of the managed system and revisit selection of the management strategy. This review includes updating models, assumptions, and uncertainties about dynamics of the managed system and comparing the performance of alternative management strategies considering this updated understanding.
- Uncertainty regarding the current state of knowledge and the implications of that uncertainty in the design and evaluation of management strategies.
- The alternative management strategies that were considered prior to selecting the preferred approach for implementation. MSE can be a valuable tool for accomplishing this.
- Timelines and triggers for re-considering management choices. Clarifying the timelines and triggers improves predictability.
- The necessary institutional capacity for monitoring and analysis.

Current Fishery Management Plan strategies

The White Seabass and Spiny Lobster FMPs include specific examples of adaptive management that should be emulated where appropriate. The Department manages the White Seabass fishery with the assistance of the **White Seabass Scientific and Constituent Advisory Panel (WSSCAP)**, which consists of representatives from the scientific community, recreational and commercial fishers, and NGOs. The FMP requires the Department and the WSSCAP to evaluate the status of the White Seabass fishery against six “points of concern” annually using fishery-dependent and fishery-independent data on recruitment if available. The Spiny Lobster FMP uses an “HCR toolbox” that describes a variety of indicators, considerations for interpretation, and a range of potential management responses. While it does not include a standing stakeholder body like the WSSCAP, its use of triggers, the toolbox approach, and targeted research and data collection provide a framework for effective adaptive management as well.

Experimental gear and emerging fisheries

Adaptive management can apply to the management of existing fisheries as described above, but also requires the availability of a policy pathway to address new fisheries and gear that emerge. To that end, the MLMA gives the Commission the regulatory authority to identify and govern these new fisheries. This section provides an overview of the existing pathway and considerations for experimental gear and emerging fisheries.

Experimental gear

Any fish species may be landed commercially unless fishing regulations are currently in place to restrict catches of that species (§8140). However, an **experimental gear permit** is needed for new types of commercial fishing gear and new methods of using existing gear that are otherwise prohibited. This is the case for new or existing fisheries in which experimental gear is used. Section 8606(b) states: “A permit may authorize the use of new types of commercial fishing gear and new methods of using existing gear otherwise prohibited by this code and may authorize that use or the use of existing gear in areas otherwise closed to that use by this code.”

The Commission’s issuance of experimental gear permits presents a good opportunity to strategically apply the steps of Figure 6. The Commission can be proactive and precautionary by requiring certain measures for the use of new gear type, including data collection and minimizing damage to the environment and other marine resources. The Commission may also revoke a permit if it finds that the fishery or gear is causing damage or creating conflict among user groups. If the experimental gear is ultimately approved for broader use, the fishery that results may then be managed pursuant to elements of the emerging fisheries policies referenced below.

New fisheries using existing gear

The emerging fisheries provisions in the MLMA are aimed at fostering a proactive approach to management. The goal is to prevent such fisheries from growing faster than the understanding necessary to sustainably manage them. More specifically, the MLMA requires the Department and Commission to “encourage, manage, and regulate” fisheries that are perceived to be increasing. It also states that the Department shall closely monitor landings and other factors it deems relevant in each emerging fishery and shall notify the Commission of the existence of an emerging fishery (§7090(c)).

Section 7090 of the MLMA defines an emerging fishery as:

1. A fishery that the director has determined is an emerging fishery, based on criteria that are approved by the Commission and are related to a trend of increased landings or participants in the fishery and the degree of existing regulation of the fishery.
2. A fishery that is not an established fishery. "Established fishery" means, prior to January 1, 1999, one or more of the following:
 - a. A restricted access fishery has been established in this code or in regulations adopted by the Commission.
 - b. A fishery, for which a federal FMP exists, and in which the catch is limited within a designated time period.
 - c. A fishery for which a population estimate and catch quota is established annually.
 - d. A fishery for which regulations for the fishery are considered at least biennially by the Commission.
 - e. A fishery for which the Fish and Game Code or Title 14 regulations adopted by the Commission prescribes at least two management measures developed for the purpose of sustaining the fishery. Management measures include minimum or maximum size limits, seasons, time, gear, area restriction, and prohibition on sale or possession of fish.

The Commission adopted an additional set of criteria to determine whether a fishery qualifies as emerging (see: <http://www.fgc.ca.gov/policy/p2fish.aspx#emerging>). If the Commission designates a fishery as emerging, it has two possible courses of action. The first is to adopt regulations to limit catch or effort. If adopted, these regulations can stay in effect until an FMP is adopted. The second is to direct the Department to develop a new FMP. The Department may make a recommendation to the Commission regarding the best course of action based on the existing set of priority fisheries. Emerging fisheries are

by nature data-poor, and tools such as PSA may be needed to inform management measures and strategies.

Guidance

- Application of the fishery management cycle described in Chapter 5 and Appendices H-K and L will advance adaptive management goals of the MLMA.
- In particular, the Department should make strategic use of reference points and HCRs wherever appropriate and where resources allow.
- ESRs should describe if and how current management is adaptive (see Chapter 3) and responsive to changing ecological, environmental, or socioeconomic conditions. This includes identification of any indicators considered in management, data collection efforts that inform decision-making, and any HCRs or processes in place to systematically consider new information.
- In developing FMPs, the Department should include adaptive management mechanisms such as those employed in the White Seabass and Spiny Lobster FMPs.
- As described in Chapter 11, climate change may be a catalyst for emerging fisheries going forward. However, prioritizing management effort is central to effective implementation of the MLMA. Therefore, when the Commission considers new fisheries or new uses of gear it should consider them in light of the criteria for evaluating new proposed priorities described in Chapter 2.

Chapter 10 – Best available information and peer review

Ensuring the use of the best available information in the management of fisheries is a central tenet of the MLMA. One step in achieving this is external peer review of certain scientific information used in management. This chapter describes the requirements of the MLMA regarding best available scientific information and external peer review. As part of the information gathering phase of the Master Plan amendment process, OST developed a report on best practices regarding peer review under the MLMA (see: <http://www.oceansciencetrust.org/wp-content/uploads/2017/06/CA-Fisheries-Peer-Review-Guidance-6.26.17.pdf>). This chapter as well as the additional details provided in Appendix Q draw from that report.

Section 7050(b)(6) of the MLMA states that management should be based on “the best available scientific information and other relevant information.” This includes the following:

- Determinations as to whether a fishery is depressed (§90.7).
- Determinations as to whether overfishing is occurring (§98).
- Management of marine living resources (§7050(b)(6), including fishery management decisions (§7056(g)) and FMPs (§7072(b)).
- Dissemination of information on the condition and management of marine resources and fisheries (§7050(b)(8)).
- The effects of management measures on fish populations, habitats, fishermen, and coastal communities (§7083(b)).
- Identification of measures that might minimize damage to habitat from fishing (§7084(a)).
- Level of bycatch and its effects on other fisheries, conservation of bycatch species, and the ecosystem (§7085).
- Identification of criteria for determining when a fishery is overfished (§7086(a)).

The Department should apply the criteria developed by the **National Research Council (NRC)** in determining the best available scientific information (NRC 2004):

- *Relevance*: Scientific information should be representative of the fish stock, habitat, and socioeconomic context of the fishery being managed, although the data need not be site specific or species specific. In some cases, analogous information from a different region or the biological characteristics of a related species or species with similar life-history strategies will be informative and relevant, and may constitute the best information available.
- *Inclusiveness*: Scientific advice should be sought widely and should involve scientists from all relevant disciplines. The goal should be to capture the full range of scientific thought and scientific opinion on the topic at hand. Critiques and alternative points of view should be acknowledged and addressed openly. Anecdotal (experiential, narrative, or local) information should be acknowledged and evaluated during the process of assembling scientific information. When no other information is available, anecdotal information may constitute the best information available. In addition, anecdotal information may be used to help validate other sources of information and identify topics for research.
- *Objectivity*: Data collection and analysis should be unbiased and obtained from credible sources. Scientific processes should be free of undue nonscientific influences and considerations.
- *Openness*: The public should have information about each phase of the process from data collection to data analysis to decision-making. Decision makers should provide a clear rationale for the choice of the information they use or exclude when making management decisions. The

process of collecting data and selecting research for use in support of management decision-making should be open, broad-based, and carefully documented. All scientific findings and the analysis underlying management decisions should be readily accessible to the public. The limitations of research used in support of decision-making should be identified and explained fully. Stock assessments and economic and social impact assessments should clearly describe the strengths and weaknesses of the data used in analyses.

- *Timeliness:* There are two primary aspects to timeliness. First, timeliness refers to the acquisition of data in such a manner that sufficient time exists to analyze it adequately before it is used to make management decisions. Second, timeliness refers to whether the data are applicable to the current situation. Uncertainties that arise from an incomplete study should be acknowledged, but interim results may be better than no new results at all. Management decisions should not be delayed indefinitely on the promise of future data collection or analysis.

Peer review

In §7062, the MLMA requires that the Department “establish a program for external peer review of the scientific basis of marine living resources management documents.” Peer review is the most accepted and reliable process for assessing the quality of scientific information. Its use as a quality control measure enhances the confidence of the community (including scientists, managers, and stakeholders) in the findings presented in scientific reports and, consequently, in decisions based on that scientific information.

The MLMA identifies some types of documents that can be submitted for external peer review, including marine resource and fishery research plans (§7062(a)), interim fishery research protocols (§7074(c) if justified), and FMPs or plan amendments (§7075(a)). The MLMA does not address data sets, analyses, and other documents developed by the Department or other entities, which may be cited within a management document (e.g., ESRs). However, scientific information developed by the Department is subject to the *Department’s Scientific Integrity Policy* (CDFW 2017a), which allows for internal review unless the documents will have “a substantial management impact or large expenditure of funds”.

The MLMA does not provide guidance on other documents that should be submitted for peer review, but limits peer review to the scientific basis of management documents. In general, the Department and Commission should consider submitting all scientific analyses central to the development of FMPs and management measures, as well as the scientific portions of FMPs, for peer review. The process for this review is described below.

Exemption of documents from external peer review

The MLMA authorizes the Commission, with the advice of the Department, to adopt criteria for exempting certain documents from external peer review (§7074(d) and §7075(c)). In making this determination, the Commission should be guided by the following criteria:

- The product does not contain scientific or technical information upon which decisions are based.
- The product has already been subject to a prior adequate peer review within a reasonable time period.
- A peer review process would significantly interfere with the need for promptness in decision-making or secrecy of information.
- The information is routine data, generated using properly applied, scientifically-accepted methods.
- Information involving a health or safety issue where dissemination is time-sensitive.

- The information consists of accounting, budget, actuarial and financial information.

Scope of external peer review

At a general level, the MLMA characterizes the scope of external peer review as “the scientific basis of marine living resources management documents” (§7062(a)). Section 7062(c) calls for the external review panel to determine whether “a scientific portion of the document is based on sound scientific knowledge, methods, and practices.” Given the breadth of issues in FMPs and related documents, properly establishing the scope of an external peer review so that it focuses upon the scientific elements of the documents is crucial to implementing these provisions of the MLMA. Due to the significant workload associated with conducting an independent peer review, including the logistics and coordination among reviewers, it is expected that it will not be possible to accomplish most reviews with volunteers and therefore contractors will likely be engaged. This will require dedicated funding and capacity to manage.

Regardless of whether contractors or volunteers are employed, to conduct an external peer review, the Department and coordinating entity managing the external peer review process should develop a detailed scope for scientific review of the target documents before selection of the panel of reviewers. The Department should notify the public of the scope upon its formulation. In many cases, it will be useful to delineate between the scientific basis of the management document undergoing review and the management recommendations contained therein, which typically would not be subject to peer review. Table 2 provides guidance on types of reviews, example applications, and the benefits and limitations of the use of review types.

Levels of peer review

The intensity of peer review may vary for different documents. For example, routine updates based upon previously reviewed methods may be reviewed internally while novel or complex methods, data, and analysis will require more formal review by an external panel of experts. Table 2 identifies four levels of external scientific peer review and considerations associated with each. See Appendix Q for additional details on best practices regarding each potential work product.

Table 2: Levels of peer review and associated considerations.

Review mode	Example applications	Potential work product	Benefits	Limitations
Internal review	Routine actions with limited management implications or associated controversy.	ESRs, fishery research protocols.	Agile, cost-effective.	Limited opportunity for alternative perspectives.
Expert written review	Products of short to moderate length, and low to moderate complexity. Work products that are unlikely to have highly significant management implications.	Draft FMP of low to moderate complexity.	Quick, less costly. Multiple independent reviews offer diverse viewpoints.	No group discussion or deliberation. Reviewers may have contrasting or opposing views.
Panel review (remote)	Moderately complex methodologies, models, or data analyses that require group discussion and participation of agency staff. Reviews requiring international participants. Work products that are likely to have moderately to highly significant management implications.	Draft FMPs or methodologies of moderate to high complexity.	Allows for deliberation among reviewers and managers. Relatively easy to accommodate public participation.	Moderately costly, moderately time-intensive. Does not allow for in-depth group working sessions.
Panel workshop review (in-person)	Complex methodologies, models, or data analyses that require group discussion and participation of agency staff. Newly applied methodologies (first application in California fisheries management). Reviews requiring additional analyses or model runs. Work products that are likely to have moderately to highly significant management implications.	Stock assessment, complex or highly complex draft FMP or methodology. Highly controversial reviews.	Allows for deliberation among reviewers and managers, real-time analysis, discovery and back and forth deliberation. Workshops open to the public may increase buy-in.	Requires extensive pre-workshop planning. Costly, time-intensive.
Journal peer review	Complex methodologies, models, or data analyses, and novel science. Decisions or scientific information that would benefit from highly rigorous scientific vetting. Scientific information that could be built upon or would benefit the wider academic community. Controversial findings or results inform influential or costly management decisions.	Varied; Methodology, models, new data, analyses.	Ensures product meets high standards of scientific quality.	Not reviewed openly, may not allay public concerns. Time-intensive – may not be appropriate for time-sensitive findings or conclusions; Manuscript must align with journal publication timelines. Competitive process.

The level of review for specific types of documents is included in the table above. However, in determining the appropriate level of review, the following criteria should be considered:

- *Complexity*: The nature and complexity of scientific information presented in models, analyses, and methods.
- *Management risk*: The significance of information and decision-making risk potential impact on sustainability for incorrect management decisions.
- *Uncertainty*: The level of confidence surrounding a body of scientific knowledge.
- *Socioeconomics*: The social and/or economic value of the fishery and economic impacts of decisions that will be informed by the scientific information; cost-benefit analysis of additional review.
- *Level of previous review*: A determination of the type and amount of previous peer review of the information used.
- *Precedent*: Whether science is regarded as “precedent setting,” particularly novel, or is the first application of a new tool or model.
- *Group discussion*: The benefits to be gleaned from group deliberations.

External peer review timing

The MLMA does not dictate the timing of peer review within the regulatory process, and practice has varied. In general, the Department should consider seeking peer review of scientific information that will be used to inform management decisions before regulatory options are developed and before agency or stakeholder positions have formed, to the extent that is feasible. External peer review of FMPs and similar documents might begin only upon completion of a draft document and before public review. Where feasible, it is advantageous for the Department to include an opportunity for the **external peer review panel** to review the Department’s responses to panel findings as well as public comments. See Figure 7 for suggested checkpoints for peer review during the management process.

Suggested Checkpoints for Peer Review of Science Supporting Fishery Management Plans

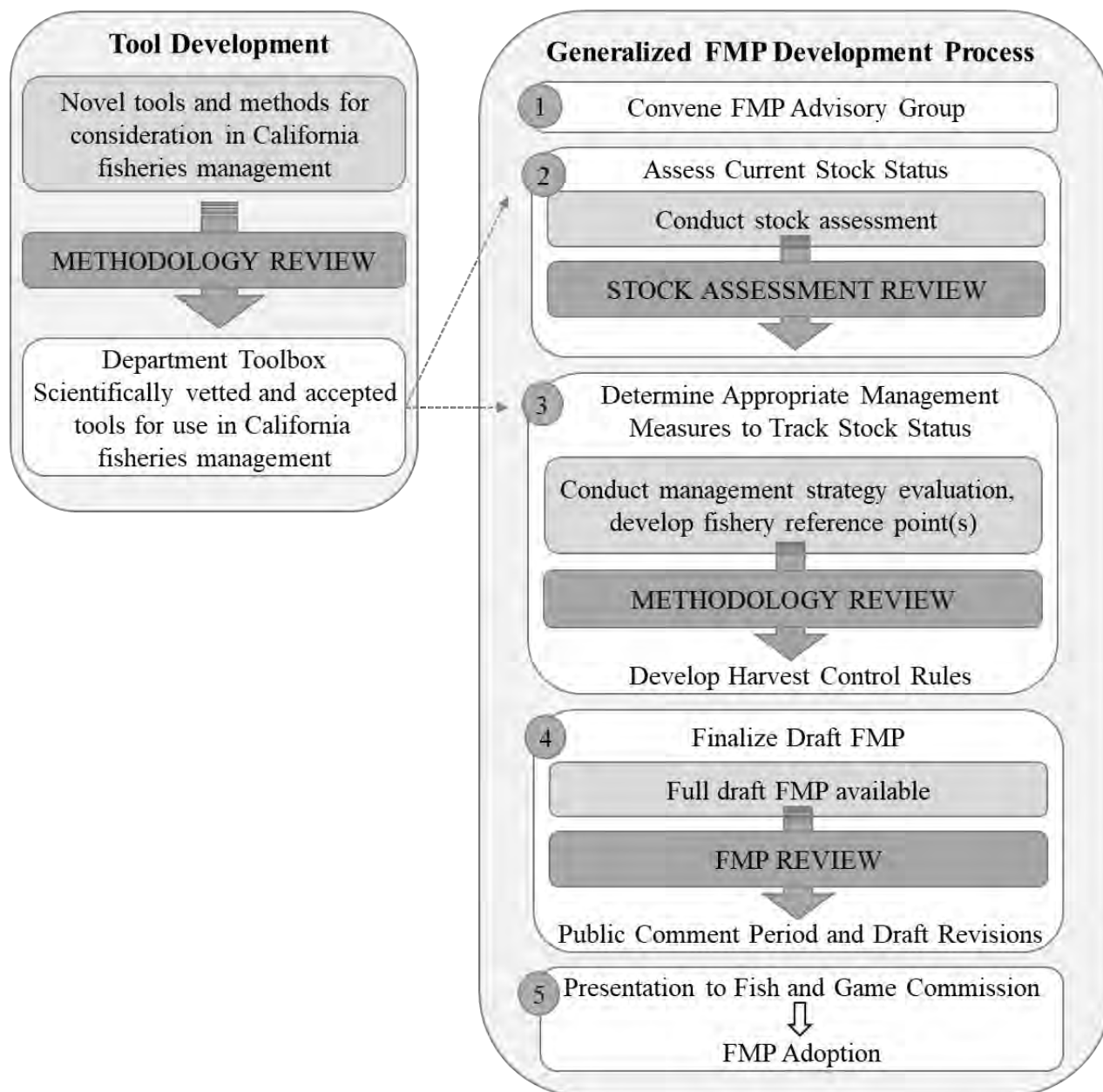


Figure 7. Suggested checkpoints for scientific peer review of science in a generalized fishery management plans development process (adapted from OST 2017).

Management and design of the external peer review process

In conducting external peer reviews of scientific information, the MLMA authorizes the Department to enter into an agreement with outside entities “that are significantly involved with research and understanding marine fisheries and are not advocacy organizations” (§7062(b)).

The contracted entity is to select and administer the external peer review panel and is responsible for the scientific integrity of the peer review process (§7062(b)). The MLMA does not define scientific integrity. However, in designing a peer review process with a contracted entity, the Department should aim for a process that has the following characteristics (Office of Management and Budget 2005):

- Incorporates the right expertise and balance.
- Identifies the key scientific issues and provides a clear charge to reviewers.
- Supports deep, focused, and high-quality discussions among members of the panel.
- Ensures that the rationale for the panel’s findings is clear and well-documented.
- Produces a highly accurate report summarizing the review findings.

The Department will also seek to ensure that external peer reviews have high process integrity, including the following characteristics:

- Are open and consistent.
- Avoid real or perceived conflicts of interest.
- Include a workable process for public comment and involvement.
- Adhere to their defined procedures.

The management and activities of external peer review panels should also be guided by the Department’s *Procedural Guidelines for Ad Hoc Independent Scientific Advisory Committees* (CDFW 2017b).

Composition of external peer review panels

Among other things, the MLMA mandates that external peer review panels be made up of “individuals with technical expertise specific to the document to be reviewed” (§7062(b)). In addition, “Peer reviewers shall not be employees or officers of the Department or the Commission and shall not have participated in the development of the document to be reviewed.” Reflecting best practices, membership of external peer review panels should have the following characteristics:

- Reflect the right types and diversity of expertise relative to the scientific information under review.
- Meet standards for expertise as demonstrated by degrees, publications, and experience.
- Have not participated in the development of the information being reviewed.
- Be free from conflicts of interest, including any financial or other interest that could impair objectivity or confer unfair competitive advantage.

The review of highly specialized information may sometimes require exceptions to these conflict of interest rules, particularly where the pool of potential reviewers is narrow. In such situations, the real or perceived conflict of interest should be promptly identified and disclosed to the public.

Dealing with disagreements among reviewers or conflicting reviews

While it is not the goal of peer review to achieve consensus among reviewers, contrasting viewpoints or recommendations about major components of the subject matter can be difficult to resolve. This may occur more frequently during written reviews where experts do not communicate with one another during the process. However, panel workshops may also produce conflicting recommendations.

Any review output should appropriately represent any dissenting or contrasting views, however it is not the role of a review coordinating body to resolve or prescribe which recommendation to consider or accept over another. This role could be deferred to the review committee chair, or, depending on the level and subject of disagreement, the Department, or the review coordinating body may choose to consult with an outside expert.

As noted here, the Department is required to provide written explanation if it disagrees with any aspect of the review findings. A written response and justification could also be appropriate when responding to conflicting reviews. The review committee chair, outside expert, or the Commission could serve as moderator to make a final determination of whether an issue was adequately addressed.

Reporting of peer review findings

Section 7062(c) of the MLMA requires that the external scientific peer review entity provide the Department with “the written report of the peer review panel that contains an evaluation of the scientific basis of the document,” including any findings of scientific deficiencies in the document and the basis for those findings. As required by the MLMA, the Department is to then accept the findings and alter the document, or if it disagrees with a finding, to include as part of the record the basis for its disagreement, including reasons for determining the document is based on sound scientific knowledge, methods, or practice. The MLMA requires that the Department submit the peer review report and its response to peer review findings with the reviewed document to the Commission and make these materials publicly accessible to strengthen the transparency of the peer review process.

While scientific review can be a resource- and time- intensive process, it can help to demonstrate that fishery management decisions are based on valid and defensible science. An open process can also demonstrate a commitment to objectivity and help to build relationships with stakeholders. Many of the recommendations contained in this chapter require standardizing and formalizing existing practices and processes, as well as dedicated funding, to ensure consistency across review implementations. For additional details regarding the peer review process including a peer review checklist, sample **Terms of Reference (TOR)**, and report template, see Appendix Q.

Chapter 11 – Adapting to climate change

The preceding chapters each address a central objective of the MLMA. When each objective is effectively achieved, the management system as a whole is robust, responsive, and resilient. While this is an important goal under typical conditions, the challenges of climate change will require management to be flexible and adaptive, further underscoring the need for effective MLMA-based management.

Since the MLMA was drafted, the potential long-term impacts of climate change have become more clearly understood. As discussed below, climate change is expected to have broad impacts across marine ecosystems, as well as the societies and economies that depend on those ecosystems. Climate change may result in several physical changes to oceanic and nearshore systems, including increased temperature, ocean acidification, altered currents, increased storm frequency and severity, and higher sea levels. These physical changes may in turn affect ecosystem productivity and function, species abundances and distributions, habitat use and availability, and cues that some species rely on that indicate changes in the season. They may also affect the ability of fishing fleets to access resources, catch, and land fish, and impact port infrastructure. These changes are already occurring and may have wide-ranging implications for California's fish stocks and fishing communities.

This chapter draws from a 2017 report by OST on adapting to climate change, which was developed as part of the information gathering phase of the Master Plan amendment process (see: http://www.oceansciencetrust.org/wp-content/uploads/2016/06/Climate-and-Fisheries_GuidanceDoc.pdf, referenced as Chavez et al. 2017). This chapter focuses on how climate change may impact California's fisheries and discusses the various ways in which management can prepare for these changes to maintain resilient ecological and socioeconomic systems.

A naturally variable system

Even in the absence of climate change, the CCE is one of the most variable marine ecosystems in the world due to the influence of the El Niño Southern Oscillation, Pacific Decadal Oscillation, and North Pacific Gyre Oscillation (Chavez et al. 2017). Because of these systems, climatic factors fluctuate on yearly and decadal (or longer) timescales. These factors create a challenging management landscape that is further complicated by the additional variability that climate change brings.

The CCE generally varies between relatively cool and warm regimes that differ in their environmental conditions, species composition and distribution, and overall food web productivity. Historically, warm and cool phases have been relatively consistent in terms of their accompanying conditions. In general, cool phases tend to be more productive because movement of subarctic water, cooler ocean temperatures, and stronger upwelling results in more nutrients available for phytoplankton, and consequently more food for higher trophic levels (Chhak and Di Lorenzo 2007). Warm phases are generally less productive. As the CCE cycles between cool and warm regimes, these environmental conditions drive recruitment, species composition and distribution, and overall production, all of which affect fishermen and their communities.

Species tend to respond differently to cool or warm periods. Within California, Market Squid, Dungeness Crab, Ocean (Pink) Shrimp, Northern Anchovy, and most **groundfish** are particularly productive under cool regimes. Under warmer regimes, including those associated with El Niño events, Pacific Sardine, Spiny Lobster, and California Halibut tend to thrive (Chavez et al. 2017). These species form the basis of major fisheries in California's waters, and management must become more flexible to deal with potentially increased fluctuations due to climate change. In addition, the extent to which a given species is likely to be affected by climatic fluctuations depends on the life history and trophic level of the species (Chavez et al. 2017). For short-lived, planktivorous species such as Market Squid and Ocean (Pink) Shrimp, populations can respond dramatically to environmental conditions, and these fisheries tend to

experience cyclical conditions. Conversely, long-lived piscivores, such as rockfish, are generally able to withstand climatic fluctuations with more modest year-to-year shifts in total population abundance or availability to fisheries (Field et al. 2006).

Measuring change

Understanding how normal climatic fluctuations within the CCE have affected fish stocks in the past may help managers prepare for climate change. Environmental indicators such as sea surface temperature and the Multivariate Ocean Climate Index, which looks at a range of oceanic conditions, can serve as valuable tools to characterize the degree to which the system is operating in a warm or cool regime. This information may be used to help assess the status of fish stocks and determine appropriate management responses. In addition, this information can help provide some insight into how these species, and the fishing communities that depend on them, may fare under climate change scenarios.

Environmental and ecological changes

Increased variability under climate change

Climate change may alter the natural cycles of the CCE by increasing the magnitude of variability in the system, leading to more extreme conditions. These changes are likely to result in large-scale impacts rather than the local-scale impacts that fishing pressure often exerts. For example, changes in atmospheric and oceanographic forcing may change the timing of natural fluctuations by increasing or decreasing the length of warm or cool states. Extreme environmental conditions, in turn, may increase the frequency or intensity of disease, parasite, or biotoxin outbreaks such as withering syndrome in abalone, sea star wasting disease, and harmful algal blooms; such outbreaks can have direct or indirect impacts on fisheries. For example, extremely warm temperatures contributed to unprecedented size and persistence of the 2015-2016 harmful algal bloom event that led to temporary closures of the Razor Clam, Dungeness Crab, and Rock Crab fisheries.

Extended warming events and higher storm activity may also lead to declines in kelp abundance and distribution. Extreme marine heat waves have also contributed to a dramatic reduction in kelp distribution, particularly in northern California. Persistent warming over several consecutive years may reduce the capacity of annual kelp species (e.g., *Nereocystis luetkeana*) to successfully reproduce. Reduction in kelp has had both direct and indirect effects on species that depend on it for food and habitat. If the magnitude and timing of CCE's variability changes, synergism among these impacts could lead to dramatic shifts in CCE dynamics with significant long-term implications for fisheries.

Changes in spatial distribution

Species that favor cool regimes such as Dungeness Crab, rockfishes, anchovies, and salmon are particularly vulnerable to climate change in California. Such species are predicted to shift poleward where conditions are likely to be more favorable. The distribution of subtropical species such as tunas, White Seabass, and Pacific Sardine is likely to expand poleward, leading to emerging fisheries in the north (Chavez et al. 2017). Some species may decline in abundance, particularly those with characteristics that prevent them from expanding their range (e.g., limited dispersal potential, specific habitat or prey requirements, etc.). Long-lived species such as rockfish are likely to be more resilient to high variability. However, individual species declines or shifts may alter food web dynamics. Highly specialized species (e.g., specialized diets, habitat requirements, or complicated reproductive strategies) are more vulnerable to increased variability.

Changes to species life histories and food web dynamics

Changes in temperature may drive changes in the phenology (seasonal timing) and phenotypic expression (physical traits) of fishes and invertebrates. Species may display a shorter pelagic larval duration, faster growth, and younger age at maturity, which are more commonly observed in the tropics (Asch 2015). Changes in life history traits, particularly changes in timing, could lead to recruitment failures if shifts in timing result in temporal mismatches with the seasonal abundance of prey resources (e.g., spring bloom in productivity). For example, earlier spawning and shorter larval stages could result in a temporal mismatch between peak larval production and the production of zooplankton prey. Snyder et al. (2003) found evidence that climate change may lead to delays in the onset of the upwelling season, which further increases the likelihood of a temporal mismatch between larval production and spring blooms in productivity. Species that time reproduction and larval release to the spring bloom in productivity are particularly vulnerable to match-mismatch dynamics and, ultimately, reduced recruitment (e.g., rockfishes, Dungeness Crab).

Changing ocean chemistry

California is already experiencing physical changes to the properties of seawater that are consistent with climate change projections and have the potential to contribute to dramatic ecological shifts (Chavez et al. 2017). Scientists have observed an overall decline in seawater pH (Somero et al. 2016). Additionally, there has been an increase in frequency of conditions that can destabilize, dissolve, or prevent the creation of calcified structures such as shells and urchin tests, and projections indicate that these conditions will continue to increase (Feely et al. 2008; Harris et al. 2013). In addition to declining seawater pH, long-term declines in oxygen content, as well as short-term hypoxic events during upwelling, have also been observed in the California Current (Feely et al. 2008; McClatchie et al. 2010). Due to regional differences in oceanography, the impacts of climate change will differ in northern and southern regions of California. Upwelling intensification in northern regions may lead to more extreme acidification and hypoxia relative to the Southern California Bight.

Shifts in ecosystem function

Climate change may cause the CCE to undergo a dramatic shift in community structure, such that food web dynamics and ecosystem function are disrupted. There are many potential causes for this. Global warming and changes to atmospheric forcing in the Northeast Pacific will alter circulation patterns, mixing, and ultimately the physical parameters of seawater. Changing ocean conditions are projected to occur gradually over the coming decades, but the ecological impacts of these changes may manifest in sudden biological tipping points that shift ecosystems into dramatically altered states (i.e., crossing thresholds) (Selkoe et al. 2015). This could result in large changes to ecosystem function, with a possible effect being the rapid change in a fish stock's abundance. Crossing this type of biological tipping point may reverberate through the food web and cause shifts in the state of the ecosystem.

Managing for climate change

Climate change adaptation will require detecting the changes described above and responding to them in a timely manner to maintain sustainable fisheries. The State of California is committed to addressing the impacts of climate change (see:

<http://resources.ca.gov/docs/climate/safeguarding/update2018/safeguarding-california-plan-2018-update.pdf>). The following sections identify important management approaches that the Department will explore for meeting this challenge.

Maintaining ecological resiliency

Resilience is defined as the “capacity of an ecosystem to absorb recurrent disturbances or shocks and adapt to change while retaining essentially the same function and structure” (McClanahan et al. 2012).

The following management approaches are designed to maintain ecosystem resilience in fisheries affected by climate change.

- *Reduce external stressors:* One strategy for increasing resilience of stocks (and ecosystems) to climate change is to decrease existing stressors already impacting the stocks expected to be negatively affected by climate change (Sumaila et al. 2011; Stein et al. 2013; Pinsky and Mantua 2014). For species expected to be negatively impacted by climate change, the impacts from other stressors are more likely to have rapid and more acute reactions. Some examples of existing stressors include high fishing mortality, habitat degradation, invasive species, disease, and pollution.
- *Identify vulnerable species:* Some species will be more vulnerable than others to the ecological and oceanographic changes that result from a changing climate. Although there is uncertainty regarding the direction and magnitude of some of these changes over time within the CCE, potential changes from a range of climate scenarios can be examined. In California and elsewhere, efforts are underway to develop and evaluate tools for assessing species' vulnerability and risk from climate change. Results from such assessments will provide valuable information to guide many facets of the MLMA-based management including prioritization, ERA, and ESR and FMP development. The Department will explore partnerships available for conducting such assessments as tool availability and resources permit.
- *Apply a precautionary approach to fisheries management:* The precautionary approach guides decision-making by assessing and managing for risks. Precaution in management actions is necessary because knowledge of ecosystems is incomplete. The precautionary approach ensures that excessive harvests are not made in the face of the considerable uncertainty associated with environmental variation. While it does not address climate impacts explicitly, the ERA framework described in Chapter 2 can help to identify risks in fisheries and where precaution may be particularly warranted. As noted in Appendix D, MPAs may help to provide additional precaution for some species.
- *Protect age structure:* Protecting or recovering the full age structure of a stock (the fraction of the population at different ages) can increase that population's resilience to a changing environment. In a population with a full age structure, larger females tend to have larger, healthier eggs and more of them, which contribute to subsequent recruitment success. In addition, older and larger fish spawn over a longer time period, greater depth gradient, and an extended area when compared to younger fish. These mechanisms may help buffer stocks from recruitment fluctuations due to environmental conditions. Management options that may improve a population's age structure include use of MPAs, minimum or maximum size limits, gear modifications to avoid catching juvenile fish, or fishery closures during times and over areas when large individuals congregate.
- *Manage for genetic diversity:* There are three components to the adaptive capacity of marine populations: 1) ability to adjust to new conditions; 2) ability to relocate if or when conditions change; and 3) ability to evolve strategies to survive in the new conditions (Beever et al. 2015). Each of these components requires high levels of genetic diversity within the population. Given the high rate of expected environmental change, genetic adaptation to climate change may be necessary, and management should aim to increase or preserve current genetic diversity. This may be accomplished through a variety of management approaches including maintaining large populations, robust size/age distributions, and connectivity across metapopulations.
- *Protect key habitats:* As discussed in Chapter 6, protecting key habitats and species can promote healthy marine ecosystems that are more resilient to environmental changes. Gear modifications that reduce impacts on habitats will result in a more resilient ecosystem (Sumaila et al. 2011). If habitats have become degraded, active restoration or creation of new habitat may be a viable management option. Efforts should be targeted at habitats that provide a role for many species

during key periods of their lives, such as nursery grounds that protect larval stages, or those that provide a number of ecosystem services, such as wetlands. Since climate change is expected to decrease important coastal habitats, adaptation efforts aimed at offsetting anticipated losses could be helpful.

- *Utilize MPAs:* MPAs can be a valuable tool for protecting habitats from fishing impacts and may increase the resiliency to climate effects of both the species being protected and the associated ecosystem. For example, reserves with full protection have been shown to increase the abundance of older females of some species, which in turn improves the age structure of a stock while decreasing the influence of environmental variability on stock abundance (Berkeley et al. 2004). In addition, because marine reserves protect multiple trophic levels, they can help retain the functional diversity of an area, improving its ability to maintain basic ecosystem functions through a changing environment. MPAs also provide locations to observe and study how ecosystems react to climate change without the added stress of fishing.
- *Use MSE:* As discussed in Appendix L, MSE can help develop defensible, tactical guidance that takes climate-related uncertainties into account.

Maintaining socioeconomic resiliency

As fish stocks adjust their distributions and abundances, fishing effort may also have to adjust by changing the species targeted and the locations and times fished, as well as landing or processing locations. To adapt to a changing climate, fishermen may need to adjust where, when, and what they catch depending on conditions. Enabling them to do so may require changes in management, including permitting. The impacts of changes to the composition, magnitude, and timing of landings could be amplified if the shore-side processing and supply chain is not adaptable as well.

The following approaches are designed to help evaluate and maintain socioeconomic resiliency associated with fisheries affected by climate change:

- *Evaluate options for flexible permitting:* Flexible permitting mechanisms could provide a means to allow fishery participants to hedge their risk, adapt to variable production or unexpected closures, and respond to shifts in species spatial distribution or range shifts. Flexible permitting could include transferrable permits and integrating gear flexibility into permits or other regulations. One of the challenges of flexible permitting mechanisms, however, is effectively controlling effort and balancing the interests of all affected stakeholders. Any such increase in flexibility would need to be consistent with the Commission's restricted access policy (see: <http://www.fgc.ca.gov/policy/p4misc.aspx#restrict>). As resources permit, the Department and Commission will work with stakeholders to conduct an analysis of permit transferability in California fisheries and the Commission's policy on restricted access fisheries. This analysis will include how permits are retired and new permits are issued, and the potential for gear switching. Permitting considerations will also be included in the development of new FMPs. A working group comprised of stakeholders, outside experts, and Department and Commission staff could help to interpret analyses and develop policy recommendations.
- *Evaluate community vulnerability:* Some communities will be more affected by climate change than others. There is a need to consider vulnerabilities of fishing communities to climate change impacts. For example, a vulnerability index that incorporates social and ecological indicators would allow communities to be ranked by their vulnerability, and could enhance the abilities to minimize adverse impacts on fishing communities when developing management plans and regulations. Vulnerability assessments should be scaled appropriately and should consider the interconnectedness of fishing communities at a regional scale.

Supporting fisheries transitions and emerging fisheries

Changes in species distributions and abundance may lead to emerging fisheries (see Chapter 9). The Department and Commission will need to carefully balance the needs of fishing communities to remain flexible and diversify their portfolios, while protecting fish stocks during a time when their range may be changing. As noted, the development of emerging fisheries needs to be considered in light of existing priorities. The criteria for evaluating new proposed priorities identified in Chapter 2 can help to ensure that limited management resources are effectively targeted.

Strengthening monitoring and data used for management

Monitoring will be an important component of any strategy to detect and respond to climate change, including the following:

- *Prioritize additional monitoring:* Current monitoring programs may benefit from re-evaluation of their design and scope in light of climate change. It may be possible to use existing data collection in a new way to monitor climate change. For example, tracking the spatial distribution of fishing effort and landings may alert managers to range shifts. Newer technologies could also be considered when planning monitoring programs, to improve information acquisition while keeping costs low. For example, cell phones allow stakeholders to provide real-time catch or sightings information, and results from satellite remote sensing can be used to estimate area-specific phytoplankton productivity and predict the fish distribution and abundance. Development of new indicators—such as duration of spring blooms and the size or species composition of phytoplankton—could provide even better information relevant to predicting climate effects on fishing resources (Chassot et al. 2011). Understanding the link between physical oceanographic conditions and ecosystem health is critical and supporting and partnering with organizations that conduct monitoring should be a priority.
- *Incorporate environmental parameters into stock assessments, MSEs, and HCRs:* There is strong evidence to suggest that the productivity of many fish stocks is directly influenced by environmental variables. For species whose productivity is known to be dependent upon environmental conditions, appropriate environmental parameters may be integrated into stock assessments, MSEs, and HCRs. See Appendix L for more details. As knowledge of relationships between managed fish stocks and environmental dynamics continues to improve, there will be more basis for incorporating environmental factors into stock assessment and management.
- *Incorporate spatial information into stock assessments, MSEs, and HCRs:* Changes in species distributions can create management challenges, particularly when they cross jurisdictional boundaries. As the abundance or distribution of fish species is impacted by a changing climate, it may no longer be appropriate to follow the common practice of basing allocations on historical catch rates. Fish may be in a new location because their distribution has shifted or because the population has expanded into new habitat. Additionally, changes in habitat availability may result in changes in fish distribution. Including spatially-explicit information in stock assessments will assist in capturing regional differences in environmental conditions that affect stock productivity. This may require coordination with neighboring states and countries.

Addressing potential climate change impacts in Enhanced Status Reports and Fishery Management Plans

To identify and better address the potential impacts of climate change and to allow for the adaptive management, ESRs and FMPs should specifically incorporate information on each of the following aspects:

- *Changes in spatial distribution:* A description of whether the species is anticipated to shift its distribution.
- *Changes in abundance:* A description of whether the species is anticipated to increase or decrease in abundance.
- *Changes to species life histories:* A description of whether the species is anticipated to alter breeding, feeding, growth, or other life history patterns.
- *Changing ocean chemistry:* A description of how potential changes in ocean chemistry might affect the species.
- *Measuring change:* A description of how these possible changes could be measured, and if possible, forecasted.
- *Potential CFR opportunities:* A description of potential opportunities for CFR to address climate-related research needs.
- *Potential management impacts:* A description of how the above changes may impact HCRs and other management strategies.
- *Human impacts:* A description of any anticipated effort shifts, altered timing of harvest seasons, expected conflicts resulting from shifting distributions, and other similar fishery dynamics.

California's oceanographic and ecological system is dynamic, and this variability is likely to increase as climate change progresses. A flexible and responsive management system will be necessary to mitigate negative ecological impacts while capitalizing on new opportunities. Given the uncertainty inherent in climate change, a multi-pronged approach to facilitate adaption and resilience in California's fisheries must be employed.

Chapter 12 – Tribal consultation

California Tribes and tribal governments are the traditional users and stewards of California's marine resources. Partnerships with Tribes and tribal communities are important to the Department and Commission to sustainably manage California's ocean fisheries. Working in close coordination with the Commission's Tribal Committee, the Department is committed to considering and incorporating traditional knowledge provided by engaged Tribes and tribal communities to successfully implement the Master Plan.

The Department and Commission are demonstrating their growing commitment through issuance and adoption of policies that provide the foundation to work cooperatively, communicate effectively, and consult with Tribes. In 2011, the Governor issued Executive Order B-10-11 directing state agencies to encourage communication and consultation with Tribes to allow meaningful input into the development of laws and policies that may affect tribal communities (see: <https://www.gov.ca.gov/news.php?id=17223>). This was followed in 2012 by the California Natural Resources Agency issuing its Tribal Consultation Policy (see: http://resources.ca.gov/tribal_policy). The purpose of that policy is to improve consultation and communication with Tribes and to promote durable outcomes by including Tribes throughout the decision-making processes of its Departments. The Department adopted its own Tribal Communication and Consultation Policy (Tribal Policy) in October 2014 (see: <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=122905&inline>). The Tribal Policy is the foundation for the Department's interaction with federally recognized Tribes and Tribes on the contact list maintained by the Native American Heritage Commission for purposes of tribal cultural resource protection. The purpose of the Tribal Policy is to establish effective tools for communication and consultation between the Department and Tribes.

Under the Tribal Policy, the Department seeks tribal input on its actions in order to identify potential issues, ensure to the maximum extent feasible that tribal interests are considered before undertaking actions, and avoid or minimize impacts whenever practicable.

In October 2013, the Commission created the Tribal Committee as one of its working committees, to strengthen communication and collaboration between the Commission and California federally recognized Tribes and tribal communities. The Tribal Committee was tasked with the development of an effective government-to-government consultation policy to guide work between the Commission and Tribes on policies that affect California tribal communities. In July 2015, the Commission adopted its Tribal Consultation Policy that focuses on early communication and coordination rather than on formal consultation. This policy created a means by which Tribes and the Commission can effectively work together to sustainably manage natural resources of mutual interest.

Chapter 13 – Periodic review and amendment process

As outlined in Chapter 9, adaptive management to achieve sustainability is a central objective of the MLMA. To meet this and the other objectives of the MLMA over time, it is essential that the Master Plan be periodically evaluated and updated as needed. Regular review will provide an opportunity for amendments that address unplanned needs, incorporate new tools, and respond to changes in circumstances and stakeholder interests. Additionally, allowing for minor revisions to the guidance and background information that the Master Plan provides will help to keep it a living and dynamic document in the interim.

This chapter addresses the following:

- *Initiation*: How any changes to the Master Plan can be initiated.
- *Ongoing revisions*: Minor changes that can be made to the Master Plan by the Department at any time and the process for making them.
- *Evaluation*: The process, criteria, and timeline for evaluating Master Plan implementation.
- *Amendment*: Comprehensive updates to the Master Plan and the process and timeline for development.

Initiation

Changes to the Master Plan can be initiated by the Department and may be in response to requests by members of the public. Requests by the public must be made in writing to the Commission and clearly state the reasons why the Master Plan should be changed. The Commission will determine whether a change recommended by the Department or request by the public is appropriate and may direct the Department to begin an amendment or revision process.

Ongoing revisions

The Master Plan includes background information that can be a resource for ESRs, rulemaking packages, and FMPs. Much of this material reflects current understanding and knowledge that continue to evolve over time, such as in the case of data-limited stock assessments. The Master Plan is structured to provide guidance that promotes consistency with Commission policy while allowing for an evolution in understanding effective means of implementation. The Department will need to update the Master Plan as new information becomes available for it to remain relevant and useful. At the same time however, the Master Plan is a Commission document and it is necessary to ensure that it continues to reflect Commission guidance over time. To that end, all proposed revisions shall be cited, summarized, justified, and placed on the Commission's consent file before they are integrated into the Master Plan.

More significant changes should be addressed through the comprehensive amendment process (see the Amendments section below). A significant change for this purpose is defined as any of the following:

1. Re-prioritization of fisheries.
2. An addition or deletion to the process for meaningful public involvement.
3. Change to the MLMA-based management framework.

Any changes other than the three listed above may be considered minor and addressed through the ongoing revision process.

Periodic evaluation

The Department should evaluate implementation of the Master Plan at least every five years. In evaluating effectiveness, the Department should assess the extent to which the framework and approaches described in the Master Plan have been implemented, including the following:

- The number of fisheries that are under active, MLMA-based management (§7065 and §7081).
- The quality and number of opportunities for meaningful public engagement in management (§7056, §7059, and §7076).
- The measures the Department has taken to identify and minimize unacceptable bycatch (§7056 and §7085).
- The measures the Department has taken to adapt to climate change (§90.1 and §7056).
- The efforts the Department has made to collect EFI and manage and present data (§7056).

The MLMA-based assessment framework described in Appendix F can also serve as a tool for assessing progress in individual fisheries. The Department should use this tool for all priority fisheries at the outset of Master Plan implementation, both to inform FMP development efforts, and as a means of tracking progress over time.

The Department will report the results of the evaluation to the Commission. The Commission may choose to initiate Master Plan revisions, amendments, or other action as necessary to address any needs identified through the evaluation.

Amendments

Depending on the outcome of periodic evaluations, the Department may recommend amendments to the Master Plan. Amendments may also be initiated by the public. At the outset of the amendment process, the Department should again evaluate implementation based on the criteria provided above. The Department and Commission will also invite suggestions for the amendment by holding meetings, workshops, or formal hearings, by using advisory bodies, or by taking written comment. After reviewing public suggestions and comments, the Department will initiate drafting of the amendment.

The Department is encouraged to partner with stakeholders and outside experts in the development of information, tools, and analyses that will inform the amendment process. The Department will then submit the amendment to the Commission for review and adoption. The amendment will be available in written form at appropriate Department offices, and on the Department's web site at least 45 days prior to Commission adoption. The Commission must hold at least one public meeting before adoption.

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Glossary

Adaptive Management

In regard to a marine fishery, a scientific policy that seeks to improve management of biological resources by viewing program actions as tools for learning, particularly in areas of scientific uncertainty. Actions shall be designed so that even if they fail, they will provide useful information for future actions. Monitoring and evaluation shall be emphasized so that the interaction of different elements within the system can be better understood.

Administrative Procedure Act (APA)

Statute that governs the regulatory process for federal agencies such as NOAA and other regulatory bodies. The state of California has its own APA in addition to the federal APA, which governs regulatory bodies such as the Department and Commission. The California APA requires that all proposed agency regulations be published in the California Regulatory Notice Register and remain open for public review and comment for a specified period of time. If a hearing is held, notice must be provided 45 days in advance and public comment by mail or at the hearing must be allowed. If the proposed regulation is then changed, the agency must make the revised regulation public 15 days before final action.

Allocation

In regard to fisheries, allocation means the direct and deliberate distribution of the opportunity to participate in a fishery, or to receive a share of a catch quota, among identifiable, discrete user groups or individuals.

Acceptable Biological Catch (ABC)

The maximum amount of fish stock that can be harvested without adversely affecting recruitment of other components of the stock. The ABC level is typically higher than the total allowable catch, leaving a buffer between the two.

Annual Catch Limit (ACL)

A harvest specification set equal to or below acceptable biological catch in consideration of conservation objectives, socioeconomic concerns, management uncertainty, ecological concerns, and other factors. The ACL is a harvest limit that includes all sources of fishing-related mortality including landings, discard mortality, research catches, and catches in exempted fishing permit activities. Sector-specific ACLs can be used, especially in cases where a sector has a formal, long-term allocation of the harvestable surplus of a stock or stock complex.

Bag Limit

A limit per day or per trip on the number or weight of fish, invertebrates, or plants that a recreational fisherman may legally retain.

Benthic

On or relating to the region at the bottom of a sea or ocean.

Billfish Conservation Act (BCA)

A federal statute that prohibits any person from offering billfish or billfish products for sale, selling them, or having custody, control, or possession of them for purposes of offering them for sale. NMFS is the lead federal agency. The BCA can be found at 16 United States Code §1827.

Biological Diversity/Biodiversity

A component and measure of ecosystem health and function. It is the number and genetic richness of different species found within a natural community or ecosystem, and of different communities and ecosystems found within a region.

Biomass

The total weight or numbers of a stock or population.

Bycatch

Fish or other marine life that are taken in a fishery, but which are not the target of the fishery. Bycatch includes discards.

California Current/California Current Ecosystem (CCE)

The waters of the eastern Pacific Ocean that move south along the western coast of North America, beginning off southern British Columbia, flowing southward past Washington, Oregon and California, and ending off southern Baja California. The California Current is part of the North Pacific Gyre and brings cool waters southward. Additionally, extensive upwelling of colder sub-surface waters occurs, supporting large populations of whales, seabirds, phytoplankton, zooplankton, forage fishes, and important fisheries.

California Environmental Quality Act (CEQA)

This Act (Public Resources Code §21000 et seq.) identifies the significant environmental effects of California's public agencies' actions and avoids or mitigates those significant environmental effects where feasible.

Capacity

The potential of a vessel or a fleet of vessels to capture fish if not restricted by management measures. It is expressed as the number of fishery participants; size, gross tonnage, or horsepower of vessels; or the maximum amount of catch retainable on the vessel.

Catch (noun)

In regard to fisheries, the total amount (numbers or weight) caught, and sometimes only the amount landed or kept. Catch that is not landed is called discards.

Catch Limit

A limit on the total fishing mortality, including both landed catch and discard mortality. See Annual Catch Limit.

Catch Per Unit Effort (CPUE)

The catch obtained by a vessel, gear or fisherman per unit of fishing effort (e.g., number or weight of fish caught per hour of trawling). CPUE is sometimes used as a relative abundance index as well.

Catchability

A value that modifies a unit of fishing effort in the calculation of fishing mortality which usually will depend on the habits of the fish or invertebrate, its abundance, and the type and deployment of fishing gear.

Climate Readiness

Characteristic of a fishery that uses expanded data collection of climate indicators from diverse sources, proactively incorporates climate information into management actions, practices adaptive decision-making that is flexible and responsive, and encourages collaboration with partners.

Co-management

Traditional co-management refers to shared decision-making with government devolving (i.e., transferring or delegating) some of its power to others. The term has been used in a broader sense to refer to a variety of arrangements, with different degrees of power sharing, for joint decision-making by the state and community or user groups, about a set of resources or areas. No single standardized definition is used for fisheries or other natural resource sectors.

Commercial Fishery

Fishing in which harvested fish, invertebrates, or plants, either in whole or in part, are intended to enter commerce through sale, barter or trade.

Commercial Passenger Fishing Vessel (CPFV)

A licensed fishing vessel that takes recreational anglers fishing for a fee. Sometimes referred to as “charter vessels” or “party boats”.

Compliance

In regard to fisheries, compliance means fishing in a manner that is in accordance with fishing regulations such as obtaining the required permits or licenses, with the allowed gears and within allowed areas and within seasons.

Collaborative Fisheries Research (CFR)

A process that involves two or more stakeholders (e.g., scientists, commercial fishermen, recreational fishermen, NGOs) in at least some aspect of research on a marine species or fishery.

Data-poor/Data-limited

Classification for a state in which essential fishery information is limited to an extent where traditional stock assessment methods may not be feasible, or results have a relatively high degree of uncertainty.

Data-rich

Classification for a state in which there is a relatively high level of essential fishery information.

Depletion

In regard to fisheries, depletion means harvesting to unsustainably low levels, to the point that the population’s ability to grow and replenish is significantly reduced.

Depressed

In regard to fisheries, depressed is the condition of a fishery for which the best available scientific information, and other relevant information that the Commission or Department possesses or receives, indicates a declining population trend has occurred over a period of time appropriate to that fishery. With regards to fisheries for which management is based on maximum sustainable yield, or in which a natural mortality rate is available, depressed means the condition of a fishery that exhibits declining levels of fish abundance below those consistent with maximum sustainable yield.

Discards

Fish that are taken in a fishery but are not retained because they are of an undesirable species, size, sex, or quality (i.e., bycatch), or because they are required by law not to be retained.

Ecosystem

The physical and climatic features and all the living and dead organisms in an area that are interrelated in the transfer of energy and material, which together produce and maintain a characteristic type of biological community. Marine ecosystems can be particularly complex due to the vastness of the marine environment, the large number of organisms, and the intricacies of the physical, chemical, biological, and social processes involved.

Ecosystem-based Fishery Management (EBFM)

An environmental management approach relying on credible science that recognizes the full array of interactions within an ecosystem, including humans, rather than considering single issues, species, or ecosystem services in isolation.

Ecosystem Indicator

An indicator that can serve as a proxy for overall condition of the ecosystem. It could be the abundance of a keystone species, biodiversity measurement, or biomass, etc. Selection of appropriate indicators is key to properly communicating between stakeholders and managers.

Ecological Risk Assessment (ERA)

The assessment of environmental effects of certain stressors and their immediate and long-term potential damage or harm to an ecosystem. Risk assessment is aimed at better identifying which species might be most adversely affected by a stressor by assessing the probability, or risk, of effects. Within the context of marine systems, risk assessment has been applied to compare the importance of individual stressors and to identify which species face the greatest threat from individual or multiple stressors.

Effort

The amount of time and fishing power used to harvest fish, invertebrates, or plants, whether by individuals or vessels. For vessels, fishing power includes gear size, boat size, and horsepower. Used to calculate catch per unit effort.

Effort Control

Management action intended to reduce fishing activities to conserve resources. These may include limited entry programs, individual transferable quotas, catch limits per license, and gear restrictions.

Electronic Monitoring (EM)

In regard to fisheries, EM means technologies such as digital cameras, sensors, tablets, and online entries to track fishing vessels' catch, bycatch, and discards at sea. These are increasingly being used in place of human observers onboard vessels that lack space or funding.

Emerging Fishery

The MLMA definition in regard to a marine fishery, means both of the following:

- (a) A fishery that the director has determined is an emerging fishery, based on criteria that are approved by the commission and are related to a trend of increased landings or participants in the fishery and the degree of existing regulation of the fishery.
- (b) A fishery that is not an established fishery. "Established fishery," in regard to a marine fishery, means, prior to January 1, 1999, one or more of the following:

- (i) A restricted access fishery has been established in this code or in regulations adopted by the commission.
- (ii) A fishery, for which a federal fishery management plan exists, and in which the catch is limited within a designated time period.
- (iii) A fishery for which a population estimate and catch quota is established annually.
- (iv) A fishery for which regulations for the fishery are considered at least biennially by the commission.
- (v) A fishery for which this code or regulations adopted by the commission prescribes at least two management measures developed for the purpose of sustaining the fishery. Management measures include minimum or maximum size limits, seasons, time, gear, area restriction, and prohibition on sale or possession of fish.

Endangered Species Act (ESA)

A federal statute that provides for the conservation of threatened and endangered plants and animals and the habitats in which they are found. The lead federal agencies for implementing ESA are the U.S. Fish and Wildlife Service and NMFS. The law requires federal agencies, in consultation with the U.S. Fish and Wildlife Service and/or NMFS, to ensure that actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of designated critical habitat of such species. The law also prohibits any action that causes a "taking" of any listed species of endangered fish or wildlife. Likewise, import, export, interstate, and foreign commerce of listed species are all generally prohibited. The ESA is found at 16 United States Code §1531 et seq.

Enhanced Status Report (ESR)

A revised approach to Status of the Fisheries Reports. ESRs are proposed to have sections on the history and socioeconomics of the fishery, the biology and status of target stocks, ecosystem aspects of the fishery, past and current conservation and management measures, essential fisheries information, monitoring and future research and management needs. This revised format would help ensure a basic standard of MLMA-based management is applied across all fisheries in a consistent and transparent fashion. It would summarize all the available essential fisheries information for each fishery and make it readily apparent what is not available. This structure is envisioned to assist the Department in planning both short and long-term research activities and inform external parties about research opportunities that may benefit management through a dynamic web-based platform.

Entanglement

In regard to fisheries, entanglement occurs when a marine species become trapped or tangled in fishing gear. It is not used to describe fish that are caught in nets but rather species including sea turtles, marine mammals, and seabirds that are unintentionally entangled.

Essential Fishery Information (EFI)

In regard to fisheries, EFI refers to information about fish, invertebrate, or plant life history and habitat requirements; the status and trends of populations, fishing effort, and catch levels; fishery effects on age structure and on other marine living resources and users, and any other information related to the biology of a species or to its take in a fishery that is necessary to permit fisheries to be managed according to the requirements of this code.

Experimental Gear Permit

Permit issued under special review of the Commission that allows the use of gear that is not permitted under any other permits or licenses in order to allow new gears to be developed and improved.

External Peer Review Panel

In the context of MLMA, this term means a group of experts who review the scientific basis of a fishery management document and evaluate the scientific soundness of the document. The panel members cannot be employees or officers of the Department or the Commission and cannot have helped with the development of the document.

Finfish

Any species of bony fish (teleosts) or cartilaginous fish (sharks, skates and rays). Finfish do not include reptiles, amphibians, invertebrates, plants or algae.

Fishery

Means either of the following:

- (a) One or more populations of marine fish, invertebrates, or plants that may be treated as a unit for purposes of conservation and management and that are identified on the basis of geographical, scientific, technical, recreational, and economic characteristics; or
- (b) Fishing for or harvesting of the populations described in (a).

Fishery-dependent Data

Information collected directly from a fishery, such as sampling catch at landing sites and information from commercial landing receipts and commercial and commercial fishing passenger vessel logbooks.

Fishery-independent Data

Information collected separately or independent of fishery landing or catch data.

Fishery Management Plan (FMP)

A planning document based on the best available scientific knowledge and other relevant information that contains a comprehensive review of the fishery along with clear objectives and measures to ensure its sustainability. Components of an FMP are described in the MLMA.

Fishing Season

A management tool that only permits fishing within set dates. This tool can be used to reduce effort or to protect target stocks during reproductive or other sensitive periods. Different fisheries and species have different seasons as decided by managers; the season is the period of time within which the fish may be caught and retained.

Forage Fish

May refer to vertebrate and invertebrate species that provide food for marine fish, mammals, and birds. Forage fish may be targeted for direct human consumption, such as anchovies or sardines, but are most often targeted for fishmeal production or as bait for other species.

Gear Restrictions

A management tool that is intended to limit fishing effort or impacts from fishing by limiting the use of, or banning, certain gears or types of gear. This may be done by only specifying allowed gears and banning the use of all others, specifying banned gears and allowing the use of all others, and/or banning or requiring gear components or specifications (e.g., mesh size).

Gill Net

A passive capture gear constructed of vertical panels of netting, hung between a ground line and a float line, and set in a straight line, in which fish can become entangled. Gill nets are classified as either set or drift.

Groundfish

Finfish species that live and feed on or near the bottom of the seafloor. Groundfish are often managed as a single multispecies fishery. Common targeted groundfish species include rockfishes, flatfishes, skates, cod, and whiting.

Habitat

The physical, chemical, and biological features of the environment where an organism lives.

Harvest Control Rule (HCR)

A primary mechanism for achieving sustainable use, preventing overfishing, preserving habitat, rebuilding depressed stocks, and recognizing the importance of non-consumptive uses. HCRs must be based on objective, measurable criteria such as population size, productivity, or density, or other inputs. An HCR specifies the approach to setting acceptable biological catch, maximum sustainable yield, or another catch parameter for a stock or stock complex as a function of the scientific uncertainty in the estimate of overfishing limit and any other scientific uncertainty. The HCR may include explicit, stock- or complex-specific definitions of overfished or other categories. Once established, an HCR becomes the default harvest policy for managers. In general, HCRs help identify key management measures appropriate to the fishery.

Hook-and-line

Any type of fishing gear involving a fishing line with attached hooks (e.g., longline, rod-and-reel, troll, and stick gear).

Incidental Catch

Fish caught incidentally during the pursuit of the primary target species, but legal and desirable to be sold or kept for consumption.

Indicator

A measure of a component or process that can serve as a proxy for values that are difficult to calculate, such as abundance of a species or ecosystem health. For example, catch per unit effort is often used as an indicator of stock abundance or availability.

Individual Transferable Quota (ITQ)

A limited access system to harvest a quantity of fish, expressed by a unit or units representing a percentage of the total allowable catch of a fishery that may be received or held for exclusive use by a person.

Input Controls

Regulations created by fishery managers to limit or control fishing impacts by limiting fishing effort, such as fishing seasons and area closures, gear restrictions, and limited access programs.

Landing Receipt

A document provided by the Department to commercial fish markets, fish dealers, fish processors, and fishermen for recording landing information. Information required includes date, port of landing, species or market category of fish, pounds landed, and price paid.

Landing

The number or weight of fish unloaded at a dock by commercial fishermen or brought to shore by recreational fishermen for personal use. A landing is reported at the point at which fish are brought to shore. Note that landings, catch, and harvest are all distinct metrics.

Life History

The history of changes an organism passes through in its development from egg, spore, or other primary stage until its natural death.

Limited Access/Entry

See restricted access.

Logbooks

Records of fishing activity and catch maintained by commercial fishermen as required for some fisheries.

Magnuson-Stevens Fishery Conservation and Management Act (MSA)

A federal statute that governs marine fisheries in the United States. The Act defines the role of regional fishery management councils and describes their functions and operating procedures. It also includes national standards for management and outlines the contents of fishery management plans. NMFS is the lead federal agency charged with implementation of the Act. The MSA can be found at 16 United States Code §1801 et seq.

Management Strategy Evaluation (MSE)

A formal process to evaluate the performance of alternative management procedures for a fishery, prior to any implementation. MSEs vary between fisheries, but typically utilize models to assess the current status of the fishery, as well as assumptions or additional models to determine the effects of potential management actions.

Marine Life Management Act (MLMA)

Passed in 1998 by the California Legislature under Assembly Bill 1241, the MLMA significantly changed the way California's marine fisheries are managed and regulated. It expanded the responsibilities of the Department and Commission, and increased stakeholder involvement in the development of fishery management plans.

Marine Life Protection Act (MLPA)

The MLPA was passed in 1999 by the California Legislature, directing the Department to redesign California's existing system of marine protected areas to increase its coherence and effectiveness for protecting the state's marine life, habitats, and ecosystems.

Marine Living Resources

Includes all wild mammals, birds, reptiles, fish, and plants that normally occur in or are associated with ocean and estuarine waters, and the marine habitats upon which these animals and plants depend for their continued viability.

Marine Mammal Protection Act (MMPA)

Passed in 1978, this Act protects all marine mammals in US waters and prohibits their take except that which is permitted specifically for tribal subsistence, scientific research, and limited incidental catch that is inherent in other fishing activities.

Marine Protected Area (MPA)

A named, discrete geographic marine or estuarine area seaward of the mean high tide line or the mouth of a coastal river, including any area of intertidal or subtidal terrain, together with its overlying water and associated flora and fauna that has been designated by law or administrative action to protect or conserve marine life and habitat. MPAs are primarily intended to protect or conserve marine life and habitat, and

are therefore a subset of marine managed areas, which are broader groups of named, discrete geographic areas along the coast that protect, conserve, or otherwise manage a variety of resources and uses, including living marine resources, cultural and historical resources, and recreational opportunities.

Maximum Economic Yield (MEY)

The maximum possible revenue after accounting for the costs of fishing that may be achieved in a fishery. MEY typically is reached at smaller catches than maximum sustainable yield.

Maximum Sustainable Yield (MSY)

The highest average yield over time that does not result in a continuing reduction in stock abundance, taking into account fluctuations in abundance and environmental variability.

Migratory Bird Treaty Act (MBTA)

Implemented in 1916 between Great Britain and the United States, the MBTA prohibited the harvest of birds that migrate between Canada and the United States, as well as the take of their feathers, eggs or nests. Similar agreements have expanded these protections to birds that migrate to/from the United States, Japan, Mexico, and Russia.

Model

An equation that can be used to predict management outcomes based on hypothetical and/or measured values. Management tools such as maximum sustainable yield, optimum yield, and stock assessments utilize models.

Monitoring

In regard to fisheries, monitoring refers to management activities that keep records of fishing and biological data, such as landings records or sampling of the catch. Monitoring may also refer to the monitoring of compliance with environmental regulations during fishing activities.

Mortality (Total or Fishing)

Total mortality is the sum total of individual deaths within a population. Usually, it is stated as an annual rate and calculated as the sum of fishing mortality (deaths due to fishing), deaths due to natural causes (e.g., predation, disease), and deaths due to non-fishing, artificial causes (e.g., pollution, seismic surveys).

Non-consumptive Activities

Activities that do not include removal of resources such as photography, whale watching or diving.

Offshore

All oceanic waters outside state waters or deeper than 100 fathoms, in comparison to nearshore.

Optimum Yield (OY)

In regard to a marine fishery, OY means the amount of fish taken in a fishery that does all of the following:

- (a) Provides the greatest overall benefit to the people of California, particularly with respect to food production and recreational opportunities, and takes into account the protection of marine ecosystems;
- (b) Is the maximum sustainable yield of the fishery, as reduced by relevant economic, social, or ecological factors; and
- (c) In the case of an overfished fishery, provides for rebuilding to a level consistent with producing maximum sustainable yield in the fishery.

Output Controls

Management tools used to limit or control fishing impacts by limiting catch, such as total allowable catch, trip limits, and bycatch limits.

Overfished

A fishery is labeled overfished based on quantitative thresholds established by the agency with authority over that fishery. The MLMA definition of “overfished” with regard to a marine fishery, means both of the following:

- (a) A depressed fishery; and
- (b) A reduction of take in the fishery is the principal means for rebuilding the population.

Overfishing

A rate or level of take that the best available scientific information, and other relevant information that the Commission or Department possesses or receives, indicates is not sustainable or that jeopardizes the capacity of a marine fishery to produce the maximum sustainable yield on a continuing basis.

Overfishing Limit (OFL)

The maximum sustainable yield harvest level or the annual abundance of exploitable biomass of a stock or stock complex multiplied by the maximum fishing mortality threshold or proxy thereof. OFL is an estimate of the catch level above which overfishing is occurring.

Participants

In regard to a fishery, participants refer to the sport fishing, commercial fishing, and fish receiving and processing sectors of the fishery.

Pelagic

Pertaining to the water column, or referring to organisms living in the water column, as opposed to those living on the seafloor.

Permit Fees

Money paid to the respective regulatory body to obtain a permit. Fees typically go to conservation funds or are used to offset management costs.

Precautionary Management

A resource management framework that implements conservation measures even in the absence of scientific certainty that fish stocks are being overexploited.

Processor

In regard to fisheries, a processor is a business, individual or vessel that is involved in the preparation or packaging of fish/marine resources to render them suitable for human consumption, pet food, industrial uses or long-term storage. This includes but is not limited to: cooking, canning, smoking, salting, drying, filleting, freezing, or rendering into meal or oil, but does not mean heading and gutting unless there is additional preparation.

Productivity

The birth, growth, and death rates of a stock. A highly productive stock is characterized by high birth, growth and mortality rates, and therefore, high turnover. Such stocks can usually sustain higher exploitation rates and, if depleted, could recover more rapidly than comparatively less productive stocks.

Productivity and Susceptibility Analysis (PSA)

A model that scores the productivity (ability to recover following depletion) and susceptibility (potential impacts from fishing) of a species, collectively known as vulnerability.

Quota

A limit on the amount of fish which may be landed in any one fishing season or year. May apply to the total fishery, a geographical area, or an individual share.

Rebuilding

The implementation of management measures that increase a fish stock to its target size. Rebuilding measures are commonly implemented for overfished species.

Recreational/Sport Fishery

Fishing with no intentions of, or ability to, sell catch.

Recruitment

A measure of the number of fish that survive to a particular life stage, often used to predict future population size. Some examples include the number of offspring that survive the larval stage and reach the juvenile stage (larval recruitment), the number of individuals that survive (i.e., recruit) to the next year (e.g., age two recruits), the number of fish that reach sexual maturity (i.e., recruit to the spawning population), or in the case of a fishery, the number of fish that recruit to the catchable component of the population.

Reference Point

Reference points are quantitative (numerical) values that inform managers about the current status of a stock. Two important types must be considered, target and threshold (or limit) reference points. Target reference point is a numerical value that indicates that the status of a stock is at a desirable level; often management is geared towards achieving or maintaining this target. Threshold (limit) reference point is a numerical value that indicates that the status of a stock is unacceptable (e.g., overfished or too small) and management action should be taken to improve stock status.

Regulatory Discard

Fish harvested unintentionally in a fishery that fishermen are required by regulation to discard whenever caught, or are required by regulation to retain but not sell.

Restricted Access

Restriction of the right to participate in a fishery, using permits or other means. This is one method managers may use to ensure sustainable fisheries, reduce fishing effort, or protect recovering or threatened stocks.

Rulemaking

The process of developing regulations which occurs in several steps, including publishing proposed rules, accepting comments on the proposed rule, and publishing the final rule. Rulemaking is used to create specific actions and regulations that are designed to carry out the intent of environmental legislation and policy.

Sector

Different, although sometimes overlapping, groups of fishermen that are subject to their own regulations. For example, the federal groundfish fishery off the West Coast is managed by the following sectors: limited-entry trawl, limited-entry fixed gear, tribal, recreational, and open-access.

Seine

A type of net that is deployed by encircling fish. Purse seines are used to catch fish within the water column or near the surface, while demersal seines are used to target fish on the seafloor.

Set net

A type of gill net that is set in place with buoys and/or anchors and catches fish that swim into it and become entangled.

Size Limit

A regulation requiring that landed fish fall below or above a certain size threshold. Minimum size limits are typically intended to prevent the harvest of juvenile or young individuals before they have reproduced. Maximum size limits are typically intended to prevent the harvest of highly fecund female fish. Size limits may be sex-specific for some species.

Spawning Potential Ratio (SPR)

A ratio of the number of eggs produced during the lifetime of an average female in a fished population to the number of eggs produced during the lifetime of an average female in an unfished population. SPR is used to characterize the amount of impact fishing has on a population's ability to reproduce.

Stakeholder

One who has an impact on, is impacted by, or is interested in something, such as a fishery or marine protected area.

Stakeholder Engagement/Involvement (in the Master Plan)

Also referred to as public involvement in the Master Plan, and may mean establishing communication between managers and stakeholders through outreach, workshops or meetings. It may also involve receiving feedback and input from stakeholders in the creation of management goals.

Stock

In regard to fisheries: a species, subspecies, geographical grouping, or other category of fish, invertebrate, or plant that can be managed as a unit.

Stock Assessment

A management tool that uses modeling and historic and current population data or trends to determine the status (e.g., productivity, biomass, population size) of a fishery, in order to determine at what level it may be sustainably exploited.

Susceptibility

The potential for a stock to be impacted by a fishery, which includes direct captures, as well as indirect impacts of the fishery (e.g., loss of habitat quality).

Substrate

The surface or medium on or in which an organism lives (e.g., mud, sand, rocks).

Sustainable

"Sustainable," "sustainable use," and "sustainability," with regard to a marine fishery, mean both of the following:

(a) Continuous replacement of resources, taking into account fluctuations in abundance and environmental variability; and

(b) Securing the fullest possible range of present and long-term economic, social, and ecological benefits, maintaining biological diversity, and, in the case of fishery management based on maximum sustainable yield, providing for a fishery that does not exceed optimum yield.

Total Allowable Catch (TAC)

A specified numerical catch (including discard mortality) for each fishing season, the attainment (or expected attainment) of which may cause closure of the fishery.

Total Allowable Effort (TAE)

A specified numerical effort objective for each fishing season. This can be expressed in number of boats, amount of gear used, etc., and is controlled and adjusted through permits and licenses.

Trap Limit

A regulatory measure that restricts the number of traps a fisherman may have in the water at the same time.

Trawl

A large net that is tapered and forms a flattened cone. The mouth of the net is kept open while it is towed or dragged, either in the pelagic habitat (midwater trawl) or over the sea bottom (otter trawl or bottom trawl).

Tribal Consultation

In regard to fisheries, Tribal consultation means the process of engaging in government-to-government dialogue with Tribes and Tribes on the contact list maintained by the Native American Heritage Commission in a timely manner and in good faith. Tribal consultation provides Tribes and tribal communities with necessary information and to seek out, discuss, and give full and meaningful consideration to the views of Tribes and tribal communities in an effort to reach a mutually agreed upon resolution of any concerns expressed by the Tribes and tribal communities or the managers.

Unfished Biomass (B_0)

The hypothetical predicted biomass of fish or invertebrates within a stock if no fishing were occurring.

Vulnerability

In regard to fisheries, vulnerability refers to a stock's susceptibility to suffer mortality from fishing or to experience overfishing.

Yield

The total number or biomass of fish, invertebrates, or plants harvested.

Yield Per Recruit (YPR)

A theoretical value that describes the yield to a fishery that is contributed by a given number of recruits (usually a single recruit).

APPENDICES

Appendix A – The Marine Life Management Act

Unless otherwise indicated, all the MLMA sections included in this appendix were added to the Fish and Game Code in 1998, became effective on January 1, 1999, and are current as of January 1, 2018. See the California Legislative Information page for current Fish and Game Code statutory language (see: <http://leginfo.legislature.ca.gov/faces/codesTOCSelected.xhtml?tocCode=FGC&tocTitle=+Fish+and+Game+Code+-+FGC>).

90.

The definitions in this chapter govern the construction of Chapter 7 (commencing with Section 1700) of Division 2 and Division 6 (commencing with Section 5500) and all regulations adopted pursuant to those provisions.

90.1.

“Adaptive management,” in regard to a marine fishery, means a scientific policy that seeks to improve management of biological resources, particularly in areas of scientific uncertainty, by viewing program actions as tools for learning. Actions shall be designed so that even if they fail, they will provide useful information for future actions. Monitoring and evaluation shall be emphasized so that the interaction of different elements within the system can be better understood.

90.5.

“Bycatch” means fish or other marine life that are taken in a fishery but which are not the target of the fishery. “Bycatch” includes discards.

90.7.

“Depressed,” with regard to a marine fishery, means the condition of a fishery for which the best available scientific information, and other relevant information that the Commission or Department possesses or receives, indicates a declining population trend has occurred over a period of time appropriate to that fishery. With regard to fisheries for which management is based on maximum sustainable yield, or in which a natural mortality rate is available, “depressed” means the condition of a fishery that exhibits declining fish population abundance levels below those consistent with maximum sustainable yield.

91.

“Discards” means fish that are taken in a fishery but are not retained because they are of an undesirable species, size, sex, or quality, or because they are required by law not to be retained.

93.

“Essential fishery information,” with regard to a marine fishery, means information about fish life history and habitat requirements; the status and trends of fish populations, fishing effort, and catch levels; fishery effects on fish age structure and on other marine living resources and users, and any other information related to the biology of a fish species or to taking in the fishery that is necessary to permit fisheries to be managed according to the requirements of this code.

94.

“Fishery” means both of the following:

(a) One or more populations of marine fish or marine plants that may be treated as a unit for purposes of conservation and management and that are identified on the basis of geographical, scientific, technical, recreational, and economic characteristics.

(b) Fishing for, harvesting, or catching the populations described in (a).

(Amended January 1, 2003.)

96.

“Marine living resources” includes all wild mammals, birds, reptiles, fish, and plants that normally occur in or are associated with salt water, and the marine habitats upon which these animals and plants depend for their continued viability.

96.5.

“Maximum sustainable yield” in a marine fishery means the highest average yield over time that does not result in a continuing reduction in stock abundance, taking into account fluctuations in abundance and environmental variability.

97.

“Optimum yield,” with regard to a marine fishery, means the amount of fish taken in a fishery that does all of the following:

(a) Provides the greatest overall benefit to the people of California, particularly with respect to food production and recreational opportunities, and takes into account the protection of marine ecosystems.

(b) Is the maximum sustainable yield of the fishery, as reduced by relevant economic, social, or ecological factors.

(c) In the case of an overfished fishery, provides for rebuilding to a level consistent with producing maximum sustainable yield in the fishery.

97.5.

“Overfished,” with regard to a marine fishery, means both of the following:

(a) A depressed fishery.

(b) A reduction of take in the fishery is the principal means for rebuilding the population.

98.

“Overfishing” means a rate or level of taking that the best available scientific information, and other relevant information that the Commission or Department possesses or receives, indicates is not sustainable or that jeopardizes the capacity of a marine fishery to produce the maximum sustainable yield on a continuing basis.

98.2.

“Participants” in regard to a fishery means the sport fishing, commercial fishing, and fish receiving and processing sectors of the fishery.

98.5.

“Population” or “stock” means a species, subspecies, geographical grouping, or other category of fish capable of management as a unit.

99.

“Restricted access,” with regard to a marine fishery, means a fishery in which the number of persons who may participate, or the number of vessels that may be used in taking a specified species of fish, or the catch allocated to each fishery participant, is limited by statute or regulation.

(Amended effective January 1, 2000.)

99.5.

“Sustainable,” “sustainable use,” and “sustainability,” with regard to a marine fishery, mean both of the following:

- (a) Continuous replacement of resources, taking into account fluctuations in abundance and environmental variability.
- (b) Securing the fullest possible range of present and long-term economic, social, and ecological benefits, maintaining biological diversity, and, in the case of fishery management based on maximum sustainable yield, taking in a fishery that does not exceed optimum yield.

CHAPTER 1. General Policies [7050 - 7051]

7050.

- (a) The Legislature finds and declares that the Pacific Ocean and its rich marine living resources are of great environmental, economic, aesthetic, recreational, educational, scientific, nutritional, social, and historic importance to the people of California.
- (b) It is the policy of the state to ensure the conservation, sustainable use, and, where feasible, restoration of California’s marine living resources for the benefit of all the citizens of the state. The objective of this policy shall be to accomplish all of the following:
 - (1) Conserve the health and diversity of marine ecosystems and marine living resources.
 - (2) Allow and encourage only those activities and uses of marine living resources that are sustainable.
 - (3) Recognize the importance of the aesthetic, educational, scientific, and recreational uses that do not involve the taking of California’s marine living resources.
 - (4) Recognize the importance to the economy and the culture of California of sustainable sport and commercial fisheries and the development of commercial aquaculture consistent with the marine living resource conservation policies of this part.
 - (5) Support and promote scientific research on marine ecosystems and their components to develop better information on which to base marine living resource management decisions.
 - (6) Manage marine living resources on the basis of the best available scientific information and other relevant information that the Commission or Department possesses or receives.
 - (7) Involve all interested parties, including, but not limited to, individuals from the sport and commercial fishing industries, aquaculture industries, coastal and ocean tourism and recreation industries, marine conservation organizations, local governments, marine scientists, and the public in marine living resource management decisions.
 - (8) Promote the dissemination of accurate information concerning the condition of, or management of, marine resources and fisheries by seeking out the best available information and making it available to the public through the marine resources management process.
 - (9) Coordinate and cooperate with adjacent states, as well as with Mexico and Canada, and encourage regional approaches to management of activities and uses that affect marine living resources. Particular attention shall be paid to coordinated approaches to the management of shared fisheries.

7051.

- (a) A regulation adopted pursuant to this part shall apply only to ocean waters and bays. Notwithstanding any other provision of this part, nothing contained in this part grants the Department or any other agency of the state any regulatory authority not in existence on January 1, 1999, in any river upstream of the mouth of such river, in the Sacramento-San Joaquin Delta or in any other estuary.
- (b) The policies in this part shall apply only to fishery management plans and regulations adopted by the Commission on or after January 1, 1999. No power is delegated to the Commission or the Department by this part to regulate fisheries other than the nearshore fishery, the white seabass fishery, emerging fisheries, and fisheries for which the Commission or Department had regulatory authority prior to January 1, 1999.

CHAPTER 2. Marine Fisheries Generally [7055 - 7059]

7055.

The Legislature finds and declares that it is the policy of the state that:

- (a) California's marine sport and commercial fisheries, and the resources upon which they depend, are important to the people of the state and, to the extent practicable, shall be managed in accordance with the policies and other requirements of this part in order to assure the long-term economic, recreational, ecological, cultural, and social benefits of those fisheries and the marine habitats on which they depend.
- (b) Programs for the conservation and management of the marine fishery resources of California shall be established and administered to prevent overfishing, to rebuild depressed stocks, to ensure conservation, to facilitate long-term protection and, where feasible, restoration of marine fishery habitats, and to achieve the sustainable use of the state's fishery resources.
- (c) Where a species is the object of sport fishing, a sufficient resource shall be maintained to support a reasonable sport use, taking into consideration the necessity of regulating individual sport fishery bag limits to the quantity that is sufficient to provide a satisfying sport.
- (d) The growth of commercial fisheries, including distant-water fisheries, shall be encouraged.

7056.

In order to achieve the primary fishery management goal of sustainability, every sport and commercial marine fishery under the jurisdiction of the state shall be managed under a system whose objectives include all of the following:

- (a) The fishery is conducted sustainably so that long-term health of the resource is not sacrificed in favor of short-term benefits. In the case of a fishery managed on the basis of maximum sustainable yield, management shall have optimum yield as its objective.
- (b) The health of marine fishery habitat is maintained and, to the extent feasible, habitat is restored, and where appropriate, habitat is enhanced.
- (c) Depressed fisheries are rebuilt to the highest sustainable yields consistent with environmental and habitat conditions.
- (d) The fishery limits bycatch to acceptable types and amounts, as determined for each fishery.
- (e) The fishery management system allows fishery participants to propose methods to prevent or reduce excess effort in marine fisheries.
- (f) Management of a species that is the target of both sport and commercial fisheries or of a fishery that employs different gears is closely coordinated.
- (g) Fishery management decisions are adaptive and are based on the best available scientific information and other relevant information that the Commission or Department possesses or receives, and the

Commission and Department have available to them essential fishery information on which to base their decisions.

- (h) The management decision-making process is open and seeks the advice and assistance of interested parties so as to consider relevant information, including local knowledge.
- (i) The fishery management system observes the long-term interests of people dependent on fishing for food, livelihood, or recreation.
- (j) The adverse impacts of fishery management on small-scale fisheries, coastal communities, and local economies are minimized.
- (k) Collaborative and cooperative approaches to management, involving fishery participants, marine scientists, and other interested parties are strongly encouraged, and appropriate mechanisms are in place to resolve disputes such as access, allocation, and gear conflicts.
- (l) The management system is proactive and responds quickly to changing environmental conditions and market or other socioeconomic factors and to the concerns of fishery participants.
- (m) The management system is periodically reviewed for effectiveness in achieving sustainability goals and for fairness and reasonableness in its interaction with people affected by management.

7058.

Any fishery management regulation adopted by the Commission shall, to the extent practicable, conform to the policies of Sections 7055 and 7056.

(Amended effective January 1, 2003.)

7059.

(a) The Legislature finds and declares all of the following:

- (1) Successful marine life and fishery management is a collaborative process that requires a high degree of ongoing communication and participation of all those involved in the management process, particularly the Commission, the Department, and those who represent the people and resources that will be most affected by fishery management decisions, especially fishery participants and other interested parties.
- (2) In order to maximize the marine science expertise applied to the complex issues of marine life and fishery management, the Commission and the Department are encouraged to continue to, and to find creative new ways to, contract with or otherwise effectively involve Sea Grant staff, marine scientists, economists, collaborative factfinding process and dispute resolution specialists, and others with the necessary expertise at colleges, universities, private institutions, and other agencies.
- (3) The benefits of the collaborative process required by this section apply to most marine life and fishery management activities including, but not limited to, the development and implementation of research plans, marine managed area plans, fishery management plans, and plan amendments, and the preparation of fishery status reports such as those required by Section 7065.
- (4) Because California is a large state with a long coast, and because travel is time consuming and costly, the involvement of interested parties shall be facilitated, to the extent practicable, by conducting meetings and discussions in the areas of the coast and in ports where those most affected are concentrated.

(b) In order to fulfill the intent of subdivision (a), the Commission and the Department shall do all of the following:

- (1) Periodically review marine life and fishery management operations with a view to improving communication, collaboration, and dispute resolution, seeking advice from interested parties as part of the review.
- (2) Develop a process for the involvement of interested parties and for fact finding and dispute resolution processes appropriate to each element in the marine life and fishery management process. Models to consider include, but are not limited to, the take reduction teams authorized under the Marine Mammal Protection Act (16 U.S.C. Sec. 1361 et seq.) and the processes that led to improved management in the California herring, sea urchin, prawn, angel shark, and white seabass fisheries.

(3) Consider the appropriateness of various forms of fisheries comanagement, which involves close cooperation between the Department and fishery participants, when developing and implementing fishery management plans.

(4) When involving fishery participants in the management process, give particular consideration to the gear used, involvement of sport or commercial sectors or both sectors, and the areas of the coast where the fishery is conducted in order to ensure adequate involvement.

(Amended effective January 1, 2000.)

CHAPTER 3. Fisheries Science [7060 - 7062]

7060.

(a) The Legislature finds and declares that for the purposes of sustainable fishery management and this part, essential fishery information is necessary for federally and state-managed marine fisheries important to the people of this state to provide sustainable economic and recreational benefits to the people of California. The Legislature further finds and declares that acquiring essential fishery information can best be accomplished through the ongoing cooperation and collaboration of participants in fisheries.

(b) The Department, to the extent feasible, shall conduct and support research to obtain essential fishery information for all marine fisheries managed by the state.

(c) The Department, to the maximum extent practicable and consistent with Section 7059, shall encourage the participation of fishermen in fisheries research within a framework that ensures the objective collection and analysis of data, the collaboration of fishermen in research design, and the cooperation of fishermen in carrying out research.

(d) The Department may apply for grants to conduct research and may enter into contracts or issue competitive grants to public or private research institutions to conduct research.

7062.

(a) The Department shall establish a program for external peer review of the scientific basis of marine living resources management documents. The Department, in its discretion and unless otherwise required by this part, may submit to peer review, documents that include, but are not limited to, fishery management plans and plan amendments, marine resource and fishery research plans.

(b) The Department may enter into an agreement with one or more outside entities that are significantly involved with researching and understanding marine fisheries and are not advocacy organizations. These entities may include, but not be limited to, the Sea Grant program of any state, the University of California, the California State University, the Pacific States Marine Fisheries Commission, or any other entity approved by the Commission to select and administer peer review panels, as needed. The peer review panels shall be composed of individuals with technical expertise specific to the document to be reviewed. The entity with which the Department enters into an agreement for a peer review shall be responsible for the scientific integrity of the peer review process. Each peer reviewer may be compensated as needed to ensure competent peer review. Peer reviewers shall not be employees or officers of the Department or the Commission and shall not have participated in the development of the document to be reviewed.

(c) The external peer review entity, within the timeframe and budget agreed upon by the Department and the external scientific peer review entity, shall provide the Department with the written report of the peer review panel that contains an evaluation of the scientific basis of the document. If the report finds that the Department has failed to demonstrate that a scientific portion of the document is based on sound scientific knowledge, methods, and practices, the report shall state that finding, and the reasons for the finding. The Department may accept the finding, in whole or in part, and may revise the scientific portions of the document accordingly. If the Department disagrees with any aspect of the finding of the external scientific peer review, it shall explain, and include as part of the record, its basis for arriving at such a

determination in the analysis prepared for the adoption of the final document, including the reasons why it has determined that the scientific portions of the document are based on sound scientific knowledge, methods, or practice. The Department shall submit the external scientific peer review report to the Commission with any peer-reviewed document that is to be adopted or approved by the Commission.

(d) The requirements of this section do not apply to any emergency regulation adopted pursuant to subdivision (b) of Section 11346.1 of the Government Code.

(e) Nothing in this section shall be interpreted, in any way, to limit the authority of the Commission or Department to adopt a plan or regulation.

CHAPTER 4. Commission and Department [7065 - 7066]

7065.

(a) The director shall report annually in writing to the Commission on the status of sport and commercial marine fisheries managed by the state. The date of the report shall be chosen by the Commission with the advice of the Department. Each annual report shall cover at least one-fourth of the marine fisheries managed by the state so that every fishery will be reported on at least once every four years. The Department shall, consistent with Section 7059, involve expertise from outside the Department in compiling information for the report, which may include, but need not be limited to, Sea Grant staff, other marine scientists, fishery participants, and other interested parties.

(b) For each fishery reported on in an annual report, the report shall include information on landings, fishing effort, areas where the fishery occurs, and other factors affecting the fishery as determined by the Department and the Commission. Each restricted access program shall be reviewed at least every five years for consistency with the policies of the Commission on restricted access fisheries.

(c) Notwithstanding subdivision (a), the first annual report shall be presented to the Commission on or before September 1, 2001, and shall cover all the marine fisheries managed by the state. To the extent that the requirements of this section and Section 7073 are duplicative, the first annual report may be combined with the plan required pursuant to Section 7073.

(Amended effective January 1, 2000.)

7066.

(a) The Legislature finds and declares that a number of human-caused and natural factors can affect the health of marine fishery resources and result in marine fisheries that do not meet the policies and other requirements of this part.

(b) To the extent feasible, the director's report to the Commission pursuant to Section 7065 shall identify any marine fishery that does not meet the sustainability policies of this part. In the case of a fishery identified as being depressed, the report shall indicate the causes of the depressed condition of the fishery, describe steps being taken to rebuild the fishery, and, to the extent practicable, recommend additional steps to rebuild the fishery.

(c) The director's report to the Commission pursuant to Section 7065, consistent with subdivision (m) of Section 7056, shall evaluate the management system and may recommend modifications of that system to the Commission.

(Amended effective January 1, 2000.)

CHAPTER 5. Fishery Management Plans—General Policies [7070 - 7074]

7070.

The Legislature finds and declares that the critical need to conserve, utilize, and manage the state's marine fish resources and to meet the policies and other requirements stated in this part require that the state's fisheries be managed by means of fishery management plans.

7071.

- (a) Any white seabass fishery management plan adopted by the Commission on or before January 1, 1999, shall remain in effect until amended pursuant to this part.
- Notwithstanding paragraph (2) of subdivision (b) of Section 7073, any white seabass fishery management plan adopted by the Commission and in existence on January 1, 1999, shall be amended to comply with this part on or before January 1, 2002.
- (b) In the case of any fishery for which the Commission has management authority, including white seabass, regulations that the Commission adopts to implement a fishery management plan or plan amendment for that fishery may make inoperative, in regard to that fishery, any fishery management statute that applies to that fishery, including, but not limited to, statutes that govern allowable catch, restricted access programs, permit fees, and time, area, and methods of taking.
- (c) On and after January 1, 2000, the Commission may adopt regulations as it determines necessary, based on the advice and recommendations of the Department, and in a process consistent with Section 7059, to regulate all emerging fisheries, consistent with Section 7090, all fisheries for nearshore fish stocks, and all fisheries for white seabass. Regulations adopted by the Commission may include, but need not be limited to, establishing time and area closures, requiring submittal of landing and permit information, regulating fishing gear, permit fees, and establishing restricted access fisheries.
- (Amended effective January 1, 2003.)*

7072.

- (a) Fishery management plans shall form the primary basis for managing California's sport and commercial marine fisheries.
- (b) Fishery management plans shall be based on the best scientific information that is available, on other relevant information that the Department possesses, or on the scientific information or other relevant information that can be obtained without substantially delaying the preparation of the plan.
- (c) To the extent that conservation and management measures in a fishery management plan either increase or restrict the overall harvest or catch in a fishery, fishery management plans shall allocate those increases or restrictions fairly among recreational and commercial sectors participating in the fishery.
- (d) Consistent with Article 17 (commencing with Section 8585), the Commission shall adopt a fishery management plan for the nearshore fishery on or before January 1, 2002, if funds are appropriated for that purpose in the annual Budget Act or pursuant to any other law.
- (Amended effective January 1, 2003.)*

7073.

- (a) On or before September 1, 2001, the Department shall submit to the Commission for its approval a master plan that specifies the process and the resources needed to prepare, adopt, and implement fishery management plans for sport and commercial marine fisheries managed by the state. Consistent with Section 7059, the master plan shall be prepared with the advice, assistance, and involvement of participants in the various fisheries and their representatives, marine conservationists, marine scientists, and other interested persons.
- (b) The master plan shall include all of the following:
- (1) A list identifying the fisheries managed by the state, with individual fisheries assigned to fishery management plans as determined by the Department according to conservation and management needs and consistent with subdivision (f) of Section 7056.

(2) A priority list for preparation of fishery management plans. Highest priority shall be given to fisheries that the Department determines have the greatest need for changes in conservation and management measures in order to comply with the policies and requirements set forth in this part. Fisheries for which the Department determines that current management complies with the policies and requirements of this part shall be given the lowest priority.

(3) A description of the research, monitoring, and data collection activities that the Department conducts for marine fisheries and of any additional activities that might be needed for the Department to acquire essential fishery information, with emphasis on the higher priority fisheries identified pursuant to paragraph (2).

(4) A process consistent with Section 7059 that ensures the opportunity for meaningful involvement in the development of fishery management plans and research plans by fishery participants and their representatives, marine scientists, and other interested parties.

(5) A process for periodic review and amendment of the master plan.

(c) The Commission shall adopt or reject the master plan or master plan amendment, in whole or in part, after a public hearing. If the Commission rejects a part of the master plan or master plan amendment, the Commission shall return that part to the Department for revision and resubmission pursuant to the revision and resubmission procedures for fishery management plans as described in subdivision (a) of Section 7075.

(Amended effective January 1, 2000.)

7074.

(a) The Department shall prepare interim fishery research protocols for at least the three highest priority fisheries identified pursuant to paragraph (2) of subdivision (b) of Section 7073. An interim fishery protocol shall be used by the Department until a fishery management plan is implemented for that fishery.

(b) Consistent with Section 7059, each protocol shall be prepared with the advice, assistance, and involvement of participants in the various fisheries and their representatives, marine conservationists, marine scientists, and other interested persons.

(c) Interim protocols shall be submitted to peer review as described in Section 7062 unless the Department, pursuant to subdivision (d), determines that peer review of the interim protocol is not justified. For the purpose of peer review, interim protocols may be combined in the following circumstances:

(1) For related fisheries.

(2) For two or more interim protocols that the Commission determines will require the same peer review expertise.

(d) The Commission, with the advice of the Department, shall adopt criteria to be applied in determining whether an interim protocol may be exempted from peer review.

(Amended effective January 1, 2000.)

CHAPTER 6. Fishery Management Plan Preparation, Approval, and Regulations [7075 - 7078]

7075.

(a) The Department shall prepare fishery management plans and plan amendments, including any proposed regulations necessary to implement plans or plan amendments, to be submitted to the Commission for adoption or rejection. Prior to submitting a plan or plan amendment, including any proposed regulations necessary for implementation, to the Commission, the Department shall submit the plan to peer review pursuant to Section 7062, unless the Department determines that peer review of the plan or plan amendment may be exempted pursuant to subdivision (c). If the Department makes that determination, it shall submit its reasons for that determination to the Commission with the plan. If the Commission rejects a plan or plan amendment, including proposed regulations necessary for

implementation, the Commission shall return the plan or plan amendment to the Department for revision and resubmission together with a written statement of reasons for the rejection. The Department shall revise and resubmit the plan or plan amendment to the Commission within 90 days of the rejection. The revised plan or plan amendment shall be subject to the review and adoption requirements of this chapter.

(b) The Department may contract with qualified individuals or organizations to assist in the preparation of fishery management plans or plan amendments.

(c) The Commission, with the advice of the Department and consistent with Section 7059, shall adopt criteria to be applied in determining whether a plan or plan amendment may be exempted from peer review.

(d) Fishery participants and their representatives, fishery scientists, or other interested parties may propose plan provisions or plan amendments to the Department or Commission. The Commission shall review any proposal submitted to the Commission and may recommend to the Department that the Department develop a fishery management plan or plan amendment to incorporate the proposal.

7076.

(a) To the extent practicable, and consistent with Section 7059, the Department shall seek advice and assistance in developing a fishery management plan from participants in the affected fishery, marine scientists, and other interested parties. The Department shall also seek the advice and assistance of other persons or entities that it deems appropriate, which may include, but is not limited to, Sea Grant, the National Marine Fisheries Service, the Pacific States Marine Fisheries Commission, the Pacific Fishery Management Council, and any advisory committee of the Department.

(b) In the case of a fishery management plan or a plan amendment that is submitted to peer review, the Department shall provide the peer review panel with any written comments on the plan or plan amendment that the Department has received from fishery participants and other interested parties.

7077.

A fishery management plan or plan amendment, or proposed regulations necessary for implementation of a plan or plan amendment, developed by the Department shall be available to the public for review at least 30 days prior to a hearing on the management plan or plan amendment by the commission. Persons requesting to be notified of the availability of the plan shall be notified in sufficient time to allow them to review and submit comments at or prior to a hearing. Proposed plans and plan amendments and hearing schedules and agendas shall be posted on the Department's Internet website.

7078.

(a) The commission shall hold at least two public hearings on a fishery management plan or plan amendment prior to the Commission's adoption or rejection of the plan.

(b) The plan or plan amendment shall be heard not later than 60 days following receipt of the plan or plan amendment by the Commission. The Commission may adopt the plan or plan amendment at the second public hearing, at the Commission's meeting following the second public hearing, or at any duly noticed subsequent meeting, subject to subdivision (c).

(c) When scheduling the location of a hearing or meeting relating to a fishery management plan or plan amendment, the Commission shall consider factors, including, among other factors, the area of the state, if any, where participants in the fishery are concentrated.

(d) Notwithstanding Section 7550.5 of the Government Code, prior to the adoption of a fishery management plan or plan amendment that would make inoperative a statute, the Commission shall provide a copy of the plan or plan amendment to the Legislature for review by the Joint Committee on Fisheries and Aquaculture or, if there is no such committee, to the appropriate policy committee in each house of the Legislature.

(e) The Commission shall adopt any regulations necessary to implement a fishery plan or plan amendment no more than 60 days following adoption of the plan or plan amendment. All implementing regulations adopted under this subdivision shall be adopted as a regulation pursuant to the rulemaking provisions of the Administrative Procedure Act, Chapter 3.5 (commencing with Section 11340) of Part 1 of Division 3 of Title 2 of the Government Code. The Commission's adoption of regulations to implement a fishery management plan or plan amendment shall not trigger an additional review process under the California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code).

(f) Regulations adopted by the commission to implement a plan or plan amendment shall specify any statute or regulation of the Commission that is to become inoperative as to the particular fishery. The list shall designate each statute or regulation by individual section number, rather than by reference to articles or chapters.

CHAPTER 7. Contents of Fishery Management Plans [7080 - 7088]

7080.

Consistent with subdivision (b) of Section 7072, each fishery management plan prepared by the Department shall summarize readily available information about the fishery including, but not limited to, all of the following:

- (a) The species of fish and their location, number of vessels and participants involved, fishing effort, historical landings in the sport and commercial sectors, and a history of conservation and management measures affecting the fishery.
- (b) The natural history and population dynamics of the target species and the effects of changing oceanic conditions on the target species.
- (c) The habitat for the fishery and known threats to the habitat.
- (d) The ecosystem role of the target species and the relationship of the fishery to the ecosystem role of the target species.
- (e) Economic and social factors related to the fishery.

7081.

Consistent with subdivision (b) of Section 7072, each fishery management plan or plan amendment prepared by the Department shall include a fishery research protocol that does all of the following:

- (a) Describe past and ongoing monitoring of the fishery.
- (b) Identify essential fishery information for the fishery, including, but not limited to, age and growth, minimum size at maturity, spawning season, age structure of the population, and, if essential fishery information is lacking, identify the additional information needed and the resources and time necessary to acquire the information.
- (c) Indicate the steps the Department shall take to monitor the fishery and to obtain essential fishery information, including the data collection and research methodologies, on an ongoing basis.

7082.

Each fishery management plan or plan amendment prepared by the Department shall contain the measures necessary and appropriate for the conservation and management of the fishery according to the policies and other requirements in this part. The measures may include, but are not limited to, all of the following:

- (a) Limitations on the fishery based on area, time, amount of catch, species, size, sex, type or amount of gear, or other factors.
- (b) Creation or modification of a restricted access fishery that contributes to a more orderly and sustainable fishery.

- (c) A procedure to establish and to periodically review and revise a catch quota in any fishery for which there is a catch quota.
- (d) Requirement for a personal, gear, or vessel permit and reasonable fees.

7083.

- (a) Each fishery management plan prepared by the Department shall incorporate the existing conservation and management measures provided in this code that are determined by the Department to result in a sustainable fishery.
- (b) If additional conservation and management measures are included in the plan, the Department shall, consistent with subdivision (b) of Section 7072, summarize anticipated effects of those measures on relevant fish populations and habitats, on fishery participants, and on coastal communities and businesses that rely on the fishery.

7084.

- (a) Consistent with subdivision (b) of Section 7072, each fishery management plan or plan amendment prepared by the Department for a fishery that the Department has determined has adverse effects on marine fishery habitat shall include measures that, to the extent practicable, minimize adverse effects on habitat caused by fishing.
- (b) Subdivision (a) does not apply to activities regulated by Chapter 6 (commencing with Section 6650) of Part 1.

7085.

Consistent with subdivision (b) of Section 7072, each fishery management plan or plan amendment prepared by the Department, in fisheries in which bycatch occurs, shall include all of the following:

- (a) Information on the amount and type of bycatch.
- (b) Analysis of the amount and type of bycatch based on the following criteria:
 - (1) Legality of the bycatch under any relevant law.
 - (2) Degree of threat to the sustainability of the bycatch species.
 - (3) Impacts on fisheries that target the bycatch species.
 - (4) Ecosystem impacts.
- (c) In the case of unacceptable amounts or types of bycatch, conservation and management measures that, in the following priority, do the following:
 - (1) Minimize bycatch.
 - (2) Minimize mortality of discards that cannot be avoided.

7086.

- (a) Consistent with subdivision (b) of Section 7072, each fishery management plan or plan amendment prepared by the Department shall specify criteria for identifying when the fishery is overfished.
- (b) In the case of a fishery management plan for a fishery that has been determined to be overfished or in which overfishing is occurring, the fishery management plan shall contain measures to prevent, end, or otherwise appropriately address overfishing and to rebuild the fishery.
- (c) Any fishery management plan, plan amendment, or regulation prepared pursuant to subdivision (b), shall do both of the following:
 - (1) Specify a time period for preventing or ending or otherwise appropriately addressing overfishing and rebuilding the fishery that shall be as short as possible, and shall not exceed 10 years except in cases where the biology of the population of fish or other environmental conditions dictate otherwise.

(2) Allocate both overfishing restrictions and recovery benefits fairly and equitably among sectors of the fishery.

7087.

(a) Each fishery management plan prepared by the Department shall include a procedure for review and amendment of the plan, as necessary.

(b) Each fishery management plan or plan amendment prepared by the Department shall specify the types of regulations that the Department may adopt without a plan amendment.

7088.

Each fishery management plan and plan amendment shall include a list of any statutes and regulations that shall become inoperative, as to the particular fishery covered by the fishery management plan or plan amendment, upon the Commission's adoption of implementing regulations for that fishery management plan or plan amendment.

CHAPTER 8. Emerging Fisheries [7090- 7090]

7090.

(a) The Legislature finds and declares that a proactive approach to management of emerging fisheries will foster a healthy marine environment and will benefit both commercial and sport fisheries and other marine-dependent activities. Therefore, the Commission, based upon the advice and recommendations of the Department, shall encourage, manage, and regulate emerging fisheries consistent with the policies of this part.

(b) "Emerging fishery," in regard to a marine fishery, means both of the following:

(1) A fishery that the director has determined is an emerging fishery, based on criteria that are approved by the Commission and are related to a trend of increased landings or participants in the fishery and the degree of existing regulation of the fishery.

(2) A fishery that is not an established fishery. "Established fishery," in regard to a marine fishery, means, prior to January 1, 1999, one or more of the following:

(A) A restricted access fishery has been established in this code or in regulations adopted by the Commission.

(B) A fishery, for which a federal fishery management plan exists, and in which the catch is limited within a designated time period.

(C) A fishery for which a population estimate and catch quota is established annually.

(D) A fishery for which regulations for the fishery are considered at least biennially by the Commission.

(E) A fishery for which this code or regulations adopted by the Commission prescribes at least two management measures developed for the purpose of sustaining the fishery. Management measures include minimum or maximum size limits, seasons, time, gear, area restriction, and prohibition on sale or possession of fish.

(c) The Department shall closely monitor landings and other factors it deems relevant in each emerging fishery and shall notify the Commission of the existence of an emerging fishery.

(d) The Commission, upon the recommendation of the Department, may do either, or both, of the following:

(1) Adopt regulations that limit taking in the fishery by means that may include, but not be limited to, restricting landings, time, area, gear, or access. These regulations may remain in effect until a fishery management plan is adopted.

(2) Direct the Department to prepare a fishery management plan for the fishery and regulations necessary to implement the plan.

(e) A fishery management plan for an emerging fishery shall comply with the requirements for preparing and adopting fishery management plans contained in this part. In addition to those requirements, to allow for adequate evaluation of the fishery and the acquisition of essential fishery information, the fishery management plan shall provide an evaluation period, which shall not exceed three years unless extended by the Commission. During the evaluation period, the plan shall do both of the following:

(1) In order to prevent excess fishing effort during the evaluation period, limit taking in the fishery by means that may include, but need not be limited to, restricting landings, time, area, gear, or access to a level that the Department determines is necessary for evaluation of the fishery.

(2) Contain a research plan that includes objectives for evaluating the fishery, a description of the methods and data collection techniques for evaluating the fishery, and a timetable for completing the evaluation.

(f) The Commission is authorized to impose a fee on an emerging fishery in order to pay the costs of implementing this chapter. The fees may include, but need not be limited to, ocean fishing stamps and permit fees. The fees may not be levied in excess of the necessary costs to implement and administer this chapter. The Commission may reduce fees annually if it determines that sufficient revenues exist to cover costs incurred by the Department in administering this chapter. The Commission and the Department, with the advice of fishery participants and other interested parties, shall consider alternative ways to fund the evaluation of emerging fisheries.

(g) An emerging fishery is subject to this section unless the Department incorporates the fishery into a fishery management plan developed under Sections 7070 to 7088, inclusive.

(h) In the event that this section is found to conflict with Section 8606, 8614, or 8615, this section shall prevail.

(Amended effective January 1, 2003.)

ARTICLE 17. Nearshore Fisheries Management Act [8585 - 8589.7]

8585.

This article shall be known and may be cited as the Nearshore Fisheries Management Act.

8585.5.

The Legislature finds and declares that important commercial and recreational fisheries exist on numerous stocks of rockfish (genus *Sebastes*), California sheephead (genus *Semicossyphus*), kelp greenling (genus *Hexagrammos*), cabezon (genus *Scorpaenichthys*), and scorpionfish (genus *Scorpaena*), in the nearshore state waters extending from the shore to one nautical mile offshore the California coast, that there is increasing pressure being placed on these fish from recreational and commercial fisheries, that many of these fish species found in the nearshore waters are slow growing and long lived, and that, if depleted, many of these species may take decades to rebuild. The Legislature further finds and declares that, although extensive research has been conducted on some of these species by state and federal governments, there are many gaps in the information on these species and their habitats and that there is no program currently adequate for the systematic research, conservation, and management of nearshore fish stocks and the sustainable activity of recreational and commercial nearshore fisheries. The Legislature further finds and declares that recreational fishing in California generates funds pursuant to the Federal Aid in Sport Fish Restoration Act (16 U.S.C. Secs. 777 to 777l, inclusive), with revenues used for, among other things, research, conservation, and management of nearshore fish. The Legislature further finds and declares that a program for research and conservation of nearshore fish species and their habitats is needed, and that a management program for the nearshore fisheries is necessary. The Legislature further finds and declares that the Commission should be granted additional authority to regulate the commercial and recreational fisheries to assure the sustainable populations of nearshore fish stocks. Lastly, the Legislature finds and declares that, whenever feasible and practicable, it is the policy of

the state to assure sustainable commercial and recreational nearshore fisheries, to protect recreational opportunities, and to assure long-term employment in commercial and recreational fisheries.
(Amended effective January 1, 2000.)

8586.

The following definitions govern the construction of this article:

(a) "Nearshore fish stocks" means any of the following: rockfish (genus *Sebastes*) for which size limits are established under this article, California sheephead (*Semicossyphus pulcher*), greenlings of the genus *Hexagrammos*, cabezon (*Scorpaenichthys marmoratus*), scorpionfish (*Scorpaena guttata*), and may include other species of finfish found primarily in rocky reef or kelp habitat in nearshore waters.

(b) "Nearshore fisheries" means the commercial or recreational take or landing of any species of nearshore finfish stocks.

(c) "Nearshore waters" means the ocean waters of the state extending from the shore to one nautical mile from land, including one nautical mile around offshore rocks and islands.

(Amended effective January 1, 2000.)

8586.1.

Funding to pay the costs of this article shall be made available from the revenues deposited in the Fish and Game Preservation Fund pursuant to Sections 8587, 8589.5, and 8589.7, and other funds appropriated for these purposes.

8587.

Any person taking, possessing aboard a boat, or landing any species of nearshore fish stock for commercial purposes shall possess a valid nearshore fishery permit issued to that person that has not been suspended or revoked, except that when using a boat to take nearshore fish stocks at least one person aboard the boat shall have a valid nearshore fishery permit. Nearshore fishing permits are revocable. The fee for a nearshore fishing permit is one hundred and twenty-five dollars (\$125).

(Amended effective January 1, 2000.)

8587.1.

(a) The Commission may adopt regulations as it determines necessary, based on the advice and recommendations of the Department, to regulate nearshore fish stocks and fisheries. Regulations adopted by the Commission pursuant to this section may include, but are not limited to, requiring submittal of landing and permit information, including logbooks; establishing a restricted access program; establishing permit fees; and establishing limitations on the fishery based on time, area, type, and amount of gear, and amount of catch, species, and size of fish.

(b) Regulations adopted by the Commission pursuant to this section may make inoperative any fishery management statute relevant to the nearshore fishery. Any regulation adopted by the Commission pursuant to this subdivision shall specify the particular statute to be made inoperative.

(c) The circumstances, restrictions, and requirements of Section 219 do not apply to regulations adopted pursuant to this section.

(d) Any regulations adopted pursuant to this section shall be adopted following consultation with fishery participants and other interested persons consistent with Section 7059.

(Amended effective January 1, 2003.)

8589.

Funding to prepare the plan pursuant to subdivision (d) of Section 7072 and any planning and scoping meetings shall be derived from moneys deposited in the Fish and Game Preservation Fund pursuant to Section 8587 and other funds appropriated for these purposes.

8589.5.

The Commission shall temporarily suspend and may permanently revoke the nearshore fishing permit of any person convicted of a violation of this article. In addition to, or in lieu of, a license or permit suspension or revocation, the Commission may adopt and apply a schedule of fines for convictions of violations of this article.

8589.7.

(a) Fees received by the Department pursuant to Section 8587 shall be deposited in the Fish and Game Preservation Fund to be used by the Department to prepare, develop, and implement the nearshore fisheries management plan and for the following purposes:

(1) For research and management of nearshore fish stocks and nearshore habitat. For the purposes of this section, “research” includes, but is not limited to, investigation, experimentation, monitoring, and analysis and “management” means establishing and maintaining a sustainable utilization.

(2) For supplementary funding of allocations for the enforcement of statutes and regulations applicable to nearshore fish stocks, including, but not limited to, the acquisition of special equipment and the production and dissemination of printed materials, such as pamphlets, booklets, and posters aimed at compliance with nearshore fishing regulations.

(3) For the direction of volunteer groups assisting with nearshore fish stocks and nearshore habitat management, for presentations of related matters at scientific conferences and educational institutions, and for publication of related material.

(b) The Department shall maintain internal accounts that ensure that the fees received pursuant to Section 8587 are disbursed for the purposes stated in subdivision (a).

(c) The Commission shall require an annual accounting from the Department on the deposits into, and expenditures from, the Fish and Game Preservation Fund, as related to the revenues generated pursuant to Section 8587. Notwithstanding Section 7550.5 of the Government Code, a copy of the accounting shall be provided to the Legislature for review by the Joint Committee on Fisheries and Aquaculture, and if that committee is not in existence at the time, by the appropriate policy committee in each house of the Legislature.

(d) Unencumbered fees collected pursuant to Section 8587 during any previous calendar year shall remain in the fund and expended for the purposes of subdivision (a). All interest and other earnings on the fees received pursuant to Section 8587 shall be deposited in the fund and shall be used for the purposes of subdivision (a).

Appendix B – Partnerships and Engagement Efforts in the Amendment of the Master Plan

Information Gathering Projects

Beginning in late 2015 and culminating in early 2017, thirteen “Information Gathering Projects” were conducted to explore and consider new tools, approaches, and products to inform the 2018 Master Plan and development of a draft framework for MLMA-based management. The following provides an overview of Information Gathering Projects, which involved 10 contractor groups of expert scientists and investigators:

- *Approach to Marine Life Management Act-based Management*: Based on MLMA objectives, a proposed framework was developed to help focus the Department’s management efforts on fisheries with the greatest management need. The framework also organized the results of Information Gathering Projects into a comprehensive management system designed to fully implement the principles of the MLMA. The proposed framework was modified throughout the amendment process informed by Department priorities and feedback heard from stakeholders during engagement efforts. *Department Lead: Paul Reilly; Contractor: Fathom Consulting*
- *Productivity and Susceptibility Analysis and Ecological Risk Assessment*: Existing PSA and ERA tools were explored as a systematic way to assess the biological and ecological risk of the prosecution of state-managed fisheries to three ecosystem components: target species, bycatch species, and habitats. Results from a PSA conducted on 45 commercial and recreational fisheries are available to help the Department prioritize fisheries management action and inform plans for future data collection and monitoring activities. An existing ERA was modified to meet the Department’s needs for assessing the ecological impacts of fisheries to habitat and bycatch species and was piloted on five fisheries with stakeholders during two workshops. *Department Lead: Paul Reilly; Contractor: MRAG Americas and OST*
- *Marine Life Management Act-based Assessment Framework*: An assessment framework was developed to track management performance under the goals and requirements of the MLMA, providing quantitative and qualitative indicators to measure management outcomes and prioritize resource allocation. The assessment framework was co-developed by CDFW and researchers through an iterative process and pilot tested on nine state-managed fisheries. *Department Lead: Tom Mason; Contractor: Center for Ocean Solutions*
- *Socioeconomic Value and Opportunity*: This project identified the need and opportunities for analyzing and assembling socioeconomic and human dimension information to guide fishery management efforts consistent with the objectives of the MLMA. *Department Leads: Debbie Aseltine-Neilson and Ryan Bartling; Contractor: California Sea Grant*
- *California Fisheries Data-limited Toolkit*: An existing software tool that uses MSE was customized and tested on four fisheries to compare the performance of a number of stock-assessment approaches for data-limited fisheries. *Department Leads: Pete Kalvass and Chuck Valle; Contactors: Natural Resources Defense Council and University of British Columbia*
- *Streamlined Fishery Management*: This project provided guidance on an approach to scale management efforts to the size and complexity of a fishery. A cost-effective, flexible, and streamlined approach to meeting the goals of the MLMA through an MLMA-based management continuum was proposed and ranged from expanded and better-structured (enhanced) status reports to traditional, resource-intensive FMPs. *Department Leads: Ian Taniguchi; Contactor: Fathom Consulting*
- *Enhanced Status of the Fisheries Reports and Web-based Fisheries Portal*: A blueprint for a regularly updated, user-friendly, web-based California Fisheries Portal was developed as an

online library to house information on California's state-managed fisheries. ESRs will be transformed from a static paper or digital document to a dynamic website structure. The portal will be available to the public, fisheries managers, scientists, and others to learn about the state of knowledge about a fishery, management issues, and current research needs. *Department Lead: Tom Mason; Contractor: Fathom Consulting*

- *Climate Change and Fisheries*: This project considered the issue of climate change in the sustainable management of California's fisheries, provided an evaluation of the effects of changing climate and ocean chemistry on fisheries (including social, ecological, and governance dimensions), and explored ways of building resilience to buffer against potential effects. *Department Lead: Debbie Aseltine-Neilson; Contractor: OST*
- *Bycatch*: The BWG composed of fishermen, NGOs, and state agencies was convened by the Commission to review bycatch and associated issues in California's fisheries. The BWG helped to inform the draft 2018 Master Plan through their review of bycatch language and definitions, and other action items within the scope of Commission authority. *Department/Commission Lead: Susan Ashcraft and Elizabeth Pope*
- *Data Review*: The Department's current data collection activities were inventoried and their use and relevance to management evaluated. Recommendations were developed for adapting the Department's fishery-dependent data collection activities to more closely meet management needs and to leverage existing monitoring programs. Trade-offs between costs, coverage, timeframes for implementation, and potential strategies and partners were also considered. *Department Lead: Kirsten Ramey; Contractor: MRAG Americas and Kate Wing Consulting*
- *Fisheries Partnerships*: Opportunities, benefits, and limitations that partnerships between the Department and fishery stakeholders can play in securing effective and efficient fisheries management were evaluated. The project explored the necessary elements of effective partnerships and the requirements for collaboration across different types of fisheries management activities. *Department Leads: Elizabeth Pope and Ian Taniguchi; Contractor: The Nature Conservancy*
- *Stakeholder Engagement Toolkit*: This project surveyed best practices and developed tools to help managers foster targeted and meaningful stakeholder involvement in fisheries management in California and beyond. Information was assembled to capture a range of stakeholder engagement methods and review considerations such as costs, necessary expertise, benefits, and challenges. *Department Leads: Toby Carpenter and Elizabeth Pope; Contractors: Center for Ocean Solutions, Kearns & West, and the University of California at Santa Barbara*
- *Peer Review*: Using lessons learned from previous peer reviews under the MLMA (e.g., FMP processes), as well as from best practices of other agencies and scientific organizations, this project developed recommendations to help inform the Department's approach to peer review for FMPs. *Department Lead: Pete Kalvass; Contractors: OST*

Tribal Communications and Consultation

Throughout the MLMA Master Plan amendment process, the Department reached out to Tribes and tribal communities through direct communications and consultation via the following:

- Sent letters (June 23, 2016, July 28, 2017, October 11, 2017, and March 12, 2018) to provide general information about the amendment process and:
 - Shared a draft Table of Contents and highlighted tribal communications and consultation as an important component of the draft Master Plan and requested input and feedback;
 - Shared an initial and revised draft of the Master Plan and requested input and feedback;

- Provided presentations on the status of the amendment process and requests for tribal input at the March 2016, February 2017, June 2017, and February 2018 Commission Tribal Committee meetings;
- Supported individual conversations with interested Tribes to provide additional information and help to address any questions and concerns; and
- Sent invitations to public discussions (i.e., conference calls, webinars, workshops, and meetings) about the amendment process.

Stakeholder Engagement

The Department engaged with stakeholders to ensure the Master Plan reflected stakeholder knowledge, expertise, needs, and priorities. Throughout the amendment process, the Department worked to:

- Support and maintain open lines of communication with target audiences (e.g., Tribes and tribal communities, fishermen, NGOs, citizen scientists, academic institutions, etc.) and key leaders;
- Learn about the most effective ways to communicate with target audiences and share information about the amendment process; and
- Share and discuss draft ideas, tools, approaches, and preliminary findings from the Information Gathering Projects, and solicit feedback and input to inform the development of the Master Plan, including a draft framework for MLMA-based management.

During the amendment phase, the Department designed and implemented formal and informal engagement strategies:

- Developed an internal communications and engagement strategy to identify key goals, target audiences, anticipated outcomes, timeframes, and other Department priorities;
- Identified and subsequently worked with community leaders, or Key Communicators, that had direct access to target audiences and were willing to play a liaison role to disseminate information and encourage involvement in stakeholder discussions;
- Conducted informal informational interviews with Key Communicators to learn about appropriate communications tools and pathways, identify local events to participate in, and establish interest in providing feedback on outreach materials development;
- Engaged with target audiences through in-person meetings and presentations at MRC meetings;
- Developed outreach materials to summarize and help frame the components of the amendment process, as well as presented the results and findings of the Information Gathering Projects;
- Utilized a variety of communications channels (i.e., webpage announcements, information blogs, Department e-newsletters, Commission listserv) to share information, outreach materials, and promote participation in stakeholder discussions;
- Hosted a series of stakeholder discussions in the form of in-person meetings, conference calls, and webinars to share information and solicit feedback; and
- Shared an initial draft of the Master Plan for stakeholder review and input in advance of the Commission's formal review process.

Outreach Materials

The Department developed a core set of outreach materials to complement stakeholder discussions and provide additional information on the amendment process. These included the following:

- Overview of a Draft Framework for MLMA-based Management
- MLMA Master Plan Amendment Timeline
- MLMA Objectives Overview
- Information Gathering Projects Overview
- Frequently Asked Questions

Additional outreach materials were developed to accompany stakeholder discussions. All outreach materials were made publicly available on the Department’s MLMA Master Plan Amendment webpage at <https://www.wildlife.ca.gov/Conservation/Marine/MLMA/Master-Plan>.

Stakeholder Discussions

To help ensure the Master Plan reflected stakeholder needs and priorities, the Department engaged with stakeholders during the amendment phase through a series of stakeholder discussions held from December 2016 through December 2017. The goal of these discussions was to share information about the Information Gathering Projects and components of the amendment process and invite input and feedback from diverse perspectives to inform the amendment of the Master Plan. A summary of outreach and stakeholder engagement efforts are available on the Department’s MLMA Master Plan Amendment webpage at <https://www.wildlife.ca.gov/Conservation/Marine/MLMA/Master-Plan>.

Stakeholder discussions took the form of conference calls, webinars, and a topical presentation at an MRC meeting. Participation at each discussion ranged from 30-75 people. The following is a list of Department-led stakeholder discussions in chronological order. This list does not include routine informational updates at public meetings (i.e., MRC and Tribal Committee meetings).

- December 13, 2016: A conference call titled “Marine Life Management Act 101: Orientation Brown Bag Conference Call for Interested Stakeholders.”
- February 1, 2017: A webinar titled “*Draft Approach to Scaled Management and a Fisheries Web-based Data Portal.*”
- March 23, 2017: A presentation and discussion at the MRC meeting in San Clemente titled, “*Considering Stakeholder Engagement in Fisheries Management.*”
- May 25, 2017: A webinar titled, “*Management Strategies for Achieving Sustainability of Marine Fisheries Under the MLMA.*”
- July 28, 2017: A webinar titled, “*Considering Approaches to Fisheries Partnerships Under the MLMA.*”
- November 9, 2017: A presentation and discussion at the MRC meeting in Marina titled, “*Update on the Marine Life Management Act (MLMA) Master Plan Amendment.*”

Appendix C – List of Marine Species Monitored by the Department, Excluding Those Managed Under a Federal Fishery Management Plan

Common name ¹	Taxon
ALGAE	
Algae	<i>Alaria</i> spp.
Algae	<i>Chondracanthus</i> spp.
Algae	<i>Gelidium</i> spp.
Algae	<i>Gracilaria</i> spp.
Algae	<i>Saccharina sessilis</i>
Algae	<i>Iridia</i> spp.
Algae	<i>Lessionopsis littoralis</i>
Algae	<i>Mazzaella splendens</i>
Algae	<i>Pelvetiopsis limitata</i>
Algae	<i>Pelveti</i> spp.
Algae, Bladderwrack	<i>Fucus</i> spp.
Algae, Bull/Bullwhip Kelp	<i>Nereocystis luetkeana</i>
Algae, Dead Man's Fingers	<i>Codium fragile</i>
Algae, Feather Boa Kelp	<i>Egregia menziesii</i>
Algae, Giant Kelp	<i>Macrocystis pyrifera</i>
Algae, Kombu	<i>Laminaria</i> spp.
Algae, Marine	<i>Phycophata</i>
Algae, Mermaids Hair	<i>Polysiphonia</i>
Algae, Nori	<i>Porphyra</i> spp.
Algae, Ocean Ribbons	<i>Lessoniopsis littoralis</i>
Algae, Pacific Dulse	<i>Palmaria mollis</i>
Algae, Sea Fern	<i>Stephanocystis osmundacea</i>
Algae, Sea Grapes	<i>Botryocladia</i> spp.
Algae, Sea Lettuce	<i>Ulva</i> spp.
Algae, Sea Palm	<i>Postelsia palmaeformis</i>
Algae, Turkish Washcloth	<i>Mastocarpus papillatus</i>
Algae, Turkish Towel	<i>Chondracanthus exasperatus</i>
Algae, Wakame	<i>Alaria marginata</i>
INVERTEBRATES	
Abalone, Red	<i>Haliotis rufescens</i>
Chione	<i>multiple species</i>
Clam, Bean	<i>Donax gouldii</i>
Clam, California Jackknife	<i>Tagelus californianus</i>

¹ **Bold** = used in initial prioritization for 2018 Master Plan (see Table E1)

Common name ¹	Taxon
Clam, Fat Gaper	<i>Tresus capax</i>
Clam, Gaper	<i>Tresus nuttalli</i>
Clam, Geoduck	<i>Panopea generosa</i>
Clam, Little Neck	<i>Venerupis philippinarum</i>
Clam, Northern Quahog	<i>Mercenaria</i>
Clam, Pacific Razor	<i>Siliqua patula</i>
Clam, Pismo	<i>Tivela stultorum</i>
Clam, Soft-Shell	<i>Mya arenaria</i>
Clam, Washington	<i>Saxidomus nuttalli</i>
Cockle, Basket	<i>Clinocardium nuttalli</i>
Crab, Armed Box	<i>Playmera gaudichaudi</i>
Crab, Box	<i>Lopholithodes foraminatus</i>
Crab, Brown Rock	<i>Romaleon antennarium</i>
Crab, Dungeness	<i>Metacarcinus magister</i>
Crab, Graceful	<i>Metacarcinus gracilis</i>
Crab, Hermit, unspecified	<i>Paguristes</i> spp.
Crab, King, unspecified	<i>Paralithodes</i> spp.
Crab, Pelagic Red	<i>Pleuroncodes planipes</i>
Crab, Red Rock	<i>Cancer productus</i>
Crab, Sand	<i>Emerita analoga</i>
Crab, Sheep	<i>Loxorhynchus grandis</i>
Crab, Shore	<i>Pachygrapsus crassipes</i>
Crab, Tanner	<i>Chionoecetes tanneri</i>
Crab, Yellow Rock	<i>Metacarcinus anthonyi</i>
Limpet, Keyhole	<i>Megathura crenulata</i>
Limpet, Giant Owl	<i>Lottia gigantea</i>
Lobster, California Spiny	<i>Panulirus interruptus</i>
Mussel, Bay	<i>Mytilus edulis</i>
Mussel, California	<i>Mytilus californianus</i>
Octopus	<i>Octopus</i> spp.
Oyster, Giant Pacific	<i>Crassostrea gigas</i>
Prawn, Golden	<i>Penaeus Californiensis</i>
Prawn, Ridgeback	<i>Eusicyonia ingentus</i>
Prawn, Spot	<i>Pandalus platyceros</i>
Sand Dollar	<i>Dendraster excentricus</i>
Scallop, Rock	<i>Crassadoma gigantea</i>
Sea Cucumber, Giant Red	<i>Parastichopus californicus</i>
Sea Cucumber, Warty	<i>Parastichopus parvimensis</i>
Sea Hare	<i>Aplysia</i> spp.
Sea Pansy	<i>Renilla koellikeri</i>

Common name ¹	Taxon
Sea Urchin, Coronado	<i>Centrostephanus coronatus</i>
Sea Urchin, Purple	<i>Strongylocentrotus purpuratus</i>
Sea Urchin, Red	<i>Strongylocentrotus franciscanu</i>
Sea Urchin, White	<i>Lytechinus anamesus</i>
Shrimp, Bay	<i>multiple species</i>
Shrimp, Coonstriped	<i>Pandalus danae</i>
Shrimp, Ghost	<i>Callinassa californiensis</i>
Shrimp, Mantis	<i>Hemisquilla ensigera californiensis</i>
Shrimp, Ocean (Pink)	<i>Pandalus jordani</i>
Shrimp, Red Rock	<i>Lysmata californica</i>
Snail, Bubble	<i>Bulla gouldiana</i>
Snail, Moon	<i>Polinices spp.</i>
Snail, Tegula	<i>Tegula spp.</i>
Snail, Wavy Top	<i>Megastrea undosa</i>
Squid, Jumbo	<i>Dosidicus gigas</i>
Squid, Market	<i>Doryteuthis opalescens</i>
Whelk, Kellet's	<i>Kelletia kelletii</i>
FISH	
Barracuda, Pacific	<i>Sphyrna argentea</i>
Bass, Barred Sand	<i>Paralabrax nebulifer</i>
Bass, Giant Sea	<i>Stereolepis gigas</i>
Bass, Kelp	<i>Paralabrax clathratus</i>
Bass, Spotted Sand	<i>Paralabrax maculatofasciatus</i>
Bass, Striped	<i>Morone saxatilis</i>
Bass, Threadfin	<i>Pronotogrammus multifasciatus</i>
Blacksmith	<i>Chromis punctipinnis</i>
Blenny, Rockpool	<i>Hypsoblennius gilberti</i>
Bonefish	<i>Albula vulpes</i>
Bonito, Pacific	<i>Sarda chiliensis</i>
Combfish, Longspine	<i>Zaniolepis latipinnis</i>
Combfish, Shortspine	<i>Zaniolepis frenata</i>
Corbina, California	<i>Menticirrhus undulatus</i>
Corvina, Orangemouth	<i>Cynoscion xanthulus</i>
Corvina, Shortfin	<i>Cynoscion parvipinnis</i>
Croaker, Black	<i>Cheilotrema saturnum</i>
Croaker, Spotfin	<i>Roncador stearnsii</i>
Croaker, White	<i>Genyonemus lineatus</i>
Croaker, Yellowfin	<i>Umbrina roncadore</i>
Cusk-Eel, Spotted	<i>Chilara taylori</i>

Common name ¹	Taxon
Escolar	<i>Lepidocybium flavobrunneum</i>
Eulachon	<i>Thaleichthys pacificus</i>
Flyingfish, California	<i>Cypselurus californicus</i>
Fringehead, Sarcastic	<i>Neoclinus blanchardi</i>
Fringehead, Onespot	<i>Neoclinus urinotatus</i>
Goby, Bluebanded	<i>Lythrypaus dalli</i>
Goby, Chameleon	<i>Tridentiger trigonocephalus</i>
Goby, Yellowfin	<i>Acanthogobius flavimanus</i>
Greenling, Painted	<i>Oxylebius pictus</i>
Greenling, Rock	<i>Hexagrammos lagocephalus</i>
Greenling, Whitespotted	<i>Hexagrammos stelleri</i>
Grunion, California	<i>Leuresthes tenuis</i>
Guitarfish, Banded	<i>Zapteryx exasperata</i>
Guitarfish, Shovelnose	<i>Rhinobatos productus</i>
Gunnel, Rockweed	<i>Apodichthys fucorum</i>
Hagfish, Pacific	<i>Eptatretus stoutii</i>
Halfmoon	<i>Medialuna californiensis</i>
Halibut, California	<i>Paralichthys californicus</i>
Herring, Pacific	<i>Clupea pallasii</i>
Herring, Pacific Roe	<i>Clupea pallasii</i> eggs
Herring, Pacific Roe On Kelp	<i>Clupea pallasii</i> /algae
Herring, Round	<i>Etrumeus teres</i>
Jacksmelt	<i>Atherinopsis californiensis</i>
Kelpfish, Crevice	<i>Gibbonsia montereyensis</i>
Kelpfish, Giant	<i>Heterostichus rostratus</i>
Kelpfish, Spotted	<i>Gibbonsia elegans</i>
Kelpfish, Striped	<i>Gibbonsia metzi</i>
Lamprey, Pacific	<i>Entosphenus tridentatus</i>
Lancetfish, Longnose	<i>Alepisaurus ferox</i>
Lizardfish, California	<i>Synodus lucioceps</i>
Louvar	<i>Luvarus imperialis</i>
Mackerel, Bullet	<i>Auxis rochei</i>
Mackerel, Frigate	<i>Auxis thazard</i>
Marlin, Blue	<i>Makaira nigricans</i>
Midshipman, Plainfin	<i>Porichthys notatus</i>
Midshipman, Specklefin	<i>Porichthys myriaster</i>
Moray, California	<i>Gymnothorax mordax</i>
Mudsucker, Longjaw	<i>Gillichthys mirabilis</i>
Mullet, Striped	<i>Mugil cephalus</i>
Needlefish, California	<i>Strongylura exilis</i>

Common name ¹	Taxon
Oilfish	<i>Ruvettus pretiosus</i>
Opah	<i>Lampris guttatus</i>
Opaleye	<i>Girella nigricans</i>
Pipefish, Bay	<i>Syngnathus leptorhynchus</i>
Poacher, Warty	<i>Chesnonia verrucosa</i>
Pomfret, Pacific	<i>Brama japonica</i>
Pompano, Pacific (Butterfish)	<i>Peprilus simillimus</i>
Prickleback, Black	<i>Xiphister atropurpureus</i>
Prickleback, Rock	<i>Xiphister mucosus</i>
Prickleback, Monkeyface	<i>Cebidichthys violaceus</i>
Queenfish	<i>Seriphus politus</i>
Ray, Bat	<i>Myliobatis californica</i>
Ray, California Butterfly	<i>Gymnura marmorata</i>
Ray, Pacific Electric	<i>Torpedo californica</i>
Sailfish	<i>Istiophorus platypterus</i>
Salema	<i>Xenistius californiensis</i>
Sanddab, Longfin	<i>Citharichthys xanthostigma</i>
Sanddab, Speckled	<i>Citharichthys stigmaeus</i>
Sand Lance, Pacific	<i>Ammodytes hexapterus</i>
Sargo	<i>Anisotremus davidsoni</i>
Saury, Pacific	<i>Cololabis saira</i>
Scad, Mexican	<i>Decapterus scombrinus</i>
Sculpin, Brown Irish Lord	<i>Hemilepidotus spinosus</i>
Sculpin, Buffalo	<i>Enophrys bison</i>
Sculpin, Bull	<i>Enophrys taurina</i>
Sculpin, Pacific Staghorn	<i>Leptocottus armatus</i>
Sculpin, Red Irish Lord	<i>Hemilepidotus</i>
Sculpin, Scissortail	<i>Triglops forficata</i>
Sculpin, Silverspotted	<i>Blepsias cirrhus</i>
Sculpin, Smoothhead	<i>Artedius lateralis</i>
Sculpin, Spotfin	<i>Icelinus tenuis</i>
Seabass, White	<i>Atractoscion nobilis</i>
Seaperch, Pink	<i>Zalemnius rosaceus</i>
Seaperch, Rainbow	<i>Hypsurus caryi</i>
Seaperch, Rubberlip	<i>Rhacochilus toxotes</i>
Seaperch, Sharpnose	<i>Phanerodon atripes</i>
Seaperch, Striped	<i>Embiotoca lateralis</i>
Seaperch, White	<i>Phanerodon furcatus</i>
Searobin, Lumptail	<i>Prionotus stephanophrys</i>
Senorita	<i>Oxyjulis californica</i>

Common name ¹	Taxon
Shad, American	<i>Alosa sapidissima</i>
Shad, Threadfin	<i>Dorosoma petenense</i>
Shark, Blacktip	<i>Carcharhinus limbatus</i>
Shark, Brown Smoothhound	<i>Mustelus henlei</i>
Shark, Gray Smoothhound	<i>Mustelus californicus</i>
Shark, Horn	<i>Heterodontus francisci</i>
Shark, Pacific Angel	<i>Squatina californica</i>
Shark, Salmon	<i>Lamna ditropis</i>
Shark, Sevengill (Broadnose Sevengill)	<i>Notorynchus cepedianus</i>
Shark, Sicklefins Smoothhound	<i>Mustelus lunulatus</i>
Shark, Sixgill	<i>Hexanchus griseus</i>
Shark, Smooth Hammerhead	<i>Sphyrna zygaena</i>
Shark, Swell	<i>Cephaloscyllium ventriosum</i>
Shark, White	<i>Carcharodon carcharias</i>
Sheephead, California	<i>Semicossyphus pulcher</i>
Skate, Starry	<i>Raja stellulata</i>
Smelt, Night	<i>Spirinchus starksi</i>
Smelt, Surf	<i>Hypomesus pretiosus</i>
Sole, Bigmouth	<i>Hippoglossina stomata</i>
Sole, C-O	<i>Pleuronichthys coenosus</i>
Sole, Deepsea	<i>Embassichthys bathybius</i>
Sole, Fantail	<i>Xystreureys liolepis</i>
Sole, Slender	<i>Eopsetta exilis</i>
Stingray, Diamond	<i>Dasyatis dipterura</i>
Stingray, Pelagic	<i>Dasyatis violacea</i>
Stingray, Round	<i>Urolophus halleri</i>
Sturgeon, White	<i>Acipenser transmontanus</i>
Sunfish, Ocean	<i>Mola</i>
Surfperch, Barred	<i>Amphistichus argenteus</i>
Surfperch, Black	<i>Embiotoca jacksoni</i>
Surfperch, Calico	<i>Amphistichus koelzi</i>
Surfperch, Dwarf	<i>Micrometrus minimus</i>
Surfperch, Kelp	<i>Brachyistius frenatus</i>
Surfperch, Pile	<i>Rhacochilus vacca</i>
Surfperch, Redtail	<i>Amphistichus rhodotus</i>
Surfperch, Shiner	<i>Cymatogaster aggregata</i>
Surfperch, Silver	<i>Hyperprosopon ellipticum</i>
Surfperch, Spotfin	<i>Hyperprosopon anale</i>
Surfperch, Walleye	<i>Hyperprosopon argenteum</i>
Thornback	<i>Platyrrhinoidis triseriata</i>

Common name ¹	Taxon
Tomcod, Pacific	<i>Microgadus proximus</i>
Topsmelt	<i>Atherinops affinis</i>
Triggerfish, Finescale	<i>Balistes polylepis</i>
Turbot, Diamond	<i>Pleuronichthys guttulata</i>
Turbot, Hornyhead	<i>Pleuronichthys verticalis</i>
Turbot, Spotted	<i>Pleuronichthys ritteri</i>
Wahoo	<i>Acanthocybium solanderi</i>
Whitefish, Ocean	<i>Caulolatilus princeps</i>
Wolf-Eel	<i>Anarrhichthys ocellatus</i>
Wrasse, Blackspot	<i>Decodon melasma</i>
Wrasse, Rock	<i>Halichoeres semicinctus</i>
Yellowtail	<i>Seriola lalandi</i>
Zebraperch	<i>Hermosilla azurea</i>

Appendix D – Marine Protected Areas and Fisheries Management

This appendix provides an overview of the different types of MPAs in California and the various ways in which they can be used as a tool to meet the management goals of the MLMA. As with the other appendices, it is anticipated this overview will continue to be expanded and refined as part of Master Plan implementation so it can serve as an effective resource to managers and stakeholders.

The MLPA was adopted in 1999 and mandated the state to reexamine the array of existing state MPAs and redesign them as an interconnected network. Its goal was to enhance the effectiveness of MPAs in protecting the state's marine life, habitats, and ecosystems (§2853). Through an extensive, collaborative, and unique public planning process, California implemented a network of MPAs across four coastal regions from 2004 to 2012 (CDFW 2016a). Operating within a collaborative statewide MPA Management Program, the Commission is the primary regulatory authority for California's MPA network, the Department is the primary managing agency, and the **Ocean Protection Council (OPC)** is the entity responsible for the direction of the state's MPA policy. The MLPA has six goals, which informed MPA design, and which now inform adaptive management of the statewide MPA network (§2853). While the primary MLPA goals are to protect biodiversity, habitats, and the integrity of marine ecosystems, the MLPA goals and MPA network also have implications for the management of fisheries. In that regard, California's MPA network presents both opportunities and challenges for fishery management.

While MPAs can help protect habitat and diversity as discussed in Chapter 6 and Appendix N (also see CDFW 2016a), this appendix is primarily about the relevance of MPAs for meeting the fisheries sustainability objectives of the MLMA. While the information in this appendix focuses on the MPAs created through the MLPA process, it is important to note that there are other spatial closures created for fishery management purposes under separate state and federal authority (such as the RCAs, state trawl closures, the Cowcod Conservation Area, and Essential Fish Habitat closures).

Types of Marine Protected Areas in California

Following the MLPA redesign and siting process, California now has 124 MPAs encompassing 852 square miles, or approximately 16% of state waters. The six goals of the MLPA recognize the importance of protecting marine resources for various purposes, and therefore include multiple types of **Marine Managed Areas (MMAs)** to achieve these distinct goals (California Public Resources Code §36600-36900). MPAs are a subset of MMAs (however throughout this document the more common term MPA is used as an umbrella term to refer to all types of protected areas) and include three MPA designations: **State Marine Reserve (SMR)**, **State Marine Conservation Area (SMCA)**, and **State Marine Park (SMP)**; and one MMA classification: **State Marine Recreational Management Area (SMRMA)**. Table D1 describes the different kinds of protected areas designated under the MLPA, the kind of protection they offer, and the amount of area protected in each designation. There are two designations for no-take MPAs, which collectively cover approximately 9.6% of state waters (about 9.0% in SMRs and 0.6% in no-take SMCAs). The remaining designations, SMCAs, SMCA/SMP, and SMRMAs, cover approximately 6.5% of California's state waters and allow multiple uses including limited specific types of take. A special closure is not an MPA, but is a relatively small, discrete marine area that protects nesting and roosting seabirds and marine mammals from disturbance by restricting seasonal or year-round access, and further contributing to the goals of the MLPA (CDFW 2016a). The California State Parks and Recreation establish SMPs through a separate process outside the MLPA. Therefore, SMPs are not included in the current MPA Network.

Much of the global research on the benefits of MPAs to fisheries, as well as the use of MPAs as reference areas, assumes that MPAs are large, well enforced, and completely no-take (Halpern and Warner 2002; Hastings and Botsford 2003; Lester et al. 2009). There is limited information on the benefits of limited-

take MPAs compared to no-take MPAs (Lester and Halpern 2008; Coleman et al. 2013; Kelaher et al. 2014). For this reason, it is important to consider the type of MPA when assessing the impacts on nearby fisheries. Approximately 40% of California's MPA area (or about 6.5% of state waters) is limited in take, which provides a unique opportunity to build scientific knowledge about the effects of different types of MPAs (CDFW 2016a).

Table D1. Marine Protected Area designations in California state waters (CDFW 2016a, CDFW 2016c).

Type	Name	Summary	Number	Area protected (square miles)
No-take	State Marine Reserve	<ul style="list-style-type: none"> Prohibits all take and consumptive use (commercial and recreational, living or geologic). Scientific take may be allowed under a Scientific Collection Permit. Non-consumptive uses are allowed. 	49	474.7
	"No-take" State Marine Conservation Area	<ul style="list-style-type: none"> Prohibits all take and consumptive use, except for take incidental to existing permitted activities such as infrastructure maintenance or water quality operations. 	10	33.2
Limited-take	State Marine Conservation Area/State Marine Park	<ul style="list-style-type: none"> MPA designated as SMCA by the Fish and Game Commission and SMP by California State Park and Recreation Commission. Only one MPA (Cambria SMCA/SMP) currently has this dual designation, as it was adopted by both Commissions at separate times with the same set of regulations and boundaries. 	1	6.3
	State Marine Recreational Management Area	<ul style="list-style-type: none"> Provides subtidal protection equivalent to an MPA while allowing legal waterfowl hunting, scientific research, and non-consumptive uses. 	5	4.4
	State Marine Conservation Area	<ul style="list-style-type: none"> May allow select recreational and commercial harvest to continue. Scientific research and non-consumptive uses are allowed. Fishing restrictions may vary by focal species, habitats, and goals and objectives of individual MPAs. 	59	333.4
	State Marine Park*	<ul style="list-style-type: none"> Prohibits commercial take, but may allow select recreational harvest to continue. Scientific research and non-consumptive uses are allowed. Prohibits injuring, damaging, taking, or possessing for commercial use any living or non-living marine resources. 	0	0
Special closure	Special Closure	<ul style="list-style-type: none"> An area designated by the Commission that prohibits access or restricts boating activities in waters adjacent to seabird rookeries or marine mammal haul-out sites. This designation is used by the Commission for relatively small, discrete marine areas to achieve the goals of the MLPA. 	15	3.3
TOTAL**			124	852
<p>* At present, no SMPs exist in California's redesigned coastal network of MPAs. As such, they are not included in the statewide counts. Eight MPAs, including seven SMPs, exist within San Francisco Bay and were established prior to the MLPA, and therefore were not part of the MLPA redesign and siting process from 2004-2012.</p> <p>** Totals do not include special closures or SMPs.</p>				

Benefits of Marine Protected Areas to Fisheries

Several studies have examined the possible benefits MPAs could have for fisheries. This section provides a review of those benefits.

Increased catches via spillover

Two types of spillover from MPAs can exist: ecological spillover and fishery spillover (Di Lorenzo et al. 2016). Ecological spillover is the net movement of fish biomass from non-fished areas into fished areas. This may happen when a species exhibits density-independent movement such as home range behavior (Moffitt et al. 2009), ontogenetic shifts with increasing age (Grüss et al. 2011), or when high densities inside MPAs lead to competition for scarce resources, causing some individuals to leave MPAs in search of food or shelter (Goñi et al. 2010). Fishery spillover is the proportion of fish biomass available to a fishery given existing regulations and access constraints. This is most likely to occur when the rate of emigration from MPAs is low enough that MPAs provide some refuge from fishing, but high enough that a certain proportion of the population exit the MPA into fishable areas (Di Lorenzo et al. 2016). This distinction is essential in helping facilitate conversations between stakeholders and policy makers when discussing how spillover may produce effects on fisheries.

While both ecological and fishery spillover of most benthic species requires habitat corridors extending from inside the MPA to fished areas (Bartholomew et al. 2008; Kay and Wilson 2012), this is not always the case. While a different habitat may bisect preferred habitat, if competition within a given habitat is strong, individuals may cross unsuitable or undesirable habitats, searching for other places to settle without an existing habitat corridor (Tupper 2007). This potential outward movement from within MPAs supports the importance of California's redesigned and interconnected network of MPAs, which resulted in a substantial increase in both the representation and replication of marine habitats protected within MPAs across the state (Saarman et al. 2013; CDFW 2016a).

Increased productivity via larval export

Due to the creation of many new MPAs, California's MPA network also resulted in a considerable reduction in the distance between habitats protected within MPAs in order to provide for the dispersal of larvae for a range of species and promote connectivity throughout the network (Saarman et al. 2013; CDFW 2016a). MPAs can contribute directly and indirectly to fisheries yields through increased survival and spawning. Protection from fishing within MPAs can result in higher abundances and/or larger female fish, which in turn can result in more eggs (Hastings 1999). The maintenance of unfished size and age structures in fish populations may also boost fecundity and subsequent larval recruitment because older, larger females can produce larvae that are more robust and grow faster than the offspring of younger fish, increasing the probability of successful settlement in some species (Berkeley et al. 2004). In fact, one study predicted that increased larval production from protected species within no-take MPAs may offset reductions in yields from MPA creation (Halpern et al. 2004). However, if the species managed is mobile, there may be no larval spillover across the MPA boundary because highly-mobile species will likely move outside the closed area and be exposed to fishing mortality (Hastings and Botsford 2003). Finally, larval dispersal patterns must also transport larvae to areas where larval recruitment is less than the maximum possible, and prior to any density-dependent effects, that might negate the benefits within the closed areas (Parrish 1999). Thus, MPAs may only increase yields in fisheries in which fishing has reduced larval recruitment, and if the above conditions are met.

Reduced fishing mortality

Spatial closures to fishing, such as MPAs, whether temporary or permanent, are a mechanism to reduce overall fishing mortality (Beverton and Holt 1957). They are functionally similar to increasing the age of fish at first capture or reducing fishing effort (Botsford et al. 2003). It is thus important to remember that

the response of harvested populations to protection, and increase in yield outside no-take MPA boundaries, will fundamentally depend on the level of fishing endured by the population prior to no-take MPA implementation (Botsford et al. 2003). MPAs may also provide additional benefits over more traditional fishery management methods because they can prevent incidental habitat damage or the take of vulnerable bycatch species if strategically placed.

The capacity for MPAs to reduce effective fishing mortality also depends on the mobility of the target species and placement of the MPA relative to the location of fishing effort. For fished species that are migratory or have large home ranges relative to the MPA (i.e., Market Squid, Dungeness Crab, salmon, tuna, etc.) and are targeted by spatially-explicit fishing effort, a strategically-placed MPA can provide a refuge from fishing for a portion of the fish or invertebrate's life history. This in turn can reduce mortality, enhance reproductive potential, or conserve the population through positive influence on another demographic process. For example, Market Squid are highly migratory and adults receive little protection from established MPAs. However, Market Squid prefer to spawn on soft-bottom substrate with a preferred depth range of 65-230 feet (20-70 meters) (Zeidberg et al. 2012). Within these conditions, California's MPA network protects, at a minimum, approximately 14% of available Market Squid spawning grounds south of Point Conception in Santa Barbara County (CDFW 2016a).

In general, MPAs protect sedentary species or those species with limited mobility within their boundaries. The Department has compiled lists of species likely to benefit from MPAs (see: <http://www.dfg.ca.gov/marine/mpa/species.asp>). MPAs may increase mortality outside of the MPA due to the shift or concentration of existing fishing effort in fishable areas (Guenther 2010). However, following a 10-year study on temperate rocky reefs at California's northern Channel Islands, Caselle et al. (2015) found that the biomass of targeted/fished species such as Cabezon and Kelp Rockfish within the MPAs increased, as well as the biomass of the same targeted species outside of the MPAs.

Insurance against management miscalculations and environmental fluctuations

MPAs can provide a buffer against management miscalculations and environmental fluctuations (Allison et al. 1998; Lauck et al. 1998). Science guidelines for sufficient replication of habitats when redesigning California's MPAs were incorporated in part to shield against catastrophic loss and effects of environmental fluctuations (Saarman et al. 2013; CDFW 2016a). Because estimates of sustainable catch limits are based on predictions about the average productivity of a stock, there is always the potential to set limits too high during periods of environmental stress, which can reduce recruitment success or increase natural mortality (Roberts et al. 2005). In such cases, protected populations and habitats could potentially serve as natural heritage sites or biological sources if they provide spillover and/or larval replenishment. For some species, MPAs may also dampen variability in recruitment from year-to-year by keeping spawning biomass at higher levels, increasing population resilience to overfishing, and buffering against decreases in reproductive success or increases in mortality (Guénette et al. 1998). Theoretical studies suggest MPAs may also reduce year-to-year variation in catch size, an important economic benefit for fishing communities (Nowlis and Roberts 1999). Therefore, MPAs offer a way for managers to be precautionary, especially for fisheries with little to no data available (Bohnsack 1999).

Protection of natural size and age structures

Management tends to make fishing more selective by modifying gear to focus fishing mortality on specific age or size classes (Reddy et al. 2013). While successful gear modifications direct fishing towards mature, rather than immature, age classes, recent work has shown that highly selective fishing (i.e., males only, a certain size class, a specific time of year) can have detrimental ecological impacts on some species (Zhou et al. 2010; Rochet et al. 2011; Garcia et al. 2012; Worm and Lenihan 2014). For example, larger mature female fish often produce far more and often larger eggs and their larvae grow faster and appear better able to withstand starvation compared to smaller mature females (Berkeley et al.

2004; Hixon et al. 2014). MPAs may provide fishery benefits such as protecting the natural age and size structure of the stock which may not be accomplished through management regulations that focus on catch limits or gear modifications (Bohnsack 1999; Roberts et al. 2005; Kay et al. 2012).

Preserving genetic variation

Protecting natural age structures may preserve genetic variation in species and boost the egg production of a population (Bohnsack 1999). Several studies have documented the effects of intensive fishing on the selection of specific heritable traits in the population (Ricker 1981; Quinn and Adams 1996; Drake et al. 1997). In particular, size-selective fishing can select for faster growth rates, younger age at first maturity, smaller maximum sizes, and behavioral changes (Worm and Lenihan 2014). Over multiple generations of intensive fishing, the alleles associated with other traits may be lost from the population. MPAs can help maintain the genetic diversity of a stock by providing refuge from fishing (Baskett and Barnett 2015).

Marine Protected Areas as fishery reference areas

The significant increase in the size and number of MPAs to the management landscape adds a new class of ecological indicators that may be highly informative to fishery managers. As the number of species protected within MPAs approaches carrying capacity, MPAs may provide robust estimates of unfished density (Bohnsack et al. 2004; Wilson-Vandenberg et al. 2014), an important reference point in the assessment and management of fish populations. Stock assessments estimate the size of a fished population by looking for contrast between data collected from a time when the population was lightly fished and recently collected data. The larger the contrast between these two data streams, the easier it is to estimate the current population size. However, data streams for many fisheries lack historical time series necessary for this comparison. MPAs, if on a spatial scale appropriately representative of a species home range, represent an opportunity for the assessment of data-poor fisheries by acting as a reference area to estimate **unfished biomass** (Bohnsack 1998; CDFW 2002; Hilborn et al. 2004; Wilson-Vandenberg et al. 2014). The potential effectiveness of reserves as reference areas will also depend on larval and adult movement rates, and should be constrained to the management of stocks at the same spatial scale as the reference area (McGilliard et al. 2015). Depending on the siting process involved, MPAs may be placed in areas with high conservation value at the expense of socioeconomic considerations, and thus may have naturally higher carrying capacities than neighboring unprotected areas (Klein et al. 2008), which could lead to an overestimate of unfished stock size outside the MPAs. Conversely, MPAs may be cited in areas with lower carrying capacities where fishing is not occurring and political opposition is low. California's MPA network was designed with both ecological and socioeconomic concerns in mind, which potentially reduced or eliminated this bias in MPA placement (Klein et al. 2008; Gleason et al. 2013; Saarman et al. 2013; CDFW 2016a).

MPAs represent contemporary rather than theoretical unfished conditions because they are subject to the same environmental fluctuations and non-fishing anthropogenic effects as nearby fished areas. Therefore, they act as important control sites for understanding both anthropogenic and natural disturbances, as well as buffering against the uncertainty caused by shifting baselines (Bohnsack 1999; CDFW 2002; Hilborn et al. 2004). This is the theoretical basis for a number of assessment methods and HCRs that rely on data from inside MPAs (see Appendix J).

MPAs may also provide a way to estimate biological parameters that are unbiased by the effects of fishing (Bohnsack 1999). As mentioned previously in the 'Preserving genetic variation' section, fishing mortality that is very high, or consistent over many years, can bias estimates of biological parameters. Fishing can alter the age at first maturity by selecting for fish that mature prior to recruiting to the fishery and can skew growth estimates if fishing frequently removes the largest individuals from the population. Data from inside MPAs can also be used to estimate natural mortality (Garrison et al. 2011), which is EFI

for all stocks, but is difficult to infer because it is frequently confounded by fishing mortality (Jamieson and Levings 2001; Kenchington 2014).

Fisheries management challenges and opportunities related to Marine Protected Areas

The previous section ‘Benefits of Marine Protected Areas to Fisheries’ examined the possible benefits MPAs could have for fisheries, such as buffering against uncertainty, reducing bycatch and habitat damage, and improving knowledge. However, MPAs can also pose challenges for fisheries management, such as socioeconomic impacts, shifts in fishing effort, and disruption of stock assessment research. When managing MPAs with a goal of enhancing fisheries management, the challenges, opportunities, and associated potential effects to target species should be considered.

In recognition of the MPA network’s potential effects on California’s fisheries, the Department convened two workshops to strengthen the link between MPAs and fisheries. In 2011, leaders in MPA and fishery management discussed and developed recommendations to help understand the potential effects of the newly-designed MPA network on California’s marine fisheries (Wertz et al. 2011). For example, expected biological effects of MPAs will vary by species and fishery, accruing at different rates and time scales. More immediate impacts may include, but are not limited to, effort displacement possibly followed by localized depletion, while gradual contributions may include spillover, increased biomass, and changes in age and size structure. Since data requirements for managing fisheries are different than those needed to evaluate MPAs, workshop participants recommended monitoring that addresses both MPA and fisheries priorities, such as focusing on those species most likely to be affected by the network and metrics that inform stock assessment (i.e., abundance, density, age, growth, and sex ratios inside and outside of MPAs). In 2014, participants in a subsequent workshop discussed how MPA monitoring and historical data could help inform management of California’s fisheries and MPAs. Identified priorities included focusing on fished species that are data-rich and recognized as likely to benefit from MPAs, identifying reference sites to model the effects of MPAs on fisheries, utilizing seafloor mapping technology to correlate habitat and spatially-explicit catch rates, determining how to couple environmental data with stock assessment data, and collecting socioeconomic data at a finer spatial scale.

The Department and OST developed recommendations to better align fisheries and MPA monitoring within regional MPA baseline monitoring plans (MPA Monitoring Enterprise 2010, 2011, 2014). Recognizing the differences in the scope and information needs for MPA and fisheries monitoring, regional monitoring plans describe options to maximize data collection, particularly for fished species sampled at an appropriate geographic and time scale with adequate replication to detect change.

Reduction in quality and quantity of fishery-dependent data to inform stock assessments

The most commonly used type of fishery-dependent data in stock assessments is CPUE. The fishery CPUE, which is an index of abundance in fished areas, will not reflect any potential increase in abundance of sedentary species within MPAs and may initially be lower after MPA creation due to the concentration of fishing effort in the remaining open space. For species with limited mobility, spillover may result in a concentrated fishing effort along the border of the MPA as fishermen “fish the line” (Murawski et al. 2005; but see Guenther et al. (2015) for alternative fishing responses). Managers should be aware that if data are spatially aggregated over the entire management range, the inflated catch rates near the borders of MPAs may mask declines in catch rates in other areas (McGilliard et al. 2015) and lead to biased assessments (Maunder et al. 2006). Thus, as reserves protect an increasing proportion of the population, standardization techniques must be applied to counteract the higher biases in indices of abundance before they are used in stock assessments (Ono et al. 2015).

Fishery-independent sampling that relies on trawl gear may have habitat impacts, and thus be prohibited inside MPAs. For Phase 1 regional baseline MPA monitoring, California has relied primarily on a variety of fishery-independent sampling methods for MPA monitoring including, but not limited to, collaborative fishing surveys (Starr et al. 2015), scuba surveys (Caselle et al. 2015), remotely operated vehicle surveys

(Rosen and Lauermann 2016), and rocky intertidal surveys (Blanchette et al. 2008). For Phase 2 long-term statewide MPA monitoring, the state is prioritizing surveys that extend beyond a regional basis to a statewide scale. Sampling within California's MPAs is allowed (even in no-take zones) upon approval of a Department scientific collecting permit and can offer the best available method to obtain samples of age structure, age-length, and age-weight relationships that are unbiased by years of selective fishing pressure. Much of this fishery-dependent sampling is catch and release.

Spatial heterogeneity in stock assessments

Stock assessments traditionally assume that the species in question is homogeneously distributed or targeted with uniform fishing effort. MPAs may violate this assumption (Bohnsack 1999) by creating patches of high biomass inside their borders and potentially contributing to stock depletion outside their borders (Hilborn et al. 2006). MPAs and their effects on the spatial distribution of both fish and fishermen may introduce biases in stock assessments, such as over estimations of the population size (Punt and Methot 2004; McGilliard et al. 2015), which can lead to misspecification of catch or effort limits.

Solutions include a greater use of spatially-specific modeling, but this may require data collection on a finer scale (Bohnsack 1999). In addition, spatial models require an understanding of the connectivity of both larval and adult fish between the various spatial patches, which is rarely known with high certainty (Botsford et al. 2003). It may be necessary to conduct separate assessments of the open and closed areas to achieve accurate estimates, which would require separate data streams for the fished and unfished areas (Punt and Methot 2004). The additional data required for spatial assessments increases the cost of fisheries monitoring and assessment programs unless data collected for MPA monitoring can be used to inform fisheries stock assessments on finer spatial scales. An example of such an application was presented by White et al. (2016), who developed an approach to use diver survey data fit to a size-structured model to provide estimates of the fishing mortality rate at the spatial scale of an MPA. They found a much higher pre-MPA implementation fishing mortality rate for Blue Rockfish in the Point Lobos region MPAs than cited in the 2005 Blue Rockfish regional stock assessment.

Accounting for populations inside Marine Protected Areas

It is unclear whether the populations within MPAs should be considered when assessing depletion levels and setting harvest limits (Field et al. 2006). Given state mandates to rebuild populations, there is an incentive for managers to count protected biomass in stock assessments to demonstrate increased stock health (Field et al. 2006). However, some research has shown that including protected fish when calculating catch limits based on the total vulnerable biomass may lead to unsustainable fishing mortality rates in the fished region because in reality only a portion of the stock is targeted (Hilborn et al. 2004, 2006). Conversely, in some cases, opposition to MPAs has been tempered via predictions of healthier spawning stocks and increased yields, and so there may be pressure from the fishing industry to count the fraction of population in MPAs as part of the total stock when setting catches. While the Nearshore FMP contemplated the use of MPAs in management, the recently adopted Spiny Lobster FMP is the first instance in which the Department has integrated MPAs through the use of a SPR model. The model accounts for the percentage of lobster habitat protected by MPAs that prohibit take of lobster; thus, providing a reproductive benefit that reflects the importance of MPAs to the reproductive potential of lobster (CDFW 2016b).

The effects of overfishing on the vulnerable stock biomass may negate the benefits of the MPA population because overfishing reduces the age structure of the population, impacting both the YPR and the lifetime spawning output of each individual (Greenstreet et al. 2009). Conversely, not considering protected populations when determining stock status is likely to lead to a reduction in MSY, resulting in reduced catch limits, and can extend the rebuilding period for overfished stocks. All these outcomes may have severe economic impacts on the fishery participants. Movement and larval dispersal between the closed and open populations can alter these predictions.

Economic effects of Marine Protected Areas

Limitations on fishing access can have both short- and long-term effects on the fishing economy (Hannesson 2002; White et al. 2013). For this reason, globally, MPA designation and placement may be the result of either political convenience (Monaco et al. 2007) or efforts to minimize socioeconomic impacts (Aswani and Lauer 2006). When MPAs are established to address ecological concerns first, the potential socioeconomic effects of such implementation are often evaluated after the MPAs have been designed and implemented (Scholz et al. 2004). If the most biologically-productive areas are set aside for protection, this can undermine the performance of MPAs if the goal is to improve both the economic and biological conditions of the fishery (Sanchirico et al. 2002). Catch rates may decrease in the short-term due to fishermen having to relearn how and where to fish when they are displaced from favored fishing grounds (Guenther et al. 2015). Fishers may also have to travel farther to access fishing grounds with high catch rates, increasing their costs and altering the distribution of fishing effort (Smith and Wilen 2003). Such short-term losses present an obstacle to stakeholder support for MPAs, as well as to managers looking to maximize the socioeconomic benefits of fisheries.

Stakeholders, including fishermen and conservationists, designed California's new MPA network while reflecting on tradeoffs between ecosystem protection and socioeconomic considerations (Saarman et al. 2013; Gleason et al. 2013; CDFW 2016a). During the MLPA redesign and siting process, California engaged in a novel and unique approach to MPA planning in regard to economic analyses alongside biological considerations using two complementary analytical approaches (White et al. 2013). The first approach was to estimate the maximum potential dollar value of economic impacts in a static short-term, "worst case" socioeconomic scenario (i.e., account for no spillover, no relocation of fishing effort, etc.). The second approach was to estimate the maximum potential dollar value of economic impacts in a dynamic long-term, equilibrium-based scenario (i.e., account for changes in spatial distribution of biomass and catch, oceanographic models of larval connectivity, etc.). This approach to MPA design allowed stakeholders to consider the usual MPA factors (i.e., MPA size, age, degree of protection, level of fishing effort pre-MPA, etc.) in addition to a suite of non-MPA factors (i.e., variability in target species abundance, catchability, and market value/infrastructure) when designing MPA proposals.

Informational and management needs for Marine Protected Areas

A primary objective of California's MPA network was to improve the existing design and management of MPAs relative to the goals and requirements of the MLPA. The MPAs are intended to be used as potential tools to complement fisheries management to maintain and improve ocean resources (CDFW 2016a). While MPAs have several potential benefits for fisheries, they are not a panacea for fisheries management (Sainsbury and Sumaila 2003; Willis et al. 2003; Hilborn et al. 2004; Kaiser 2005). Multiple studies have shown that the ability of MPAs to benefit fisheries requires that very specific conditions be met, including: 1) the presence of specific habitat and life history characteristics; 2) the source-sink dynamics between closed and open areas; and 3) properly siting MPAs to take advantage of these conditions (Agardy et al. 2011).

Monitoring within MPAs is essential to integrating MPAs into existing fishery management frameworks. This appendix has highlighted some of the informational needs that must be met to ensure that MPAs benefit nearby fisheries. They include, but are not limited to, an understanding of the following:

- Level of fishing prior to MPA implementation.
- Home range of species relative to size of MPA.
- Larval connectivity between fished and unfished areas.
- Size and age structure of species protected within MPAs, and how this changes over time.

- Abundance/density of stocks within MPAs.
- Whether the habitat inside MPAs is representative of nearby areas outside MPAs.

Moving forward, the Department and the OPC are collaborating to develop a statewide MPA Monitoring Action Plan. This Action Plan will provide an opportunity for the Department to ensure that long-term monitoring design and data collection efforts assist in the management of California's fisheries.

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Appendix E – Interim List of Priority Fisheries

The interim priority list in Table E1 is based on the results of a PSA conducted by the Department, in partnership with MRAG Americas, Inc and OST. See http://www.oceansciencetrust.org/wp-content/uploads/2017/07/CDFW-PSA-Report-on-Select-CA-Fisheries_Final-.pdf for information on the PSA’s methodology and results. This interim priority list is intended to help guide Department efforts while the more comprehensive prioritization approach described in Chapter 2 is implemented.

Table E1. Interim list of priority fisheries based on Productivity and Susceptibility Analysis results.

Priority	Fishery - (C) commercial; (S) sport	Gear
High	Barred Sand Bass (S)	Hook-and-line
	Brown Smoothhound Shark (S)	Hook-and-line
	CA Sheephead (C)	Trap
	CA Sheephead (S)	Hook-and-line
	CA Spiny Lobster (C)	Trap
	CA Spiny Lobster (S)	Hoop net
	Giant Red Sea Cucumber (C)	Trawl
	Kelp Bass (S)	Hook-and-line
	Ocean Whitefish (S)	Hook-and-line
	Pacific Angel Shark (C)	Gill net
	Pacific Herring (C)	Gill net
	Red Abalone (S)	Abalone iron
	Spotted Sand Bass (S)	Hook-and-line
	White Seabass (C)	Gill net
	White Sturgeon (S)	Hook-and-line
Medium	Barred Surfperch (S)	Hook-and-line
	CA Barracuda (C)	Hook-and-line
	CA Barracuda (S)	Hook-and-line
	CA Bay Shrimp (C)	Beam trawl
	CA Halibut (C)	Trawl
	CA Halibut (C)	Gill net
	CA Halibut (C)	Hook-and-line
	CA Halibut (S)	Hook-and-line
	Geoduck Clam (S)	Clam fork
	Market Squid (C)	Purse seine
	Pink Shrimp (C)	Trawl
	Red Sea Urchin (C)	Trap

	Spot Prawn (C)	Trap
	Warty Sea Cucumber (C)	Diver
	White Seabass (S)	Hook-and-line
Low	Bonito (C)	Hook-and-line
	Bonito (S)	Hook-and-line
	Brown Rock Crab (C)	Trap
	CA Corbina (S)	Hook-and-line
	Dungeness Crab (C)	Trap
	Dungeness Crab (S)	Trap
	Jacksmelt (C)	Hook-and-line
	Kellet's Whelk (C)	Trap
	Night Smelt (C)	A-frame
	Pacific Hagfish (C)	Trap
	Pismo Clam (S)	Clam fork
	Redtail Surfperch (C)	Hook-and-line
	Ridgeback Prawn (C)	Trawl
	Shiner Surfperch (C)	Trap
	White Croaker (S)	Hook-and-line

Appendix F – Marine Life Management Act-based Assessment Framework

This appendix provides an overview of a software-based assessment framework, the MLMA-based assessment framework, developed by the Center for Ocean Solutions during the information gathering phase of the Master Plan amendment process (Hazen et al. 2017). As with the other appendices, it is anticipated this overview will continue to be expanded and refined as part of Master Plan implementation so it can serve as an effective resource to managers and stakeholders.

As referenced in Chapter 3, the MLMA-based assessment framework was co-developed by Department staff and scientists, and is designed to provide a systematic, practical, and flexible means to measure California fisheries management. The assessment framework can help identify future needs and direction in ESRs and can be applied at the outset of an FMP development process to help scope the effort by identifying areas where management efforts should be directed. This can allow the Department to systematically identify future management needs, prioritize limited resources, and effectively communicate decision-making rationale.

The assessment framework was created through the careful repurposing of relevant metrics from well-known, widely-applied sustainability assessment frameworks, peer-reviewed literature, and experts. It has been extensively reviewed and tested by Department staff.

Structure and organization of the Marine Life Management Act-based Assessment Framework

The assessment framework comprises six questionnaires, each containing metrics associated with the following requirements of the MLMA, respectively:

1. Manage for abundance of the target stock(s).
2. Minimize unacceptable bycatch.
3. Maintain, restore, and enhance habitat(s).
4. Conserve entire ecosystems.
5. Minimize adverse effects on fishing communities.
6. Ensure good management process (compliance, evaluation, and stakeholder engagement).

The main component of the questionnaires is a list of metrics. The first four questionnaires (#1-4) deal with the ecological outcomes of management efforts. These questionnaires contain metrics that assess how much scientific information is available for the fishery, the effects of the fishery on the stock(s) and associated marine resources, and the management measures currently in place to address potential and/or known effects. Specifically, the metrics within each questionnaire are organized into the following three categories, consistent with the structure of the MLMA's goals:

- *Understand*: Managers understand the basic sustainability concerns for each fishery and identify scientific information relevant to affected marine resources and fishing activities.
- *Assess*: Managers assess the magnitude of effect the fishery has on the biophysical system and how management measures affect fishing communities.
- *Manage*: Managers take action to address actual and potential impacts of the fishery and management activity.

The questionnaire on minimizing adverse effects on fishing communities (#5) is based on the broad MLMA goals of recognizing the interests of fishery participants and minimizing adverse impacts to fishing communities. This questionnaire contains metrics that assess understanding of the fishery participants and their concerns and effects of regulation on fishing communities. Metrics within the final questionnaire on management processes (#6) focus on compliance, data needs, research plans, evaluation of management actions and responsiveness to those evaluations, and stakeholder engagement throughout the management process. The metrics are primarily in multiple choice format, but some require the input of narrative information.

Each questionnaire was developed with several principles in mind:

- *Flexible:* The questionnaire balances guidance and discretion. Metrics provide enough guidance so that the differences between various responses are clear and defined. The questionnaire also provides enough discretion to enable the assessment of a diverse array of fisheries that may be characterized by different ecological and socioeconomic issues and managed using distinct management strategies.
- *Manageable:* The questionnaire is a reasonable length.
- *Theoretically sound:* The questionnaire is based on best available science and best practices in fisheries management.
- *Legally accurate:* The questionnaire accurately evaluates legal compliance and requires no more or less than the MLMA.

The questionnaires that compose the assessment framework are generally linear. The respondent should answer questions in numerical order, except where the questionnaires provide explicit instructions to do otherwise. Guidance and text about navigating to various sub-questions is included in the questionnaires to demonstrate the intended flow of the self-assessment.

In addition to the metrics, each questionnaire has several additional components. User guidance is incorporated throughout the questionnaires, pointing the questionnaire-taker to specific, vetted examples, definitions, and useful tools developed elsewhere. Such guidance is expected to result in more accurate and consistent answers and direct managers to possibilities for improving management strategies and outcomes. An uncertainty scale and best available science scale are included to reduce response biases and gain further useful information for scoping and prioritizing future management actions. These components are designed to gauge the precision and rationale underlying responses to each question. The uncertainty scale appears after each question and the best available science scale follows certain questions (e.g., queries about the collection of scientific information or making decisions based on scientific information). Space for comments is provided after each question where the questionnaire-taker can identify missing information, barriers, or any other comments that allow for more discretionary and narrative responses that can inform future management decisions.

Suggested best practice for utilizing the Marine Life Management Act-based Assessment Framework

Step 1. Identify the appropriate person(s) to complete the questionnaire(s).

Several options for utilizing the assessment framework exist. The Department could self-assess their management outcomes and identify both successes and areas for potential improvement. In a complementary or collaborative manner, outside entities such as Sea Grant, OST, academic, or other institutions could use the assessment framework as a mechanism for scientific peer review. Lastly, the Department could apply the framework in collaboration with interested constituents as an approach for improved engagement and dialogue.

Step 2. Conduct assessment.

Completing the entire assessment may require reference to management documents and/or consultation with colleagues. Two of the questionnaires—bycatch (#2) and habitat (#3)—are designed to be taken for each different fishing sector (i.e., recreational and commercial) or gear type in the fishery. The remaining questionnaires are designed to be taken only once for each fishery. However, if the reviewer feels that the geography or fishing activities of different sectors warrants multiple assessments under any of the remaining questionnaires, the reviewer has discretion to do so. For example, if a fishery has a northern and southern component, and different stock health information that is specific to each, the reviewer should take the managing target stock questionnaire (#1) separately for the two geographic components.

As noted above, each questionnaire contains metrics and several additional components. Each question is accompanied by background and guidance, designed to define key terms and provide specific examples where appropriate. Each question is followed by a comment box that may be used to provide narrative explanations, identify gaps in understanding, or specify other important information. Comments are fully incorporated into the assessment results and have the potential to add valuable information to the outputs where gaps in understanding or uncertainty about the most accurate response exist. Certain questions are also accompanied by confidence scales that track how certain the reviewer is that the response selected fully captures the fishery being assessed. This scale can be used to identify when the reviewer feels that none of the possible responses are entirely accurate, that an accurate response falls somewhere between the possible responses, or that data are too sparse to answer with full confidence. Low confidence scores should be explained in the comment box. Finally, many questions are accompanied by a request to identify the sources of information that support either the scientific understanding of the fishery or the management measures that have been implemented for the fishery. The categories of sources are defined each time they appear.

Step 3. Review results to scope and prioritize future management actions and resource allocation.

The results of this assessment framework can be used to scope and prioritize future management actions and to efficiently allocate resources. Designed to evaluate consistency with the MLMA, the framework generates a comprehensive picture of the current status of implementation. The Department can use these results to inform development of management documents (e.g., ESRs and FMPs) within the new scaled management approach and other management actions or decisions. Outputs will also be valuable for informing internal discussions, facilitating communication with constituents about management outcomes and processes, allocating limited resources to focus on areas of need, or directly supporting decision-making through clearer identification of priorities.

The following are suggested options for quantifying and visualizing results:

- *Unweighted:* The possible responses for each metric sum to a maximum value of 1, with each individual response allocated an equal fraction thereof. For example, for a question with four possible responses where the lowest answer represents “no information available” the values are 0, 0.33, 0.66, and 1.0. The mean value is then calculated for each set of answers, per questionnaire.
- *Weighted:* A weighting scheme could be applied to individual responses, questions, categories, questionnaires, or some combination of the aforementioned. For example, critical questions can be identified by reviewing the metrics and selecting those deemed most important as a policy matter. Specific multipliers (i.e., 1.5, 2) can then be applied to the results of these questions to reflect their importance. Proposed weighting schemes should be vetted by experts familiar with California fisheries and the assessment framework.
- *Threshold:* A threshold methodology could set pre-determined results for questions, categories, or questionnaires that are used to indicate an area of concern. Utilizing the underlying scoring

methods from either the unweighted or weighted options, selecting thresholds would translate results into a system akin to “pass/fail” or “no concern/concern.”

Once an option for quantifying results is selected, results can be presented through a series of summary tables with all the assessment framework’s questions and selected responses for a hypothetical fishery. The tables can include descriptions of the questions and display the total response value, the response value per category, and the response value per question (Table F1). Tables can also include weighting and thresholds (Table F2).

Table F1. Summary results for the “Manage for Abundance of the Target Stock” questionnaire (adapted from Hazen et al. 2017).

Category	Question number	Short description	Response value	Value per category	Total value
INFORMATION 2 questions	Q1	Information on fishery and stock to support management decisions	52%	43%	80%
	Q2	Ongoing collection of data sufficient to support management decisions	33%		
ASSESSMENT 5 questions	Q3	Criteria defining depressed fisheries in place	100%	92%	
	Q4	Presence of stock assessment	100%		
	Q5	Result of stock assessment	75%		
	Q6	Presence of risk-based assessment	N/A		
	Q7	Result of risk-based assessment	N/A		
MANAGEMENT 4 questions	Q8	Frequency of revision of the stock assessment	100%	100%	
	Q9	Management strategy to control exploitation in healthy fisheries	100%		
	Q10	Management strategy to minimize non-fishing pressures on depressed stock	N/A		
	Q11	Management strategy to control exploitation and rebuild overfished stocks	N/A		

Table F2. Summary results for the “Maintain, Restore, Enhance Habitat” questionnaire (adapted from Hazen et al. 2017). Includes weighting and areas of concern based on pre-determined thresholds.

Category	Area of concern	Weight	Question number	Response value	Value per category	Total value	New value per category	New total value	
INFORMATION 3 questions		1	Q1	50%	63%	72%	69%	75%	
		1.5	Q2	100%					
		1	Q3	40%					
ASSESSMENT 4 questions		1	Q4	N/A	78%		73%		
	X	2	Q5a	33%*					
		1	Q5b	100%					
		2	Q5c	100%					
MANAGEMENT 3 questions		1.5	Q6	50%	75%		82%		
		1	Q7	75%					
		3	Q8	100%					

Key

X= Area of concern; *Italics*= A critical question (“up-weighted”); Asterisk (*)= Score of a critical question under a certain threshold (e.g., <35%)

Results can also be translated into visual representations of data (e.g., figures, charts, or diagrams) to compare areas of concern within a fishery or overall results for multiple fisheries. Example conceptual results for hypothetical fisheries are included in Figures F1 and F2.

Figure F1 provides a visual way to compare elements of an individual fishery, as a step toward allocating resources and prioritizing management action. It demonstrates that focusing management efforts and resources on minimizing bycatch and maintaining habitat would likely result in more significant gains than focusing on managing the target stock or conserving ecosystem functions for this fishery.

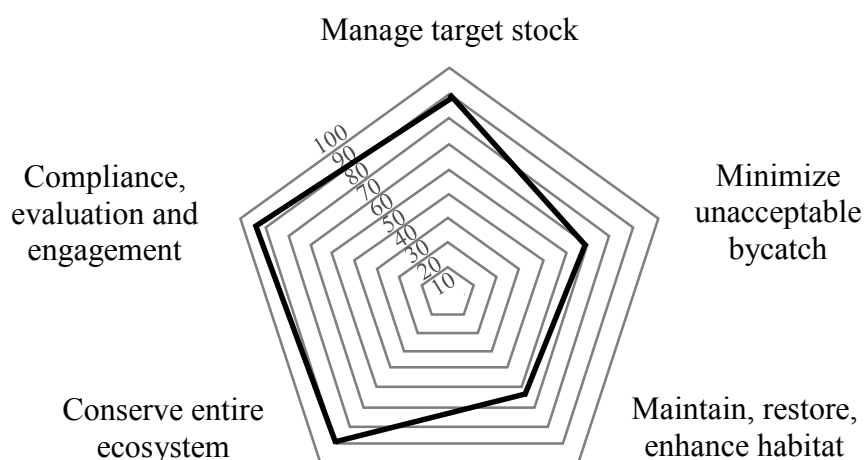


Figure F1. The current state of Marine Life Management Act implementation for a hypothetical fishery across five questionnaires on a scale from 0% to 100% (adapted from Hazen et al. 2017).

Figure F2 provides an example visual to compare the overall implementation results for a suite of hypothetical fisheries. Specifically, this figure demonstrates that hypothetical Fishery 1 is furthest from full achievement of the goals of the MLMA, while Fishery 9 is the closest. A cutoff line of 55% implementation is included to demonstrate the possible use of a threshold for triggering resource allocation or management review.

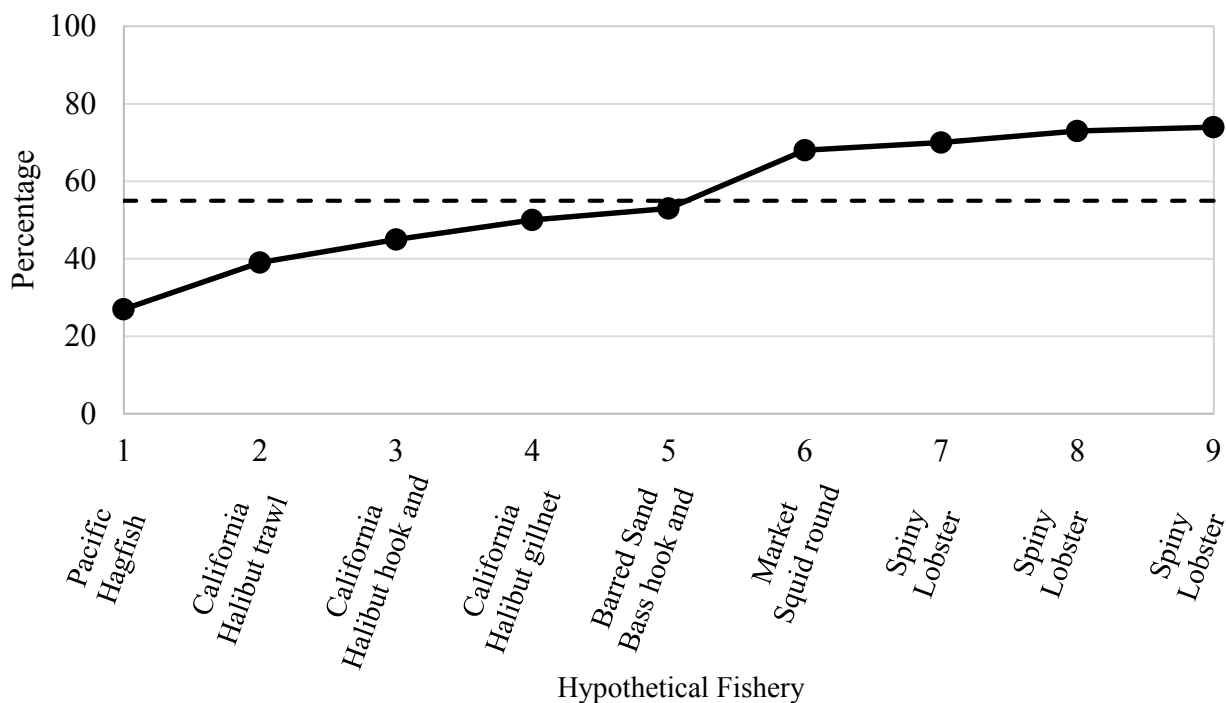


Figure F2. Overall response values for a suite of hypothetical fisheries on a scale from 0% to 100% (adapted from Hazen et al. 2017).

Step 4. Regularly revisit and review.

After using the assessment framework for scoping initial management actions and priorities, the Department can reapply it periodically, on an as-needed basis, or as resources permit. If conducted regularly, this self-reporting exercise will allow the Department to monitor the effectiveness of management, prioritize efforts and allocation of resources, and facilitate adaptive management. The assessment process and/or results can also serve as a stakeholder engagement and communication tool. While an initial assessment is expected to take several hours to complete, subsequent assessments will likely require significantly less time and resources, as the results of previous assessments will provide a baseline. If the need exists to only analyze or reanalyze one component of management (e.g., bycatch), the Department can use the questionnaires individually.

References

Hazen, L., D. Gourlie, and E. Le Cornu. 2017. An MLMA-based Assessment Framework: A Practical Tool for Tracking Management under the California Marine Life Management Act. Stanford Center for Ocean Solutions.

Appendix G – Stakeholder Engagement Strategies and Considerations

This appendix contains brief descriptions and considerations associated with individual strategies for stakeholder engagement. The appendix draws from an overview of stakeholder engagement strategies developed by Kearns and West and the Center for Ocean Solutions during the information gathering phase of the Master Plan amendment process (Kearns & West and Center for Ocean Solutions 2017). As with the other appendices, it is anticipated this overview will continue to be expanded and refined as part of Master Plan implementation so it can serve as an effective resource to managers and stakeholders.

The overview was developed with the input of a range of stakeholders, including commercial Halibut, Herring, Spiny Lobster, and Sea Urchin fishermen. Recreational Abalone, **Commercial Passenger Fishing Vessel (CPFV)**, private vessel, kayak, spear, and pier fishermen also provided input, as well as NGOs. Table G1 provides guidance on which strategy may be most effective at achieving the possible management goals as outlined below and further discussed in Chapter 4.

Potential strategies are organized into two groups: passive strategies and active strategies. Passive strategies do not require direct engagement with individual stakeholders, are generally easier to conduct, and have the potential to reach large audiences. Passive strategies provide less feedback and do not necessarily build the same relationships or engage or empower stakeholders to the same degree as active strategies. They are often best used when the engagement need is purely focused on information sharing. Active strategies provide a better chance of receiving information and engaging stakeholders in meaningful ways. Active strategies, however, typically require greater effort and need to be carefully planned to ensure the engagement is effective.

Passive Engagement Strategies

BLOGS

Description:

- Blogs are an internet-based method for writing informally about management status and processes. Managers use blogs to share information and ideas.
- Comments can provide a forum for more active engagement, but must be carefully moderated, which can significantly increase workload and effort.

Purpose:

- Managers can use blogs as an online Frequently Asked Questions message board, increase the visibility of management staff perspectives, and highlight current management interests and concerns.
- Stakeholders can use blogs to highlight their own perspectives and share information, updates, and ideas about the marine resource.

Required resources:

- Staffing: Low – Medium
 - Write blog posts and, if needed, respond to comments on a regular basis.
- Budget: Low

EMAILS

Description:

- Emails typically include relatively brief messages used to inform or share information with intended recipients. Emails may also contain attached documents. Recipients may range from individuals to large groups of stakeholders accessed via a listserv.

Purpose:

- Personal emails to key individuals can help build relationships and create two-way dialogue between active marine resource participants and managers.
- Mass emails to stakeholders and listservs can serve to efficiently disseminate timely information to a targeted audience.

Required resources:

- Staffing: Low
- Budget: Low

NEWSLETTERS

Description:

- Electronic newsletters can be used to disseminate information to a large number of stakeholders in a formal and consistent manner.

Purpose:

- Newsletters communicate a message to a large number of stakeholders (e.g., upcoming management changes or rulemaking processes).

Required resources:

- Staffing: Low – Medium
 - Draft, vet, and send newsletters on a consistent, as-needed basis, and maintain and update the newsletter listserv contacts.
- Budget: Low

PHONE APPLICATIONS

Description:

- Phone applications provide cell phone users with a method to input information about marine resource conditions and catch, or to quickly and efficiently receive information.

Purpose:

- Phone applications provide a fast and easy method for managers to collect real-time data about resource collection, marine resource conditions, and socioeconomic and demographic information.
- Managers can use applications to disseminate timely information about updated resource regulations, current rulemaking processes, and other relevant information.

Required resources

- Staffing: Low
- Budget: Medium

SOCIAL MEDIA

Description:

- Facebook, Twitter, Instagram, Flickr, and YouTube are examples of online social media tools that can be used to inform a large number of people (beyond those on existing listservs) of key information and increase the visibility of managers among specific stakeholder groups.

Purpose:

- Social media is a low-cost and efficient method for reaching a large number of people, including marine resource stakeholders who may be underrepresented in other engagement processes or the general public. Social media requires more effort to ensure it is current, interesting, and providing the information that users are seeking. It does not engage people who are more passively waiting for information to be delivered.
- Comments can provide a forum for more active engagement, but must be carefully moderated, which can significantly increase workload and effort.

Required resources:

- Staffing: Low – Medium
 - Maintain social media accounts and current content. If applicable, respond to comments and manage dialogue.
- Budget: Low

PRINTED MATERIAL (PAMPHLETS/FLYERS/POSTERS)

Description:

- Educational and information pamphlets, flyers, and posters can be placed in locations where recreational and/or commercial fishermen are known to frequent (e.g., tackle shops, fuel docks, marine supply stores, and other marine-related businesses). Management information in the form of flyers or brochures can be placed at the check-out counter or storefront or posted on bulletin boards in these locations to disseminate details to stakeholders that may not have access to information shared electronically.

Purpose:

- Distribute timely information efficiently to a broad stakeholder audience. Sharing messages in this fashion is particularly helpful when the stakeholder groups are undefined, speak a different language, or are difficult to reach using electronic methods.

Required resources:

- Staffing: Low
 - Develop, vet, and distribute flyers.
- Budget: Low – Medium
 - Print and distribute materials.

WEBSITES

Description:

- Websites are internet sites where structured and searchable information can be shared.

Purpose:

- Websites have the capacity to inform a large number of stakeholders about agency structure, process, and activities.

- Websites can have varying degrees of interactivity, including online comment sections, videos, live feeds, or links to other methods of engagement (e.g., blogs, newsletters, documents, etc.). Websites require people to seek information out and will not reach passive stakeholders who are expecting information to be provided more directly.

Required resources:

- Staffing: Low – Medium
 - Maintain the website and generate material.
- Budget: Low – Medium
 - Custom website designs and applications increase costs.

PRESS RELEASES

Description:

- Press releases are written or recorded communication directed at members of the news media to announce something newsworthy (often a major project milestone or regulatory decision).

Purpose:

- Press releases reach a broad audience quickly, inform members of the public about a major decision or milestone, and target individuals who may not otherwise be aware of marine resource management.

Required resources:

- Staffing: Low
- Budget: Low

Active Engagement Strategies

WRITTEN PUBLIC COMMENT

Description:

- Written public comment is an opportunity for members of the public to provide input (e.g., via email, letter, or online forum) on draft policy and regulatory documents. This can take place as part of a formal regulatory process. Resource managers can also solicit written comments on draft materials or concepts in the pre-regulatory phase.

Purpose:

- Public comment provides marine resource managers or agency staff with a formal written record of public opinion on a regulatory process.
- Public comment provides stakeholders with an opportunity to provide input to inform management decisions, both early in planning processes and during formal regulatory processes.
- Public comment does not necessarily require a response but can help influence responses at a later date.

Required resources:

- Staffing: Low – High
 - Staff time for written public comment is entirely dependent on the number of comments received and on whether marine resource managers plan to, or are required to, respond to the comments (this acknowledges that agencies cannot always respond to all comments).

- At a minimum, one staff or project/regulatory lead and one support staff will be needed to manage, catalogue, and respond to public comments as they come in. Resource managers often contract these services out to an outside consulting firm to support large-scale efforts.
- Budget: Low – Medium
 - For larger projects, likely will require use of external consultant.
 - Assumes consultant would manage, catalogue, and respond to public comments as they come in.

ONLINE FISHING FORUMS

Description:

- Online forums are similar to social media feeds targeted to a specific interest group. Proactive participation in forums allows staff to virtually meet stakeholders to exchange ideas and build an understanding of stakeholder interests.

Purpose:

- Online forums provide a venue to increase the visibility of management staff, promote agency messaging within trusted channels, and limit the proliferation of unclear or inaccurate information.
- Online forums, if not moderated by the agency, can often lead to ineffective, off topic, or even inappropriate engagement that is counterproductive to the intended use.

Required resources:

- Staffing: Low – Medium
- Budget: Low

SURVEYS

Description:

- An evaluation or information collection technique consisting of a series of questions designed to solicit opinions from stakeholders on specific marine resource management issues and/or to collect data (e.g., human dimensions of the resource or otherwise). Surveys can be distributed online or via hard copy to be completed in-person or mailed by the respondent at a later date.

Purpose:

- Surveys solicit input on a specific topic from a targeted list of stakeholders, such as evaluating the socioeconomic demographics of a marine resource or soliciting feedback on a proposal for a management alternative.
- Surveys need to be carefully designed to achieve the desired outcome and can suffer from low response rates, limiting their applicability in some cases.

Required resources:

- Staffing: Medium
- Budget: Low

POLLING

Description:

- Polling samples or collecting opinions on a subject from either a selected or a random group of stakeholders. Polling can be done through a survey or real time using mobile devices (i.e., mobile polling).

Purpose:

- Polling is similar to surveys but with a greater level of specificity (usually a single or small number of questions). The purpose of a poll is to solicit input on a specific issue quickly.
- If taken in person, polling results can provide greater participation than simple surveys.

Required resources:

- Staffing: Medium – High
 - Staff are needed to design, implement, compile, and interpret results of a poll.
- Budget: Medium – High

PHONE CALLS

Description:

- Phone calls are an opportunity for staff to communicate orally with individual stakeholders. These may be initiated by staff or the stakeholder.

Purpose:

- Phone calls provide staff with an informal opportunity to reach out directly to individual stakeholders to ask questions, receive input, and build relationships.
- Phone calls initiate two-way communication to test ideas on sensitive subjects; this may be useful in cases where stakeholders or marine resource managers do not feel comfortable creating a written record.

Required resources:

- Staffing: Low
 - Variable depending on communication needs.
- Budget: Low

CONFERENCE CALLS

Description:

- Managers engage a group of stakeholders remotely via telephone.

Purpose:

- Conference calls facilitate two-way dialogue between marine resource managers and stakeholders.
- They provide an efficient and accessible method of engagement by reducing the cost and travel time for participants.

Required resources:

- Staffing: Low – Medium
 - Plan, convene, schedule and lead calls. Notes and summary documents are often provided after calls to provide a written record of the discussion.
- Budget: Low

FISHERY ASSOCIATION MEETINGS

Description:

- Managers attend marine resource association meetings convened by industry associations or recreational marine resource users to make announcements and meet stakeholders.
- Association meetings usually involve their membership and may also include the broader resource user community.

Purpose:

- Attending association meetings provides marine resource managers with the opportunity to present and share information directly to resource users.
- Managers can receive input from resource users in an environment where they are likely to share information more freely than in a venue with more conflicting interests present (e.g., an advisory group).
- Attending association meetings is an efficient method for meeting marine resource users face-to-face and building relationships.

Required resources:

- Staffing: Low – Medium
 - Effort depends on the number and location of meetings and level of pre-planning (e.g., presentation development).
 - Marine resource association meetings are often 1-3 hours and take place close to the docks. Some meetings, however, are full days or even multiple days depending on the association and topic.
- Budget: Low – Medium
 - Travel costs need to be considered.

TRADE SHOWS

Description:

- Trade shows are periodic events (typically annual) that bring together gear suppliers and resource users from commercial and recreational sectors. Agency staff can host a booth at trade shows to disseminate general information about and increase visibility of agency structure, process, and activities.

Purpose:

- Trade show booths can be used to target underrepresented stakeholder groups in conversation, distribute information about agency processes, and generally build trust and visibility among the general public. They are a good opportunity for agency staff to engage in informal, one-on-one discussion with interested resource users.

Required resources:

- Staffing: Low – Medium
 - Plan for and attend trade shows. Frequency of attendance impacts staffing.
- Budget: Low – Medium
 - Travel costs for staff depending on location, as well as any communication materials for dissemination and booth banners.

INFORMAL MEET AND GREETINGS

Description:

- Small group or one-on-one discussions between marine resource managers and stakeholders, often located in public establishments close to the docks.

Purpose:

- Meet-and-greets provide marine resource managers with the opportunity to build personal relationships with individual marine resource users in an informal environment.
- They allow marine resource stakeholders to share concerns and input with marine resource managers in an informal environment.

Required resources:

- Staffing: Low (per meeting)
 - One staff per meeting, with additional staff support as needed.
- Budget: Low

LISTENING SESSIONS

Description:

- Listening sessions are in-person meetings between managers and stakeholders focused on providing a venue for stakeholders to voice their interests and concerns. Managers are present primarily in a listening, rather than information presentation, capacity.

Purpose:

- Listening sessions help managers get a pulse on the range of options for crafting management alternatives, potentially identify creative management opportunities by introducing new perspectives and elevate the voices of underrepresented stakeholder groups.

Required resources:

- Low – Medium (depending on the number of sessions)
- Budget: Low – Medium (depending on the number of sessions)
 - Facilitation materials and travel costs for staff.

OPEN HOUSES

Description:

- Open houses are often structured in an open-floor format with different “stations” placed around a large room. Stakeholders may engage in dialogue with content experts and provide comment as desired.

Purpose:

- Individual stakeholders interact directly with agency staff and build relationships.
- Agency staff have the opportunity to learn of stakeholder issues and key concerns.
- Interested marine resource stakeholders become more knowledgeable about a specific rulemaking process.

Required resources:

- Staffing: Medium – High
 - Develop materials, plan, and participate in the event.
- Budget: Low – High

- Outreach materials and travel costs for staff.

WEBINARS

Description:

- Webinars are virtual meetings with auditory and visual components that allow participants who may be geographically far from one another to share information and dialogue.

Purpose:

- Webinars can be used to communicate management options early in the rulemaking process, educate stakeholders about a particular issue, or electronically stream public meetings. More advanced webinars allow for breakout groups, instant polling, and other innovative tools to provide a high degree of stakeholder input and collaboration in virtual meetings.

Required resources:

- Staffing: Low – Medium
 - Design, market, and manage webinars, plus staff time for individual presentation development and implementation per webinar.
- Budget: Low

KEY COMMUNICATORS

Description:

- Managers work with key members, usually leaders, of a marine resource community and other stakeholder groups as nodes for building trust, communicating with other participants within their marine resource community about management processes, and providing critical feedback on management options.

Purpose:

- By disseminating information to key communicators and requesting they distribute it to their representative communities, key communicators can help build relationships and ensure resource management information is distributed to and received from key stakeholders.
- Key communicators provide a means of engaging hard-to-reach marine resource groups. They speak the same language as users, have established positive relationships within the particular resource community, and are sometimes seen as being able to speak for the group in question.

Required resources:

- Staffing: Low (variable effort depending on the project and how often communication is needed)
 - At least one agency staff member per fishery who is aware of the relevant key communicators for that fishery and maintains contact with them throughout the management process.
- Budget: Low

WORKSHOPS

Description:

- In-person meetings (which can range in duration from one hour to two days) that are informal, problem-solving focused, interactive, and often involve a combination of small group and plenary discussions.

Purpose:

- Workshops provide marine resource managers and stakeholders with the opportunity to interact directly with each other in a small group format as well as in a standard, plenary format.
- Workshops are useful spaces for brainstorming, sharing ideas, joint-problem solving, and trust and relationship building.

Required resources:

- Staffing: Medium – High
 - Workshops tend to be staff intensive, although time for planning and implementation may only be required over 2-3 months.
- Budget: Medium – High
 - Often requires facility rental and use of contractors to assist with planning and facilitation. Travel costs for staff.

EDUCATION PROGRAMS

Description:

- Education programs train stakeholders and increase their understandings of the management process and capacity to engage in scoping or revising management rules.
- Education programs can occur over single or multiple days with the goal of training key stakeholders in how to engage effectively, participate in management processes more generally (e.g., rulemaking 101), and where attendees are given the opportunity to socialize with other stakeholders and agency staff.

Purpose:

- Education programs increase stakeholder understandings of management and engagement processes and thereby better equip them to more fully participate in dialogues about the resource and take on leadership roles.

Required resources:

- Staffing: High
 - Dedicated staff to develop, implement, and manage the educational aspects of agency decision-making processes.
- Budget: Low – High
 - Depends on facility needs and curriculum development.

TOWN HALLS

Description:

- Town hall-style meetings are open, public meetings often structured around a brief presentation on a specific topic followed by time for questions and discussion.

Purpose:

- Town halls give stakeholders an opportunity to speak freely about a specific or general issue of management concern. They can also be structured to disseminate information to a geographically-specific stakeholder community. They are helpful during rulemaking processes or while implementing a management policy as a means of disseminating information and clarifying uncertainties among geographically-specific communities.

Required resources:

- Staffing: Medium – High

- Develop materials, plan, and participate in the event.
- Budget: Low – High
 - Outreach materials and travel costs for staff.

PUBLIC HEARINGS/TESTIMONY

Description:

- Public hearings are opportunities for members of the public to provide verbal testimony at formal public meetings or as part of a regulatory process.

Purpose:

- Public hearings provide marine resource managers or agency staff with a formal spoken record on a regulatory process.
- They provide stakeholders with a formal opportunity to provide input to inform management decisions.

Required resources:

- Staffing: Medium – High
 - Public hearings often require high-level staff and support staff.
- Budget: Low – High (depends on whether external facilitation is needed and how many meetings are involved)
 - Low (if a single meeting and if convened and facilitated by an existing Board or Commission)
 - Medium – High (if multiple meetings, facilities, and external facilitation are required)

STAKEHOLDER ADVISORY GROUPS

Description:

- Stakeholder advisory groups are multi-interest bodies of appointed stakeholders convened for a pre-determined period of time to provide individual or collective advice to a decision-making body. Stakeholder advisory groups can serve to identify key issues, generate management alternatives, or liaise between managers and advisory group constituencies. They typically have charters describing their core charge and participants, and can meet once or multiple times.
- There are two kinds of stakeholder advisory groups:
 - Standing stakeholder advisory groups (often required by statute or regulation):
 - Typically focused on a particular fishery.
 - Typically meet at set intervals throughout a year.
 - Formalized, rotating membership.
 - Ad hoc stakeholder advisory groups:
 - Typically focused on a particular policy, planning, or regulatory issue.
 - Typically convened for multiple meetings. May range from a few months to multiple years.

Purpose:

- For either standing or ad hoc advisory groups, the purpose is to solicit collaborative input from a group of individuals representative of larger interest groups (e.g., fishing industry, NGOs,

recreational interests, research, regulators, etc.) to support development of solutions to policy challenges.

Required resources:

- Staffing: High
 - Staffing assignments are largely dependent on the size of the group in question. For smaller advisory groups, a single staff member, one support staff, and one group facilitator may be sufficient. Larger groups may require additional staff to support group activities.
- Budget: High (assuming at least four advisory group meetings)
 - Cost will depend on the number of meetings and the complexity of the advisory process.
 - Third-party, neutral, professional facilitation is often necessary.

COLLABORATIVE FISHERIES RESEARCH

Description:

- Managers, researchers, and fishermen co-design and co-conduct research to assess marine resource status or test a management option. Note that the engagement component of CFR is secondary to the primary purpose of conducting research.

Purpose:

- CFR evaluates hypotheses around the efficacy of various management alternatives or tests specific management-relevant technology.
- CFR serves to engage marine resource stakeholders with relevant context or expertise in a rigorous and intensive process of formulating research questions and executing research design, thus fostering and building relationships and trust in the process.
- CFR increases buy-in and ownership of the decision-making process, increases transparency around the use of data in decision-making, improves the valuation of scientific information in decision-making, and motivates co-development of management goals.

Required resources:

- Staffing: High
- Budget: High

Table G1: Engagement strategy effectiveness for achieving specific engagement goals (adapted from Kearns & West and Center for Ocean Solutions 2017).

Engagement strategy	Build trust	Efficiency educate	Build relationships	Engage underrepresented stakeholders	Socioeconomic	Research	Inform	Solicit input	Involve	Collaborate	Empower
<i>PASSIVE STRATEGIES</i>											
Blogs	SL	ML	SL	LL	LL	LL	ML	SL	SL	LL	LL
Emails	SL	SL	SL	ML	SL	LL	ML	SL	SL	SL	LL
Newsletters	LL	SL	SL	ML	SL	LL	ML	LL	SL	SL	LL
Phone applications (Apps)	LL	ML	LL	LL	LL	ML	ML	LL	SL	LL	LL
Social media	SL	ML	SL	SL	ML	LL	ML	ML	ML	LL	LL
Printed materials	LL	SL	LL	LL	ML	LL	ML	LL	SL	LL	LL
Websites	LL	ML	LL	LL	LL	LL	ML	LL	LL	LL	LL
Press releases	LL	ML	LL	LL	LL	LL	ML	LL	LL	LL	LL
<i>ACTIVE STRATEGIES</i>											
Written public comment	LL	SL	LL	LL	LL	LL	LL	LL	SL	LL	LL
Online fishing forums	SL	SL	LL	SL	SL	LL	ML	SL	SL	LL	LL
Surveys	LL	ML	LL	LL	LL	ML	LL	LL	LL	LL	LL
Polling	LL	SL	LL	LL	LL	ML	LL	LL	LL	LL	LL
Phone calls	SL	SL	LL	SL	SL	LL	ML	SL	LL	SL	LL
Conference calls	LL	ML	LL	SL	LL	LL	ML	SL	SL	LL	LL

Fishery association meetings	ML	ML	SL	ML	LL	LL	ML	SL	SL	LL	LL
Trade shows	SL	SL	LL	SL	ML	LL	ML	SL	LL	LL	LL
Informal meetings	ML	SL	SL	ML	ML	LL	ML	ML	ML	LL	LL
Listening sessions	SL	SL	LL	SL	SL	LL	SL	ML	SL	LL	LL
Open house	ML	ML	ML	ML	SL	LL	ML	SL	SL	LL	LL
Webinar meetings	SL	ML	SL	LL	LL	LL	ML	SL	SL	LL	LL
Key communicators	ML	ML	ML	ML	ML	LL	ML	ML	ML	LL	LL
Workshops	SL	SL	SL	SL	LL	LL	ML	ML	ML	SL	LL
Education programs	ML	ML	ML	ML	SL	SL	ML	ML	ML	LL	LL
Townhalls	LL	SL	LL	SL	LL	LL	ML	LL	SL	LL	LL
Public hearings	LL	SL	LL	LL	LL	LL	SL	ML	LL	LL	LL
Stakeholder Advisory groups	ML	LL	SL	ML	ML	LL	ML	ML	ML	ML	SL
Collaborative research	ML	LL	ML	ML	SL	SL	SL	ML	ML	ML	ML

References

Kearns & West and Center for Ocean Solutions. 2017. California State Fisheries Stakeholder Engagement User Manual. Accessed at http://ca-fisheries-engagement.s3-website-us-west-2.amazonaws.com/user_manual.pdf

Appendix H – Essential Fishery Information and Data Collection Strategies

Data collection is an essential component of fisheries management. Data collected through ongoing monitoring provides the scientific and technical information necessary to understand fishery operations, estimate the status of exploited stocks, evaluate fishery impacts on the ecosystem, and develop appropriate management regulations. It is this ongoing source of information that allows future management decisions to be adaptive, even when there is uncertainty during the design phase. A well-designed data collection and monitoring program is central to meeting management objectives.

The Master Plan is required to contain a description of the research, monitoring, and data collection efforts that the Department conducts (§7073(b)(3)). This appendix defines the various kinds of biological, ecological, and socioeconomic EFI and maps them onto the categories of data needed to make fishery management decisions. It then gives an overview of the types of data collection protocols that can be used to collect the various kinds of data required for fisheries management and describes the monitoring procedures in place in California. Finally, it describes some alternative sources of data that may be available when it is necessary to assess data-poor fisheries that lack historical information.

As with the other appendices, it is anticipated this overview will continue to be expanded and refined as part of Master Plan implementation so it can serve as an effective resource to managers and stakeholders.

Primary data needs for fisheries management

Fisheries management is primarily concerned with estimating the abundance of a fish stock and determining whether it is at a healthy level. Data is collected and analyzed to monitor fish stocks and estimate stock status. This is primarily done by fitting data to population models, also known as stock assessments, or by using other analytical techniques to estimate a metric of stock status (see Appendix I for more information).

Stock assessments usually require three primary categories of information: abundance, biological, and catch data. These three types of data and their collection methods are described in Table H1.

Table H1. Description of types of data used in fisheries management and their collection methods.

Data	Definition	Types of Data	Collection Methods
Abundance	Absolute or relative index of the number or weight of fish in the stock.	Size and/or weight of fish collected or observed per sample unit.	Statistically-designed, fishery-independent survey that samples fish at many locations throughout the stock's range. CPUE can be used as a proxy for abundance.
Biological	Information on population dynamics processes.	Fish size, age (via otoliths or scales), maturity, fecundity, natural mortality, and movement.	May be collected during fishery-independent surveys or tag-recapture studies, or be obtained from observers and other fishery sampling programs. Academic programs and cooperative research with the fishing industry are other important sources of biological data.
Catch	The amount of fish removed from a stock by fishing, and the effort used to remove those fish.	Number, weight, and species composition of removals (including discards). Effort data, including type and amount of gear used, time, day, and location of fishing.	Dockside monitoring (also known as port sampling), logbooks, on-board observers, EM, and telephone surveys.

Additional data needs for fisheries management

While Table H1 summarizes the core data needs for assessing the status of target stocks and developing HCRs, the population health of target stocks is just one component of fisheries. Fisheries are complex socioecological systems, and the MLMA specifies both socioeconomic and ecological goals and objectives for management of the state's fisheries.

As discussed in Chapter 7, the MLMA's socioeconomic objectives for fishery management include: 1) observing the long-term interests of people dependent on fishing for food, livelihood, or recreation (§7056(i)); 2) minimizing the adverse impacts of fishery management on small-scale fisheries, coastal communities, and local economies (§7056(j)); and 3) being proactive and responding quickly to changing environmental conditions, and market or other socioeconomic factors, and to the concerns of fishery participants (§7056(l)). In addition, the MLMA requires that FMPs include a summary of the economic and social factors related to the fishery (§7080(e)). If additional conservation and management measures are included in an FMP, a summary of the anticipated effects of those measures on relevant fish populations and habitats, fishery participants, and coastal communities and businesses that rely on the fishery (§7083(b)) is needed.

Additionally, as fisheries management agencies around the world move towards EBFM, there is increased focus on collecting data to monitor the impacts of fishing at the ecosystem level. The MLMA lists the following as an objective: “Support and promote scientific research on marine ecosystems and their components to develop better information on which to base marine living resource management decisions” (§7050(b)(5)). This objective suggests that the ongoing collection of ecological data is also important for managing California’s fisheries in a holistic manner.

Essential Fisheries Information

The MLMA states that FMPs are to summarize the best scientific and other relevant information available, and to collect necessary additional information if this does not significantly delay FMP preparation (§7072(b)).

Table H2 demonstrates how the major EFI categories are related to the major types of data required to make fishery management decisions and provides examples of each. In addition, the various EFI categories are explained in detail below.

Table H2. Summary of the type of information that may be applicable for each essential fisheries information category, and how they meet the basic data requirements necessary for fisheries management.

Data needs for fishery decisions	EFI categories	Examples
Abundance	Estimates of abundance	Absolute or relative abundance of fishable population, standardized CPUE index.
Biological	Age and growth characteristics	Size at age, length frequency, maximum length, maximum age.
	Distribution of stocks	Habitat preferences by life history stage, range, genetics, depth preferences.
	Movement patterns	Seasonal migration, ontogenetic movements, changing environmental conditions, home range.
	Reproductive characteristics	Fecundity, size/age at maturity, sex ratio, spawning periodicity and areas, size/age of sex change.
Catch	Total mortality	Landings, dead loss, discard mortality rate, discards (species and amount), research take, natural mortality, target species catch in other fisheries.
	Effort	Gear type and specifications, fishing location, number of trips, fleet capacity, effort/trip, boat size/capacity. Note: CPUE can be used as an index of abundance.
Socioeconomic	Economic	Price/lb., market dynamics revenues, business costs, cost of management.
	Social	Gear type and specifications, fishing location, number of trips, fleet capacity, effort/trip, boat size/capacity.
Ecological	Ecological interactions	Endangered, threatened, or protected species interactions, predator/prey, trophic role, other species encountered, habitat interaction, amount and type of bait.

Target stock Essential Fisheries Information

Age and growth

Age and growth studies typically measure how long a species lives, the age at which it reproduces, and how fast individuals grow. This information is very important to determine a population's ability to replenish itself, the rate at which it might be harvested, and the age at which individuals will reach a harvestable size. Changes in the age structure and growth rate of a population also serve as indicators of that population's health. Fish age often cannot be determined externally, so individuals must be harvested for age information.

Stock distribution

A stock is a population unit that is selected for management purposes. It may be defined based on its ecology, genetics, harvesting location, and/or geographic separation. Discrete stocks of a given species may have very different growth rates, reproductive schedules and capacity, and even ecological relationships. Stock distribution refers to where a stock is found and is important in addressing jurisdictional issues.

Indices of abundance

By its very nature and size, the ocean prevents highly accurate animal population counts. Managers and scientists rely instead on estimates and indices of abundance. An index of abundance is an indirect measure of the size of a population and is often obtained by counting a portion of the population using the same methodology each year, or by comparing counts between areas using similar techniques. This information is used by managers to calculate estimates of the total population size and determine appropriate harvest levels.

Movement patterns

Information on distribution patterns and the movement of fish can provide resource managers with important insights about a stock's vulnerability to harvest. Certain species may aggregate in specific areas for spawning, travel in predictable patterns, or move to certain locations that make them especially vulnerable. Insights into the movement patterns of fish are vital to the development of management strategies based on regional catch quotas or MPAs.

Recruitment

Recruitment refers to a measure of the number of fish that survive to a particular life stage and is often used to predict future population size. Some examples include: the number of offspring that reach the juvenile stage (i.e., larval recruitment), the number of individuals that survive (recruit) to the next year (e.g., age two recruits), the number of fish that reach sexual maturity (i.e., recruit to the spawning population), or in the case of a fishery, the number of fish that recruit to the catchable component of the population. Young-of-the-year (i.e., individuals less than one year old) are frequently counted for many fish species and used as an index of larval recruitment success.

Many highly-valued species depend on successful recruitment events for replenishment. Recruitment success can be highly variable because it depends on the proper combination of many factors. As a result, the sustainable harvest of the fishery may depend on only a few strong cohorts (i.e., born the same year) to provide harvestable stocks until the next successful recruitment event. Resource managers must consider this variable recruitment success when setting harvest levels by allowing sufficient portions of stocks to escape harvest and provide spawning biomass for future recruitment successes.

Reproduction

Reproduction encompasses information such as the number of eggs a female produces, the average age an individual becomes sexually mature, and whether a female bears live young or broadcasts eggs into the water. This type of information helps managers determine the ability of a population to replenish itself, and at what level it might be harvested. This knowledge allows them to set appropriate open seasons, areas, size limits, escape mechanisms for traps, and net mesh-size restrictions based on spawning considerations.

Total mortality

Natural and fishing mortality rates comprise the sum of all individuals removed from a population over a fixed period of time, often over one year. Fishing mortality is the rate at which animals are removed from the population by fishing and can be calculated from landings information if the population size can be estimated. Natural mortality refers to all other forms of removal of fish from the population, such as predation, old age, or disease. This information is used to predict how many animals remain to reproduce and replenish the population. Mortality figures are used by managers to calculate the number or weight (i.e., biomass) which may be safely harvested from a population or stock on a sustainable basis.

Ecological Essential Fisheries Information

Ecological interactions

Studies of ecological interactions assess the relationship of the species with other animal and plant species and the physical environment. For example, the harvest of an organism has an effect on both its predators and prey. In addition, fishing activity may have unintended effects on fish habitat or other species inhabiting the area. Ecosystem-based studies consider how oceanographic parameters, habitat, trophic (e.g., food, energy) dynamics, community structure, competition, or fishing mortality affect the health and abundance of organisms.

Oceanographic features include many biological (e.g., primary production, nutrient levels) and physical (e.g., current, temperature, salinity patterns) variables that can provide valuable insights into the abundance, distribution, and condition of a particular species or stock. Their predictive value makes long-term trends in oceanographic data, coupled with other biological information parameters, especially important in fisheries management.

Certain biological and physical variables may prove to be valuable indicators of climate change.

Habitat

Habitat investigations are useful to fisheries managers because they can identify the importance of specific physical parameters to the species of interest and associated biological assemblages.

Socioeconomic Essential Fisheries Information

It is important that fisheries managers have a clear understanding of the current economic condition of the community and fishery under regulation, and of the likely socioeconomic consequences of regulatory changes to the fishery. This includes direct impacts to resource users, such as reduction in landings revenue due to lower catch quotas and shorter fishing seasons, as well as indirect or “downstream” economic impacts to local employment or associated industries.

Demographics

Demographic information typically consists of data relating to a population and groups that comprise it. Examples of demographic data include age, gender, ethnicity, race, education level, income level, residence location and type, and household size. In a fisheries context, the population includes fishery

participants (i.e., commercial, recreational and subsistence fishermen, and fish buyers), those who provide goods and services in support of their activities, other members of the communities where they are based or operate, and consumers of seafood. Demographic data and analyses may be used to: characterize individuals, communities and other aggregates of people, including sociocultural groups, fisheries, and associated communities; identify historic variability and change in populations and groups; and measure change or impacts resulting from management action or other factors. Demographic changes, in turn, can signal changes in motivations, values, and practices.

Practices

Practices are the ways people do things and include where, when, and how they participate in fisheries and fishery-related activities. More specifically, practices include how vessels, equipment, and gear are configured and used, whether and how certain species are targeted, caught, and handled, and how the catch is distributed. Practices also include patterns of use in time and space of fishery resources, marine areas, coastal harbors, and infrastructure. These necessarily include analyses of characteristics such as: vessel length, hull material, fish holding capacity, engine type and horsepower; type of navigation, fish-finding, and gear-handling equipment; gear types, configurations, and number of units; and number of crew and their roles. The characteristics of the shore side operations may vary in many ways, including whether operations for receiving fish are mobile or fixed, the size and function of these operations, and the handling, processing, and distribution operations. Understanding fishery-related practices is key to identifying sources and solutions for ecological and socioeconomic concerns.

Motivations

Motivations are the reasons why people do the things they do. Although it is often assumed that individual behavior is fully rational and driven by reason, with economic motivations, growing evidence indicates that individuals are motivated by a complex mix of social, cultural, and economic values. An understanding of fishery participants' motivations for fishing and related activities can be used to develop management options that create appropriate and effective incentives for compliance, and to evaluate those options in terms of their acceptability, compliance, and socioeconomic outcomes.

Institutions

Institutions are the formal (e.g., regulations) or informal (e.g., shared understandings of where and how gear is set, the distance between operations) norms, rules, and strategies that govern peoples' behavior. Formal institutions include those specific to a given fishery, and those that pertain to other state- and federally-managed fisheries, broader marine space use, coastal land use, environmental protection, food production, public health, and other relevant topics. Understanding the formal and informal institutions that affect fishery participants and associated communities is useful for evaluating the potential efficacy and outcomes of fishery management actions, and for guarding against unintended consequences (e.g., effort shifts from one species to another, or to potentially sensitive or vulnerable areas).

Relationships

Relationships include the social and economic connections among people that are ongoing and meaningful to those people. In fisheries, such relationships include those among fishermen, buyers, and providers of supporting goods and services, within and among fishing families and communities, and between fishery participants and fisheries managers. Relationships can also be among organizations and communities, through which information and social and economic resources flow. They reflect interdependencies among those connected for a range of tangibles (e.g., income, goods, services, practical support) and intangibles (e.g., information, shared identity, sense of belonging). Information about these relationships is useful for understanding how the fisheries-human system functions, and for assessing social and economic impacts of change.

Capital

Fisheries-relevant capital includes the natural, human, physical, and financial resources needed and used by fishery participants and communities to sustain their activities and generate associated benefits (e.g., livelihood, recreation, sustenance). Natural capital consists of the ecological system, including living resources and habitat. Human capital includes people, and the skills and knowledge they possess individually and collectively. Physical capital includes vessels, equipment, gear, ports and other landing sites and facilities, and seafood processing facilities. Financial capital includes the monetary resources used to purchase or provide physical capital and goods and services to enable human activities. Understanding the types of capital needed, available, and used by fishery participants, fisheries, and communities is useful for better understanding fisher-related behavior, social and economic impacts, and opportunities and challenges to effective adaptation to environmental and regulatory change.

Employment

Employment relevant to fisheries and their management includes part- and full- time, seasonal, and year-round jobs in fishing and seafood production and those jobs associated with the provision of supporting infrastructure and goods and services, including related research and management activities. Changes in fishing opportunities and activities can have direct, indirect, and induced effects on employment among fishery participants, goods and service providers, and others in the associated communities and economies. Jobs gained or lost in one part of the human system affect those in other parts of the system. Employment information is useful for evaluating the impacts of management change on fishery participants, communities, and economies.

Expenditures

Expenditures are the amount paid by fishery participants for goods and services used directly in fishing or indirectly to enable fishery-related activities to occur. Expenses related directly to fishing include those for durable goods such as vessels, equipment, and gear, licenses and permits, and expendable items such as fuel, bait, and ice. Indirect expenditures include items that are ancillary to fishing such as vessel taxes, medical insurance, worker's compensation, angling accessories, and clothing. Expenditures also include those by fish receivers and others engaged in seafood production and other fishery-related activities. Information on these types of expenditures is used to help estimate the economic value of fisheries and the impacts of changes in resource availability and management on those fisheries and associated businesses and communities. For example, changes in expenditures related to fisheries affect the viability and wellbeing of associated businesses and communities.

Revenue

Revenues consist of payments received by fishery participants and businesses for fish landed, handled, processed, and sold. Revenue also includes payments received for fishery-related goods and services, ranging from charter fishing trips to vessel, gear, equipment, gear sales, boat rentals, fuel, bait, and ice. Revenues may originate and circulate primarily within a community, although they typically come from and/or circulate outside a given community. Information about fishery-related revenues is useful for assessing the impacts of changing resource availability and management on fishery participants, fisheries, fishing communities, and the overall economy. Moreover, changes in revenues, such as the ex-vessel price for commercially-caught species can signal a change in fishing practices.

Data collection strategies for fisheries management

The EFI outlined above provides a comprehensive list designed to guide fisheries managers in improving their understanding of a stock. While ideally managers would have all categories of EFI for all stocks, the Department is working with limited resources and currently information is lacking for many fisheries in California. In prioritizing data collection efforts to support the acquisition of EFI, it is necessary to think about how the data collected will inform management. One strategy is to consider all the components of

the management strategy (i.e., data collection protocol, data analysis/assessment HCRs, and management measures) simultaneously because the available data will dictate which assessment methods and HCRs are feasible. Managers will need to assess the potential costs and benefits associated with implementing additional data collection activities. To aid in that process, this section gives a broad overview of the various monitoring options available to fisheries managers, their relative costs, and the type of data they produce.

Fishery-dependent data

The MLMA dictates that the Department is the primary agency responsible for the acquisition of EFI and that the collection of the necessary data is best collected through the ongoing cooperation and collaboration of participants in fisheries (§7060(a-c)). For this reason, fishery-dependent monitoring is often the primary mechanism for monitoring fish stocks. Fishery-dependent data are collected directly from the commercial and recreational fisheries. Data are usually collected via dockside monitors, at-sea observers, self-reporting through logbooks, EM and reporting systems, telephone surveys, **Vessel Monitoring Systems (VMS)**, or cooperative research initiatives, and can provide information on fishing effort, landings, CPUE, discards, species composition, and biological information.

Fishery-dependent data are generally more economical to collect and typically consist of a relatively large sample size. Because of this, fishery-dependent sampling protocols usually form a core component of any management strategy. Table H3 summarizes the types of data that can be collected with commonly used fishery-dependent monitoring protocols, as well as the relative cost of each. Table H4 summarizes the Department's current monitoring activities. These tables can be used to help select the type of monitoring program needed to implement a particular stock assessment technique and HCR when developing a new management strategy. Additionally, they can be used to assess an existing monitoring protocol to determine whether the existing protocol is providing all possible data.

There are known biases associated with data obtained via fishery-dependent monitoring. These biases must be identified before fishery-dependent data can be incorporated into stocks assessments. For example, the most common and easily collected fishery-dependent data is catch and effort information from commercial or recreational fishers, usually summarized in the form of CPUE, or catch rate. CPUE is often used as an index of abundance in stock assessments when fishery-independent abundance data are absent because it can be assumed that the catch is proportional to the product of fishing effort and density of the fish. If catch and effort can be measured, then density and abundance can be estimated. However, CPUE can change for many reasons, including changes to the gear over time (e.g., through increasing efficiency or regulations designed to decrease efficiency), spatial distribution of fishing, or time of day or year when fishing occurs. Changes in any of these variables may lead to a change in the CPUE in the absence of a change in the underlying abundance of the stock, which can sometimes limit the applicability of CPUE as an index of abundance. The impact of these additional factors can be accounted for through a statistical process called catch-effort standardization. For this reason, it is important to fully document any historical management or market changes that may have influenced these factors, and FMPs provide managers with an opportunity to do this in a comprehensive manner. Additionally, a comprehensive management program that employs both fishery-dependent and fishery-independent studies in a complementary fashion can be used to help identify these biases and provide a more complete picture of the stock status.

Table H3. Common fishery-dependent sources and the type of data they can produce.

Monitoring approach		Landing receipts/sales dockets	Logbooks	Creel surveys/dockside monitoring	Onboard observers	Interviews with fishery participants	Market/processor sampling
Description		Records the species, weight landed, and price paid by processors receiving fish. May also record sex or size composition (categorical) if prices differ.	Information the Department requires all licensed fishermen to report. Vulnerable to self-reporting errors.	Sampling protocol used to intercept fishermen when they are fishing from shore or landing their catch.	Viable option for large-scale, industrial fleets. Can provide fine-scale information on all aspects of the fishery. A high proportion of observer coverage may be required.	Useful for gathering historical information when data is lacking. Often provides qualitative rather than quantitative information.	Sampling catch at the processor/market site. Useful when fishing activities are spatially disparate, but there are a small number of processors/ marketing sites.
Data collected							
	Historical information					x	
	Socioeconomic/ operational information	x				x	x
	Gear Type/amount used		x		x	x	
	Effort	x	x	x	x	x	
	Fishing location		x	x	x	x	
	Catch per vessel	x	x	x	x	Approximate	
	Total catch for fleet	x	x	x			
	CPUE	x			x		
	Species composition			x	x	x	x
	Bycatch/discards		Possibly		x		
	Size composition (detailed)	Possibly		x	x		x
	Size composition	Possibly		x	x	x	x
	Sex composition	Possibly		x		x	
	Reproduction/maturity	Possibly		x			
	Age composition			x			
Relative cost to implement		Low	Low	Moderate	High	Moderate	Low to moderate

Table H4. Summary of Department’s current data collection activities.

Tool	Sector	Collection frequency	Description
License applications	Both	Annual	Online registration (vessels and individuals) with fee collection using third-party software, managed by the Department.
Logbooks	Commercial	Per trip	Paper except for CPFV logs, which run on dedicated tablets.
Landing receipts	Commercial	Per landing	Paper, except for eight dealers registered with eTix system. Full transition to eTix in 2019.
Report cards	Recreational	Per season	Paper, but anglers can enter data online via the Automated License Data System web portal.
On-board observers	Commercial	Set percentage of fleet covered per season	Usually only for federal fisheries through NOAA federal observer program. Data not easily available to the Department.
Port/dock samplers	Both	Set percentage of fleet/docks covered per season	Coverage varies by fishery and by season; core component of California Recreational Fishery Survey.
Catch monitors	Commercial	Per landing	Independent staff who oversee landings; may or may not also be certified to collect biological samples.
Vessel Monitoring Systems	Commercial	Constant data stream while vessel is fishing	Required for some federal fisheries, data collected by NMFS, but not readily available to Department science/management staff.
Electronic monitoring/ video cameras	Commercial	Constant data stream while vessel is fishing	Only for a limited number of federal trawl fishery participants. Summarized data treated as federal observer data and may be unavailable to Department staff or available only in aggregate.

Landing receipts

The Department’s first major attempt to gather EFI began in 1916 with the use of landing receipts, or “fish tickets,” as they are commonly known. Commercial buyers are required to complete landing receipts when the catch is off-loaded onshore to track the amount of fish landed by weight or number, along with the fee due on those landings. These forms contain information on the species, general location fished, weight of the catch, and price paid for the catch. Many fish species are often grouped into multispecies market categories based on similar market value rather than separated into species-specific categories. This can present a problem when attempting to use this information in analyses. Although limited in

scope and accuracy, information on landing receipts are often the only information available for a particular fishery.

Logbooks

Logbooks were developed to augment information obtained from landing receipts and require that fishermen record information such as catch, location fished, and time spent fishing for each time their fishing gear is deployed. The log is then sent to the Department. Logbooks seek to access the professional knowledge and observations of fishermen to improve fishery management. The utility of the information that they provide is dependent on its accuracy, timeliness, and return rate. Logbooks have the potential to be a very valuable source of fishery-dependent information, especially considering the relatively low cost to administer the program statewide.

The Department is in the process of shifting from paper to electronic logbooks, and this transition provides an opportunity to revise the data that is collected, as well as overcome the lags associated with return and data entry that have been obstacles to the use of the data in the past. A 2017 review in support of the Department's transition to electronic logbooks suggested that logbooks be redesigned to collect the information in Table H5 to increase their utility.

Table H5. Suggested data to be collected using the logbook format.

EFI category	Data element	Example data fields
Effort	Activity and capacity	Boat size/capacity Date and time of trip start/end (number of trips) Number of hooks Number of traps set Number of anglers on a charter boat Gear type and specifications Time of gear in water Time spent targeting a species Fishing location (fishing block) Latitude/longitude, automated as much as possible
Total mortality	Landed and discarded catch	Number of individuals Weight Length Species Sex
Economic	Price	Price per pound landed condition
Ecological interactions	Bycatch and discards	Predation of hooked or discarded fish, by species

Creel surveys

Creel surveys entail interviews of sport fishermen at boat-launching ramps or at points where they are fishing from land (e.g., beaches, piers, and rocky coastline). Samplers typically gather information on the number of each species caught, number of each species kept, size and sex of kept fish, number of fish returned to the water, type of gear used, number of fishermen in the party, and total hours fished. Certain creel surveys may also collect socioeconomic data such as distance traveled from home or port, length of stay in the area, and expenditures. The accuracy and precision of these surveys depend largely on a good working relationship between Department staff and the fishermen being surveyed. Information collected on catch composition, CPUE, size limits, and fishing mortality are used to determine how the recreational sector of a fishery affects a resource.

Dockside/market sampling

Dockside or fish market sampling is used to collect commercial landings data after the catch has been off-loaded and, in the case of multiple-species landings, separated into market categories. These data provide important information on total weight, species composition, size, sex, age, and maturity of the species being landed. It is important to note, however, that this type of sampling provides imprecise estimates of fishing effort, and little to no information on bycatch or discards. Fishery landing statistics collected from this sampling allow fishing mortality rates to be calculated (excluding any discard mortality).

On-board sampling

Scientific observers accompany commercial and sport fishermen on fishing trips to collect biological and socioeconomic data at sea. Observers collect information on the location fished, total catches (not just landed), and the species, size, sex, and maturity of fish caught. In some fisheries they also collect (or have collected in the past) data on bycatch, discards, and interactions with birds and marine mammals. This information also can be used to verify logbook and creel survey data. On-board sampling also has the potential to address socioeconomic gaps in EFI. On-board observers collect EFI that cannot be obtained by other means (e.g., bycatch, precise fishing locations of each unit of fishing effort).

Fishery-independent data

Fishery-independent data come from sources other than directly from the fishery. They are collected from surveys designed and conducted by scientists to gather information on fish stock abundance and biology. These surveys are specifically designed to follow consistent methods using the same gear for the duration of the survey in order to develop unbiased and independent indices of abundance. Since the data are not influenced by specific management measures (e.g., size and **bag limits**, season closures, mesh sizes) or socioeconomic factors, they present an unbiased accounting of stock health. These surveys often collect biological data and abundance information and may be able to sample components of the fish stock that are not accessible using commercial gears (e.g., juvenile fish). They can also collect information on fish habitat characteristics and environmental factors.

Fishery-independent survey methods vary widely, and may include standardized trawl surveys, dive surveys, hook-and-line surveys, etc. The choice of survey mode is driven principally by the species being monitored, availability of suitable vessels and personnel, and the ability to maintain continuity of survey time series. The Department may contract with commercial fishing vessels to conduct sampling provided it occurs separately from fishing activities.

Fishery-independent research collects standardized information often on all life stages and not just what is marketable or utilized by the fishery. Greater technology and more sophisticated equipment are often required compared to typical fishery-dependent data collection. While fishery-independent data usually have fewer biases, they are relatively more expensive to collect, may have smaller sample sizes and

smaller spatial scales, and may not be collected every year. Historical data collection protocols, and any changes in protocols that have occurred over time, should be fully documented in an FMP or elsewhere.

Fishing surveys

Rather than rely on a commercial or recreational fishery to provide the Department with samples, biologists often collect their own samples using a variety of gear. Since fisheries often use gear that selects certain sizes or a sex of fish or invertebrates, catches usually do not represent the entire population. By using gear that catches a representative sample of the entire population (e.g., trawls for some fisheries) the Department avoids such limitations of fishery-dependent samples.

Tagging

Tagging animals provides EFI such as their movement, age, growth, and population size. Fish or invertebrates are captured alive, the size and catch location are recorded, and they animals are tagged externally (typically), and released. If they are recaptured at a later date, information can be obtained on their age, growth, and distance traveled since being released. Tagging studies are most frequently conducted with the advice and participation of fishermen, who are most likely to recapture tagged animals and return the tag and/or animal to the Department. Information on distribution patterns and movement of fish is valuable to resource managers because it allows insight into the areas and times that stocks are most vulnerable to harvest or environmental effects.

Egg abundance surveys

Surveys to estimate the abundance of eggs spawned by a particular species of fish or invertebrate are also used to estimate the size of a population, especially the reproductive portion of a population. This method also provides information on the amount and locations of reproduction, and spawning habitat preferences.

Underwater (in situ) surveys

The ability to deploy divers or equipment underwater to make direct observations of animals and habitats is important. This method allows a variety of EFI to be collected that cannot be collected using other methods, including information on detailed habitat preferences, ecological interactions, movement patterns, and non-lethal size/abundance information. Scuba-based projects are equipment-intensive and require a relatively large staff or partnership to ensure the requisite sampling effort.

Submarines and remotely operated vehicles are also capable of direct, in situ observation of the environment and living resources. Unlike divers however, their operation is not as severely constrained by depth, ocean conditions, or operating time. In addition, these units can carry a wide array of sensory equipment.

Hydroacoustic surveys

Hydroacoustic technology is familiar to most fishermen because it is the same technology used by depth finders and sonar to locate schooling fish or the ocean bottom. This method can be used to measure the size, distribution, and movement of fish schools, and to map and characterize the associated bottom or habitat type. It is most useful for species that exhibit schooling behavior.

Genetic investigations

Recently, scientists have refined genetic assessment techniques to sample populations to differentiate discrete fish or invertebrate stocks. Separate stocks of a given species may have very different life histories and this type of EFI may be used by resource managers in regional management strategies.

Alternative data sources for use in data-poor management

The management of many fisheries is hampered by a lack of data, specifically time series of the kinds of data described above. Data-poor fisheries are characterized by uncertainty in the status and dynamics of the stock or species, uncertainty in the nature of fishing (e.g., in terms of fleet dynamics and targeting practices), or having only basic or no formal stock assessments. Many of California's fish stocks can be characterized as "data-limited" under this definition.

However, the MLMA requires that the fishery management systems in place protect the sustainability of the stock, regardless of the level of information available. When data are insufficient for a conventional stock assessment, alternative methods can be used to inform management decisions. Frequently, and as discussed in Appendix I, stock assessment methods rely on time series of catch, CPUE, or abundance to estimate how fishing has impacted a stock over time. Without information on historical conditions, it becomes difficult to estimate the current stock status relative to sustainable targets. However, several simple length-based assessment methods have been developed to provide insight into stock status from size composition data. Measurements of length composition of an exploited stock are inexpensive and simple to collect via port sampling, and representative samples of the catch can often be obtained within a single fishing season.

The addition of no-take MPAs to California's seascape also provides an opportunity to improve the monitoring of California's data-poor fish stocks. MPAs present an opportunity for the assessment of data-poor fisheries by acting as a reference area, allowing for the comparison of fished vs. unfished conditions in much the same way as comparisons against historical data. MPA-based stock assessment methods have relied on comparisons of catch rates, survey data, and size compositions inside and outside of MPAs. The Spiny Lobster FMP identifies reserve monitoring as a primary source of data used to estimate growth rates, longevity, natural mortality, fishing mortality, and stock size structure.

Market-based sources provide an additional opportunity to gather the data necessary to assess fish stocks. Size and species composition data may be available from processors and other buyers, who often keep records of the approximate size of fish purchased. These data may be binned into categories and can provide some sense of how fishing is impacting the stock, often over many years. Market-based data can also provide information on how stock composition and trophic level has changed over time, which provides a means of estimating the level of fishing pressure.

In fisheries that are essentially data-free, it is possible to gather qualitative information on the fishery from participants. By gathering information on the history of the fishery, the gear types used, species caught, fishing locations, and how things have changed over time, it is possible to characterize the likely risk that fishing poses to the stock. This is especially true when this method is paired with the "Robin Hood" approach (Punt et al. 2011), which borrows biological parameters estimated from related fish stocks in data-rich systems to understand the biological vulnerability based on the species life history. Additionally, a number of "rule of thumb" reference points have been developed based on life history characteristics and borrowing this information may allow these reference points to be applied to stocks for which no local data exist.

References

Punt, A. E., D. C. Smith, and A. D. M. Smith. 2011. Among-stock comparisons for improving stock assessments of data-poor stocks: the "Robin Hood" approach. *ICES Journal of Marine Science* 68(5):972-981.

Appendix I – Stock Assessment and Data-limited Techniques

This appendix provides an overview of stock assessments and data-limited techniques. As with the other appendices, it is anticipated this overview will continue to be expanded and refined as part of Master Plan implementation so it can serve as an effective resource to managers and stakeholders.

Overview

Existing data, and the quality of those data, will generally dictate what types of assessment options are available to aid managers in making management decisions. The term assessment is generally interpreted to mean a quantitative analysis, but there are several data-limited assessment techniques to assist managers in analyzing the available information and making management recommendations. For fisheries with little data, qualitative assessments that rely on stakeholder information, expert judgment, and borrowed information from related fish stocks can be used to fill information gaps and understand relative vulnerability.

This appendix groups different data types into tiers and discusses the data required and possible data-limited assessment techniques available for use at each tier. The tiers are in ascending order with higher levels having more data available. The types of reference points that these assessments produce are also provided. This information is intended to assist managers in understanding the assessment techniques available now and the data that should be collected in the future to employ a particular assessment technique. Table I1 provides a summary of the data-limited assessment techniques available at each tier, dependent on the level of information available.

Tier 1: Qualitative information

In the lowest informational tier, there is little to no quantitative data available with which to conduct an assessment. However, there is generally qualitative information that can be used to make management decisions. Some of the methods available for this tier (Table I1) are frameworks that have been developed to address vulnerabilities and threats at a wide variety of scales, including for target species, bycatch species, and entire ecosystems. Using these tools, the current level of knowledge of the fishery is assessed using information gathered from managers, stakeholders, and expert judgment. Extrapolation, or borrowing information from related fish stocks, can be used to fill information gaps to better understand the biology of the species (Punt et al. 2011). Outputs from this tier might include a determination as to whether the fishery is likely to be vulnerable to exploitation, and recommendations on what data are most valuable to collect to improve the current level of understanding of the fishery (e.g., size of maturity and mean length of the catch).

In highly data-limited California fisheries, the Department may be able to use data collected through landing receipts to monitor for major changes in species landed, participation, price, gear used, spatial extent, etc. A significant change in these indicators over a short period of time could alert managers to changes in abundance or fishing effort that might need to be addressed through increased management or data collection.

Tier 2: Size data

A number of methods have been developed to infer fishing mortality and reproductive capacity of the stock from size information. One of the simplest indicators of stock status is the average length of fish in the catch. If an understanding of the approximate mean size of the catch is available, this can be compared to the size at first maturity to understand how much of the catch is composed of mature vs. immature individuals (size relative to size-at-maturity; see Table I1). Management recommendations from this tier might include altering size limits, seasons, or gear selectivity to target mature fish, and suggested data collection protocols may involve collection of an unbiased size structure that is representative of the

population. For some species, MPAs might provide protection for a portion of the adult biomass in unfished areas, which could increase spawning stock biomass and potentially allow for less stringent fishery controls. This is described in more detail in the ‘Marine Protected Area data – Fishery-independent surveys within MPAs’ section below.

With some additional knowledge of growth parameters, average length can be used to estimate the total mortality (both fishing and natural) of the stock. Natural mortality can be empirically derived, estimated from the maximum age of the stock, or borrowed from a related stock. With an estimate of the natural mortality, the fishing mortality can be calculated by subtracting the natural mortality from the total mortality (mean length; see Table I1). While this method only requires a single year of data, multiple years of size data could be used to track exploitation trends over time and compared against targets.

Length composition data can be used to calculate the proportion of mature fish, optimally sized fish, and large, highly fecund females in a population to determine if stock spawning biomass is at or above a specified target reference point (length-based reference point; see Table I1). Length composition data can also be used to infer the **Spawning Potential Ratio (SPR)**, which is the ratio of the total egg production in fished and unfished states, of the stock (fractional change in lifetime egg production and length-based SPR; see Table I1).

Length-based methods are relatively straight forward to use, but it is important to understand the implications of each method. Typically, these methods assume that the current population is in equilibrium, which allows them to be applied with only a single year of data. Length-based methods are not appropriate for very short-lived stocks, which tend to be dominated by a single year class, or stocks whose abundance fluctuates a great deal from year-to-year. Additionally, length-based methods assume a constant growth rate, and thus are not appropriate for species that have highly variable growth between cohorts or from year-to-year.

Tier 3: Catch data

If time series of catch data are available, data-moderate assessment methods may be used. A number of methods have been developed to estimate a sustainable catch level based on the logic that historic catches during times of stock stability reflect a level of exploitation the stock can sustain (Zhou 2013). Thus, a simple average catch taken from a period of stability is assumed to be sustainable. The **Depletion-Corrected Average Catch (DCAC)** (Table I1) method is based on this principle, but it uses historical catch data and an estimated natural mortality rate to correct for the initial **depletion** in fish abundance typical during the “fish-down” phase in many fisheries (MacCall 2009). The **Depletion-Based Stock Reduction Analysis (DB-SRA)** (Table I1) combines DCAC with a probability analysis to account for uncertainties in historical biomass estimates (Dick and MacCall 2011). The **Cumulative Sum (CUSUM)** (Table I1) technique uses catch data as an indicator of trends in abundance. It looks for deviations beyond the standard deviation from the mean to determine trends in catch and, by extension, biomass.

With historical catch information, biological parameters, and approximate estimates of the biomass in the first and last years of data, it is possible to use a Schaefer production model to calculate annual biomass. The Schaefer production model is most widely known as the model that is used to estimate the biomass that will produce MSY. This model can be used to set catch limits despite uncertainty about the carrying capacity and growth rate of the population. With in-season CPUE data, it is possible to use the in-season depletion estimator (Table I1) to set sustainable catch limits. This method assumes that effort efficiency is constant throughout the season, and thus any declines in CPUE are due to a reduction in abundance. By graphing the cumulative catch and effort over the season it is possible to see the point at which an additional unit of effort no longer yields additional catch.

Catch-based methods tend to be thought of as data-moderate assessment techniques because many data-poor fisheries have very little historical data or no way to accurately monitor catch. However, with

California's logbook system, catch-based methods may be appropriate for many fisheries that lack the other types of data necessary for a stock assessment. Catch-based methods are primarily used to set catch limits and are most appropriate for fisheries with systems in place to monitor catch in real time and enforce closures once catch limits have been reached.

Tier 4: Age or size structure, time series of catch, and indices of abundance

At this information level, there are many quantitative stock assessment methods available to managers. Nearly all these models are based on a population dynamics model. They use mathematical equations to model the recruitment, growth from one age or size class to the next, and mortality (from fishing and natural causes) of a fish population from year-to-year. Modelers fit these population models to the available data to estimate parameters of interest, which are typically the number of fish in the stock and current fishing mortality rate. Having time series of a number of different types of data makes the ability to estimate these parameters more robust. While Table I1 does not provide information on the various types of quantitative stock assessment models available for use, there are several resources online and in the literature that describe the types of analytical techniques available for this tier. See <http://www.pewtrusts.org/~media/legacy/uploadedfiles/peg/publications/report/aguidetofisheriesstockassessmentpdf.pdf> for a simple description of the different stock assessment models available.

Marine Protected Area data – fishery-independent surveys within Marine Protected Areas

MPAs present new opportunities for fisheries management by acting as reference areas and sources of biological information. Several data-poor assessment methods have been developed to use data from MPAs to assess stock status. One such method, called the density ratio control rule, compares a survey-based estimate of the density of fish outside an MPA to an estimate of density inside the MPA and provides a representation of the stock under unfished conditions. Another MPA-based method, a decision tree that compares size and CPUE data inside and outside of MPAs (Wilson et al. 2010), uses no-take areas as a proxy for historical conditions to determine targets. One potential benefit of this method over those that compare current stock status against historical unfished conditions is that the MPA incorporates contemporary environmental conditions. MPAs may also provide a way to estimate biological parameters that are usually biased by the effects of fishing. In particular, natural mortality is very difficult to estimate in any fished system, however it is one of the most informative biological parameters for fish stocks because it provides information about their natural productivity level. Length-based mortality estimators have been applied to size data sampled from inside of MPAs in the Channel Islands to estimate natural mortality of Spiny Lobster (Kay and Wilson 2012).

While MPA-based assessment methods are promising, they have some caveats. Because fishing is not allowed in MPAs, these methods rely on fishery-independent sampling protocols, which are typically costlier. Additionally, the MPA must be well enforced. The size of the MPA relative to the size of the species' home range must also be considered since MPAs can provide effective protection for species that spend a significant portion of time in fished areas. Thus, MPAs generally provide more appropriate information for relatively sedentary species with local reproductive input. Finally, MPAs take time to return to equilibrium unfished conditions, and so may not be useful in assessing fish stocks for 15+ years, depending on the life history of the species.

Stock assessments traditionally assume that the stock in question is homogeneously distributed over the management area and targeted with uniform fishing intensity. MPAs violate this assumption (Bohnsack 1999) by creating patches of high biomass inside their borders and potentially fueling stock depletion outside (Hilborn et al. 2006). As such, MPAs and their effects on the spatial distribution of both fish and fishermen may introduce biases in stock assessments (McGilliard et al. 2015). This can lead to mis-specification of catch or effort limits. There is also the question of whether populations within MPAs should be considered when assessing depletion levels and setting harvest limits (Field et al. 2006). Given the mandates to rebuild populations, there is an incentive for managers to count protected biomass in

stock assessments to demonstrate increased stock health (Field et al. 2006). There may be pressure from the fishing industry to count the fraction of population in MPAs as part of the total stock when setting catches. Including protected fish when calculating catch limits based on the total vulnerable biomass can lead to unsustainable fishing mortality rates because in reality only a portion of the stock is targeted. Conversely, not taking protected populations into account when determining stock status is likely to lead to a reduction in catch limits in the short-term as well as extend the time period until recovery targets are achieved, both of which may have severe economic impacts.

Empirical vs. model-based indicators to assess stock status

The output of a stock assessment model is usually some form of indicator (e.g., an estimate of fishing mortality or stock abundance) that can be compared to a pre-determined reference point to assess whether the stock is overfished or if overfishing is occurring. However, empirical indicators, which are based on directly measurable indicators such as CPUE or average length, are being used in several data-poor fisheries (Dowling et al. 2016). In some cases, these empirical indicators lead directly to HCRs, effectively replacing the assessment with the monitoring aspect of the harvest strategy. In other cases, the data feed into an HCR, which includes calculations that effectively function as a type of stock assessment, such as decision tree-type HCRs (Prince et al. 2011; Dowling et al. 2016). The Department's Spiny Lobster FMP uses catch and CPUE as empirical indicators and SPR as a modeled indicator. Empirical indicators can serve as a type of stock assessment tool if managers are able to make inferences about stock status and decisions to adjust fishing behavior. Empirical harvest indicators are not constrained by the need for quantitative population models and can provide some measure of exploitation status. Empirical harvest strategies are often more applicable to data-poor fisheries management as quantitative models are often difficult to apply to data-poor fisheries. It is possible to design indicators that reflect the status of the stock (e.g., acceptable, unacceptable, or somewhere in between) for data-poor fisheries.

Determining the appropriate level of complexity for assessments

Management strategies based on integrated stock assessments are considered the gold standard for fisheries management because they have been shown to outperform those based on data-poor assessments and empirical indicators (Punt et al. 2002). However, these assessments require many different types of data collected over many years. It is very costly to initiate and maintain these types of sampling programs. This type of investment may be practical only for specific situations, such as high-value fisheries or high-risk stocks. Alternative assessment methods that have been shown to adequately achieve management targets and prevent stock collapse may be more appropriate for other stocks. In addition, harvest strategies based on simple assessment methods can be designed to scale in complexity as needed by requiring further data collection or a more defensible assessment when a reference point is passed.

Tradeoffs between ecological and economic risks and the costs associated with management must be considered when making decisions about the required complexity of the management system for a fishery. In scenarios with lower data quality and quantity, management responses can be adjusted in proportion to data limitations to buffer against scientific uncertainty. This may result in a smaller catch than might be obtained under a management system with higher levels of monitoring to offset uncertainty, but the increase in potential management costs to implement such a system might outweigh the potential benefits of increased yield. MSE (discussed in Appendix L) can provide objective methods for deciding what level of assessment is appropriate for a given fishery.

Table I1. A summary of the data-limited assessment techniques available at various levels of information.

Tier	Method	Description and reference	Necessary data	Assumptions/caveats	Reference point
1	Ecological risk assessment	Information from the literature, surveys, and stakeholder interviews are used to generate a risk assessment that identifies the most vulnerable parts of the system. This is used to detect high-risk activities that require immediate management attention and to screen out low-risk activities from further analysis (Smith et al. 2007).	<ul style="list-style-type: none"> • Knowledge of the fishery. • Knowledge of other activities that could potentially impact the system. 	Assumes fishing to be the most important threat facing any given system. Predicts potential future risk based on current (static) conditions.	None
1	Comprehensive assessment of risk to ecosystems	Quantitatively considers the interaction of all system threats and assesses the risk to the entire ecosystem through inclusion of a comprehensive suite of attributes to characterize system productivity and functioning. Comprehensive assessment of risk to ecosystems generates risk values for each threat-target pair, for ecosystem service production, and for the ecosystem as a whole.	<ul style="list-style-type: none"> • Knowledge of the fishery and external threats. • Knowledge of ecosystem characteristics and processes. • Life history parameters (may be borrowed). 	Relies on expert knowledge (where data are missing). Precautionary approach may result in overestimation of risk. Predicts potential future risk based on current (static) conditions.	None
1	Productivity-susceptibility analysis	Productivity is ranked from low to high and based on life history parameters. Susceptibility of the stock to fishing pressure is scaled from low to high based on the fishing mortality rate (including discards) and species behavior, such as schooling and seasonal migrations, which may alter catchability (Patrick et al. 2009).	<ul style="list-style-type: none"> • Knowledge of the fishery. • Life history parameters, including fecundity. 	Assumes that risk depends on the extent of the impact due to fishing, and the productivity of the stock. Where information is missing the scores are set "high", so final risk scores may overestimate actual risk.	None
1	Monitoring for major changes	Examining logbook/landing receipt data for major changes in a fishery over a five-year period. Could be changes in participation, price, spatial extent of fishery, gear type, etc., that would signal a change in either fishery demand or population status (Dowling et al. 2016).	<ul style="list-style-type: none"> • Knowledge of one or more of the following: species ratios, dominant species landed, spatial extent of fishing, price, number of participants, or gear type. 	Assumes that sudden changes in peripheral fishery information may be indicative of changes in fishing mortality or abundance.	None

Tier	Method	Description and reference	Necessary data	Assumptions/caveats	Reference point
2	Length-based reference point	Catch-length data are used to calculate the proportion of mature fish, optimally sized fish, and large, highly fecund females in a population to determine if stock spawning biomass is at or above a specified target reference point (Cope and Punt 2009).	<ul style="list-style-type: none"> • Length data for at least one year (catch data are not needed). • Life history parameters. 	Does not estimate optimal harvest levels. Assumes length data are representative of the stock.	Proxy for depletion
2	Size relative to size at maturity	Compares the size of the catch to the average size at maturity to understand whether the fishery is catching mature fish. If a large proportion of the catch is immature a size limit should be recommended (Punt et al. 2001).	<ul style="list-style-type: none"> • Mean size or approximate proportions at size. • Size at maturity data. 	Assumes length data are representative of the stock.	Proxy for fishing mortality (F)
2	Mean length	Uses average length and biological parameters from a single year of data to estimate exploitation status (Ault et al. 2005).	<ul style="list-style-type: none"> • Length data from the catch and independent monitoring. • Life history parameters. 	Assumes length data are representative of the stock and equilibrium dynamics.	F
2	Fractional change in lifetime egg production	Length-frequency data from an unfished (or early exploited) population and the current population, along with information on growth and maturity, are used to determine a limit reference point that represents the persistence of a population. The fractional change is calculated as the ratio of lifetime egg production between the unfished and current populations (O'Farrell and Botsford 2006).	<ul style="list-style-type: none"> • Length data from the fishery and an unfished population. • Length-egg production relationship. • Life history parameters. 	Does not estimate optimal harvest levels. Can use historical size data or data from an MPA.	SPR and F
2	Length-based spawning potential ration)	Uses length composition, life history, and selectivity information to estimate SPR and fishing mortality. SPR has been shown to track depletion for some life history types (e.g., long lived, slow growing; Hordyk and Prince 2013).	<ul style="list-style-type: none"> • Length data from the fishery. • Selectivity at length. • Life history parameters. 	Assumes length data are representative of the stock. Assumes an equilibrium population.	SPR, F, and depletion
2	Visual survey spatial assessment	Uses visual survey of fish length frequencies and habitat quality/extent to extrapolate stock depletion estimates (Prince 2010).	<ul style="list-style-type: none"> • Fishery-independent length frequency and habitat data. 	Assumes species-habitat associations are a good indicator of species presence.	Depletion

Tier	Method	Description and reference	Necessary data	Assumptions/caveats	Reference point
2	Spawning potential ratio-based decision tree	The SPR-based decision tree uses length data from the catch and CPUE to improve an initial allowable catch limit by adjusting it based on changes in the size composition of the catch using a SPR as a reference point. Size composition of the catch is broken down into three length classes: small (recruits), medium (prime), and large (old). The decision tree then uses CPUE of each length class (Prince 2010).	<ul style="list-style-type: none"> • Length data from catch. • CPUE. • Life history parameters, including fecundity. 	Assumes linear relationship between CPUE and abundance.	Overfishing limit (OFL)
3	In-season depletion estimator	Calculates the current stock biomass of target species. Abundance data from completed seasons is compared to current season information, allowing managers to apply harvest rates to biomass estimates to determine appropriate catch limits.	<ul style="list-style-type: none"> • Life history characteristics. • CPUE over the course of the season. • Cumulative catch. 	Trend indicator only. CPUE is not always accurate due to effort creep, fishermen behavior, and/or stock dynamics. Assumes ecosystem and fishery dynamics in equilibrium.	OFL
3	Cumulative sum	Uses catch data as an indicator to detect trends in abundance and discern significant changes away from the mean (Scandol 2003).	•Time series of landed catch.	Assumes that the underlying dynamic of the system have remained constant over time. Assumes that catch is proportional to abundance.	Depletion
3	Static average catch	Average catches are used to estimate an OFL. Catches can be adjusted downward to reflect uncertainty about stock status (Carruthers et al. 2014).	<ul style="list-style-type: none"> •Historical average catch for a period when there was no evidence of decline. •Adequate catch data stream to objectively identify such a time period. 	Assumes a period of no depletion existed, assumes average catch during this period is representative of MSY.	OFL

Tier	Method	Description and reference	Necessary data	Assumptions/caveats	Reference point
3	Depletion-corrected average catch	Uses historical catch data (10+ yrs) and an estimated natural mortality rate (preferably 0.2 or smaller) to determine potential sustainable yield. An extension of potential-yield models, DCAC is based on the theory that average catch is sustainable if stock abundance has not changed substantially. DCAC divides the target stock into two categories: a sustainable yield component and an unsustainable “windfall” component, which is based upon a one-time drop in stock abundance for a newly-established fishery. DCAC calculates a sustainable fishery yield, provided the stock is kept at historical abundance levels (MacCall 2009).	<ul style="list-style-type: none"> • Catch records >10 years. • Estimated initial catch. • Life history parameters. 	Requires reliable catch data (landings plus bycatch); does not work well for highly depleted stocks.	OFL
3	Depletion-based stock reduction analysis	Combines DCAC with a probability analysis to more closely link stock production with biomass and evaluate potential changes in abundance over time. Using Monte Carlo simulations, DB-SRA provides probability distributions for stock size over a given time period, under varying recruitment rates (Dick and MacCall 2011).	<ul style="list-style-type: none"> • Catch records >10 years. • Estimated initial catch. • Life history parameters. 	Requires reliable catch data (landings plus bycatch); does not work well for highly depleted stocks.	OFL
3	Catch maximum sustainable yield	Estimates MSY from catch data, resilience of the respective species, and simple assumptions about relative stock sizes at the first and final year of the catch data time series. Uses the Schaefer production model to calculate annual biomasses for a given set of growth and carrying capacity parameters (Martell and Froese 2013).	<ul style="list-style-type: none"> • Catch records. • Estimated ranges of stock size in the first and final years of the catch data. • Life history parameters. 	Assumes population growth rate and carrying capacity do not change over time.	OFL
MPA	Marine Protected Area density ratio	Fish densities (measured in kg/ha) inside and outside of the MPA can be estimated from the results of fishing or visual surveys. The MPA density ratio (fished/unfished fish density) can then be calculated to serve as an indicator of stock status (McGilliard et al. 2015).	<ul style="list-style-type: none"> • Fish density inside and outside of effectively-managed MPAs. • Life history parameters. 	Assumes reserves are well-enforced and conditions inside represent an unfished population.	Depletion
MPA	Reserve-based spawning potential ratio	Combines age or length data from inside and outside of no-take marine reserves with life history characteristics to estimate sustainable yield from SPRs (Kay and Wilson 2012).	<ul style="list-style-type: none"> • Length or age data inside and outside of MPAs. • Life history parameters, including fecundity. 	Assumes reserves are well-enforced and conditions inside represent an unfished population.	SPR and F

Tier	Method	Description and reference	Necessary data	Assumptions/caveats	Reference point
MPA	Marine Protected Area-based decision tree	Similar to the length-based reference point method, the MPA-based decision tree uses spatially explicit, easy to gather catch and age-length data to set and further refine TAC. Additionally, data gathered from inside of no-take MPAs are used as a baseline for an unfished population. TAC is calculated using the current CPUE and target CPUE levels, and then further adjusted with each successive step of the decision tree (Wilson et al. 2010).	<ul style="list-style-type: none"> • CPUE, fish density surveys, or visual census data. • Age-length data inside and outside of MPAs. • Life history parameters. 	Assumes reserves are well-enforced, conditions inside represent an unfished population and CPUE surveys are unbiased by targeting or aggregation behavior. Assumes linear relationship between CPUE and abundance.	OFL

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Appendix J – Harvest Control Rules

This appendix provides an overview and considerations associated with a range of HCR approaches. As with the other appendices, it is anticipated this overview will continue to be expanded and refined as part of Master Plan implementation so it can serve as an effective resource to managers and stakeholders.

Harvest Control Rules

As discussed in Chapter 5, HCRs are simply rules for the management of a fishery. They are usually composed of an equation, formula, or procedure that links a change in one or more indicators with a corresponding change in fishing behavior. The HCR connects the current status of the stock (as determined via the data collection and assessment procedures) with the measures that will control fishing.

HCRs can be based on either a single indicator or multiple indicators. Those indicators can be model outcomes (an estimate produced by a stock assessment method, such as the current fishing mortality or biomass of the stock) or empirical metrics (measured directly from the fishery, such as the mean length of the catch or the CPUE). Regardless of whether the indicator is empirical or estimated, it provides information on the status of the stock. HCRs provide a pre-determined method for comparing that indicator against a target or limit reference point and adjusting fishing behavior as needed to avoid limits and reach the target.

Reference points

Reference points are metrics that combine several components of fishery performance into a single value. Reference points are commonly expressed as either a biomass level or fishing mortality rate that would achieve that biomass level under long-term equilibrium fishing conditions. Management actions may be required depending on where the indicator falls relative to the reference point. Commonly used reference points include the following:

- F_{\max} , the fishing mortality rate (F) that produces the maximum **Yield Per Recruit (YPR)**.
- $F_{0.1}$, the fishing mortality rate corresponding to 10% of the slope of the YPR curve at the origin.
- $F_{X\%SPR}$, the fishing mortality rate that would achieve X% of the spawning potential under no fishing.
- F_{MSY} , the fishing mortality rate which maximizes the total catch.
- **B_{MSY} , (Population Biomass at Maximum Sustainable Yield)** the biomass which produces the maximum catch.

Fishery managers also frequently use limit and target reference points. Limit reference points are the point beyond which fishing is no longer considered sustainable, and target reference points define the ideal fishery state. The use of these reference points is designed to constrain harvesting within safe biological limits. They are used in part because stocks fluctuate in response to natural ecological and environmental variability. Achieving a single point value is unlikely.

Some management strategies include a threshold reference point between target and limit reference points. The threshold reference point is defined as an early warning reference point, to reduce the probability that a limit point would be passed due to estimation or observation uncertainty or slow management reaction. Under these management approaches, limit points should never be reached, and if they were to be reached, severe and corrective management actions should be implemented. Thresholds are advisable when there is an especially high probability of a negative outcome when the limit is crossed (e.g., in a highly variable environment, when species are at the edge of their geographic range or are relatively susceptible to overfishing), or other circumstances when the cost of exceeding the limit is high.

Because reference points are often set using biological models, it can be difficult to determine reference points for data-poor stocks. In situations where there is insufficient knowledge to develop a model, proxies can be used. Proxies are substitutes for key biological reference points that are easier to calculate, require fewer data, or are more robust. For example, 40% of unfished biomass is considered a proxy for MSY for rockfish off the west coast, though the true MSY value is likely different depending on the specific biology of each species.

In general, reference points from YPR and spawning-stock-biomass-per-recruit analyses are easier to calculate because they only require biological information. For this reason, YPR and spawning-stock-biomass-per-recruit reference points are often used as proxies for other reference points that require stock and recruitment data. However, it is also possible to set empirical reference points when biological or recruitment data are missing. Empirical reference points are functionally similar to model-based reference points in that they trigger management action when crossed, but they are not necessarily directly related to the biological productivity or resiliency of the stock. For many data-poor stocks, catch history, catch at length, or CPUE may provide empirical indicators that can be used to understand stock status relative to reference points and make management decisions. For these stocks, reference points might be set based on historical trends during a time period when the fishery was perceived to be stable. See Appendix I for more details. In extremely data-poor situations, target and limit reference points may be identified by expert judgment, but these should be paired with a monitoring program to decrease uncertainty in the future.

The MLMA requires that FMPs include criteria for determining when a fishery is overfished (§7086(a)). Limit reference points provide a simple and straightforward mechanism for defining this criterion. When a limit reference point is crossed, the MLMA requires that a recovery or rebuilding plan be implemented (§7086(c)). A recovery plan is usually built into a comprehensive HCR, which specifies the appropriate management action at all stock levels. The HCR should be tested to ensure that it complies with the MLMA requirements for overfished stocks, including the time requirements for rebuilding.

Harvest Control Rule frameworks

Data-rich Harvest Control Rules

The most common types of HCRs provide a link between the current estimated stock status and the desired catch, effort, or fishing mortality level for the fishery. This relationship can take many functional forms. Figure J1 shows a suite of different kinds of HCRs that link a generic stock status parameter with the TAC, **Total Allowable Effort (TAE)**, or fishing mortality prescribed for each value of that stock status parameter. The types of HCRs illustrated demonstrate a tradeoff between simple but less responsive forms, such as the constant and threshold forms, and more responsive but more complex forms. These more complex forms are most commonly employed in data-rich fisheries, in which a quantitative stock assessment model is used to estimate biomass. They are usually designed and tested using MSE as described in Appendix L.

Data-poor Harvest Control Rules

While most data-poor fisheries lack the means of obtaining an estimate of biomass for use as a single metric of stock status, there is still a need to link the available information to control measures. This is often achieved by identifying empirical reference points, which specify that some kind of action must take place when the indicator passes a certain level. Under this type of framework, the indicator can be any type of data collected via the monitoring of the fishery (whether it undergoes analysis via a data-limited assessment technique or not), and the control measure can be any kind of mechanism for altering fishing behavior. For example, a simple HCR could specify that if the mean length of the catch (the indicator) drops below the average size of maturity (the trigger), a size limit will be instituted (the control measure).

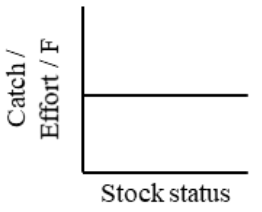
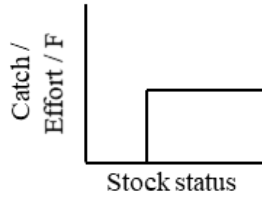
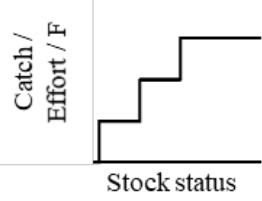
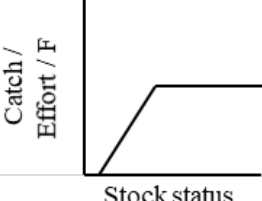
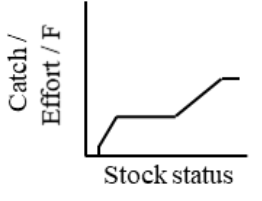
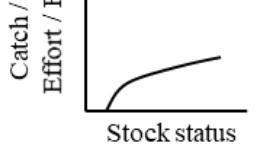
HCR	General Description and Implications	Graphic
Constant	A constant control rule maintains a single target value for the controlling measure, regardless of stock status.	
	TAC/TAE: promote stability but at the cost of either lower overall yields or higher levels of risk associated with reaching undesirable population states.	
	TAF: harvest remains proportional to stock status.	
Threshold	A threshold rule also maintains a single target value for the controlling measure up until a limit is reached, at which point fishing ceases.	
	TAC/TAE: promote stability at healthy population sizes.	
	Reduces risk of fishery collapse.	
	Potential for fishing closures.	
Step	A step rule incorporates discrete (or step-wise) increments in the control measure such that higher levels are permitted with improved stock status.	
	Control measure adjusts with stock status.	
	Increased variation in yield.	
	Abrupt changes in the value of the control measure.	
Sliding (Simple linear)	A sliding (or "state-dependent" or "adjustable rate") rule allows for a continuous adjustment in the control measure. Higher levels are permitted with improved stock status.	
	Moderate yields but generally with low levels of risk.	
	Increased variation in yield.	
	Gradual change in the value of the control measure.	
Sliding (Complex linear)	Same as above but linear combinations can be complex.	
	Incorporate multiple transition points (e.g., according to limit, trigger, target, etc. management reference points).	
	Contention from uncertainty in stock status when near transition points.	
Sliding (Non-linear)	Same as two above except continuous adjustment is non-linear.	
	Smooth function.	
	No major transition points so uncertainty in stock status tends to be less contentious.	

Figure J1. Examples of six basic functional forms for harvest control rules (adapted from Berger et al. 2012).

There are many different kinds of indicators, triggers, and control measure combinations. For each fishery, the appropriate combination will depend on what types of data and biological information are available on a regular basis given the resource constraints of the managing agencies, the objectives of management, and which control measures are appropriate for the fishery. There are many different ways to specify how the control measure should be adjusted. Table J1 provides examples for how various controls can be adjusted in response to changes in indicators.

Table J1. Examples of the types of harvest control rules that can be implemented for each kind of management control response (adapted from Dowling et al. 2016).

Harvest Control Rule families	
Catch or effort limits	Adjust by fixed proportions up and down Adjust in proportion to distance from a reference point or proxy Adjust according to assessment outcomes Adjust from monitoring-closed areas or MPAs
Gear	Adjust gear selectivity to achieve targets Adjust to counteract effort creep Adjust to avoid capture of undesired/overfished/at-risk species Restrict location and or season in which certain gears can be employed to avoid bycatch or habitat impacts
Spatial restrictions	Open or close areas in response to stock triggers Rotate after catch is achieved in a specific area
Size limits	May be invoked or modified to adjust selectivity in response to targets May be indirectly achieved via temporal, spatial, or gear restrictions
Sex restrictions	May be invoked in response to targets or triggers
Temporal restrictions	Adjust time of day when fishing is allowed in response to trigger Adjust season duration in response to trigger Start and stop fishing in response to trigger Implement seasonal closure
Other management responses	Trigger data collection (for example, when a catch or participation trigger is passed) Application of additional precaution/buffers Overrides in cases of exceptional circumstances Retain status quo (apply a wait-and-see approach) Taxes, fees, or other financial incentives to alter fishing behavior

These trigger systems are useful because they are readily understood by stakeholders. For this reason, they provide an opportunity for involving stakeholders in management by helping to identify triggers and consequent actions. They are inherently adaptive as the trigger level values can be revised as understanding improves. The HCR can also trigger increased monitoring to provide management agencies with a way to keep management costs low while the fishery stays in the healthy zone and increase management activities when the fishery moves into the precautionary zone.

Multi-indicator Harvest Control Rules

HCRs are increasingly being designed to respond to multiple indicators instead of a single indicator. HCRs that are based on multiple indicators perform better because they track different aspects of the population. Sometimes there can be unidentified biases in indicators, and using multiple indicators provides a safeguard against being overly reactive, or not reactive enough. Additionally, attempting to control one aspect of fishing (e.g., instituting a size or catch limit) can have unintended consequences such as an increase in regulatory discards, which may result in increased mortality. For this reason, there is usually a need to monitor the population health on multiple fronts, and to institute or alter a number of different control measures in order to achieve management objectives.

“Traffic light” HCR frameworks are an example of a trigger system with multiple indicators. Indicators that pass their limit reference points function as “red lights”, signaling to stop fishing. Those between their target and limit reference points function as “yellow lights”, signaling to “proceed with caution”, and indicators that are within a reasonable range of their target reference points are “green lights”, signaling that the fishery is in a healthy zone. One issue that can arise with the traffic light approach is how to respond to mixed signals that occur when different indicators achieve different colors (Punt et al. 2001; Basson and Dowling 2008). These scenarios must be carefully thought through during the design phase to ensure that the management response is appropriate.

Hierarchical decision tree frameworks allow for a decision to be reached by a sequential series of intermediate decisions. The most important decision criteria are in the upper part of the tree and applied first, which is a useful filtering system. The questions lower down on the tree refine the management approach. Decision trees allow for more complex management than traffic light systems, but each decision point on the tree is relatively easy for stakeholders to understand so transparency can be maintained. Because of this, decision tree HCRs are a powerful tool that allow for a series of simple HCRs to be combined to form a relatively sophisticated management tool.

Ecosystem-based indicators in Harvest Control Rules

There is a broad understanding of the connection between ecosystem health and sustainable fisheries, which has spurred calls for the implementation of EBFM to try and mitigate fishing impacts at the ecosystem level (Pikitch et al. 2004). In designing HCRs to make management decisions for target stocks, managers are embracing several of the central tenets of EBFM (Long et al. 2015), including:

- Long term sustainability;
- Adaptive management;
- Precautionary management;
- Acknowledgement of uncertainty;
- Use of scientific knowledge;
- Appropriate monitoring; and
- Management decisions that reflect societal choice.

However, the complexities and scale of holistic ecosystem management have made it difficult to operationalize EBFM in a practical way, especially for data-poor fisheries. Including ecosystem indicators in HCRs facilitates implementation of some core principles of EBFM (Long et al. 2015), including:

- Consideration of ecosystem connections;
- Accounting for the dynamic nature of ecosystems; and

- Preserving ecological integrity and **biodiversity**.

By including ecosystem indicators such as sea surface temperature in HCR frameworks, managers are able to explicitly acknowledge links between the decisions made for a target stock and the impacts on the wider ecosystem. Many HCRs have bycatch indicators, in which fishing activities are altered or curtailed based on the catch of indicator bycatch species as a means of limiting the ecosystem impacts of fishing. Bycatch, especially of threatened or ecologically important species, has direct impacts on biodiversity and ecosystem integrity, and this is one way to attempt to mitigate those impacts.

Fishing has indirect impacts on species that are not bycatch but are trophically related to the target species as predators or prey. Care must be taken to ensure that the HCR is not overly-reactive to predator fluctuations since few predators are solely dependent on a single prey item, and the health of predators is likely dependent on a wide range of factors in addition to food availability. In these situations, the HCR might require managers to assess the population of the predator in question during each decision-making cycle, but only trigger a change in fishing activities when very specific conditions are met. For management of a forage fish, it may be possible to include an indicator of alternative forage to assess whether the needs of the ecosystem's predators are being met. A quantitative alternative forage indicator is currently being developed as part of the NOAA's Integrated Ecosystem Assessment program for the CCE (see: <https://www.integratedecosystemassessment.noaa.gov/regions/california-current-region/index.html>).

Including ecological and environmental indicators in HCR frameworks also provides a way to acknowledge and incorporate ecosystem dynamics, which are constantly fluctuating, into decision-making processes. Many fish species, especially those at lower trophic levels, are highly responsive to environmental changes that affect the productivity of the system as a whole. Examples of these types of indicators include temperature, salinity, or plankton levels. For example, the Pink Shrimp fishery uses a combination of ecosystem indicators (e.g., April sea surface height) and fishery dependent indicators (e.g., CPUE and number of age-0 shrimp in the catch) to determine the start and end dates of the season (Hannah 1993). The Pacific Sardine fishery is managed using an HCR that includes a temperature indicator to determine the harvest rate (Hurtado-Ferro and Punt 2014).

It is important to establish a link to look for correlations between indicators and metrics of population health. This is usually done via a regression analysis and requires time series of data, which may not be possible for data-poor fisheries. Additionally, when looking for correlations between indicators and response variables it is important to consider alternative temporal lags and spatial scales since correlations might go undetected at the yearly timescale at which we normally consider stock management. Establishing links between the environmental or ecological indicators and the productivity of the stock may allow managers to recognize changing conditions, such as the those due to regime shifts or climate change, and proactively manage for these situations.

The science on using ecosystem indicators in HCRs to make harvest decisions for target stocks is emerging and should be applied cautiously. HCRs are usually crafted so that the indicator and management control are causally linked. This helps ensure that managers can see results in the indicator of interest when they alter fishing behavior, which is an important component of the adaptive management process. However, because the links between ecological indicators and target stocks are rarely understood, implementing these types of indicators in an HCR framework may be difficult, and managers should proceed with caution.

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Appendix K – Management Measures to Regulate Fishing Activities

This appendix provides an overview and considerations associated with a range of management measures and approaches that are applied globally. Applicability of a specific management measure to California's fisheries needs to be considered on a case-by-case basis. As with the other appendices, it is anticipated this overview will continue to be expanded and refined as part of Master Plan implementation so it can serve as an effective resource to managers and stakeholders.

Overview

Managers have a suite of possible regulatory mechanisms, known as controls, available to them to ensure sustainability. These include restrictions on catch, effort, gear, season, size of fish, and fishing areas. The best choice will depend on a variety of factors, including the biology of the species, how the fishery is prosecuted, socioeconomic issues, and governance capacity.

When used properly, fishery controls not only provide conservation benefits, but also help to make the fishery more sustainable and economically stable. Controls can also allow depressed stocks to recover and may prevent collapse. Controls on effort that limit fishing capacity may be especially useful in fisheries that experience increases in fishing due to volatile prices for fish.

Fishery controls are usually classified as either input controls or output controls. If the control measure implemented directly constrains fishing effort, it is an input control, and if it constrains the catch, it is an output control (Morrison 2004). The controls summarized in this appendix provide an overview of the kinds of tools available in the fishery manager's tool box as well as considerations associated with each.

Input controls

Input controls relate to who does the fishing, and when, where, and how they can fish. They include restrictions on the type and amount of fishing gear used, number and size of fishing vessels, amount of time fishing vessels can fish, and number of participants in the fishery. Each of these restrictions effectively limit the amount of fishing effort and are thus referred to as **effort controls**.

Input controls assume that fishing effort is a useful proxy for the amount of fish stock captured each year. When fishing effort increases, all else being equal, managers expect the magnitude of fish caught to increase. As a result, managers may use input controls as a means of limiting catch and, by extension, fishing mortality. However, there is frequently uncertainty regarding the relationship between effort and catch. This section discusses the various types of input controls available to managers, as well as their respective strengths and weaknesses (see Table K1 for a summary).

Table K1. Summary of types of input controls and associated considerations. Note that multiple controls may be applied simultaneously.

Type	Description	Benefits	Considerations and limitations
Effort limits	Limits on number of vessels or participants.	<p>Highly applicable across a wide range of fisheries.</p> <p>Requires less monitoring and is easier to enforce than catch limits.</p> <p>Limiting entry may help prevent over capitalization.</p>	<p>Requires knowledge of relationship between effort and catch to set limits.</p> <p>Usually requires multiple controls to curb “effort-creep”.</p> <p>Limiting entry to fisheries may restrict access to fisheries and limit employment opportunities.</p>
Gear restrictions	Restrictions on the number, type, or size of fishing gear used.	<p>Widely applicable to any fishery that uses gear. Often paired with other controls.</p> <p>May be used to:</p> <ul style="list-style-type: none"> ● Limit fishing efficacy; ● Protect particular size/age classes from harvest; ● Prevent bycatch of other species; and ● Reduce the negative impacts of fishing gear on the habitat. 	<p>Restrictions may increase the cost of fishing for fishermen.</p> <p>Restrictions may limit ability of fishermen to innovate new gear types.</p>
Temporal restrictions	<p>Restrictions on the time when fishing can occur, including:</p> <ul style="list-style-type: none"> ● Seasonal closures; ● Restrictions on time of day/days of the week when fishing is allowed; and ● Tending requirements for passive gear 	<p>Temporal closures can indirectly reduce fishing mortality by reducing the number of days that fishing is allowed each year.</p> <p>Seasonal restrictions may be used to protect vulnerable life history stages (i.e., spawning aggregations, reproductive stages).</p> <p>Tending requirements reduce lost gear, bycatch mortality, and ghost fishing in passive gear fisheries.</p>	<p>May not reduce fishing mortality if efficiency or amount of fishing gear is very high.</p> <p>May encourage fishing during hazardous sea conditions.</p> <p>May encourage change in type/amount of gear used in response to closure; may encourage illegal fishing.</p>
Spatial restrictions	<p>Restrictions on where fishing can take place.</p> <p>May be rotational, in response to triggers, or permanent.</p>	<p>Easily understood by user groups.</p> <p>Easy to enforce in nearshore environments.</p>	<p>May increase crowding and cause a race to fish in remaining open areas.</p> <p>Not appropriate for managing highly-mobile species.</p> <p>May require an understanding of spatial distribution of fishing and habitat.</p>

Effort limits

Effort limits restrict the amount of effort that can be used in a fishery, and can come in many variations, such as limits on the number or capacity of vessels, number of participants, trip length, etc. These are primarily designed to reduce or cap the efficiency of the fleet by limiting how much can be caught in a given time period.

The number of permits and vessel size are common metrics for assessing or limiting fleet capacity. Fisheries where the number of participants is capped are referred to as limited entry or restricted access fisheries. The Commission has adopted a policy that guides the development and implementation of commercial restricted access programs (see: <http://www.fgc.ca.gov/policy/p4misc.aspx#RESTRICT>). The development of these programs is often controversial, resource intensive, and can lead to litigation. They are nevertheless an invaluable tool for management.

If a restricted access program is already in place and it is determined that the existing fleet is too large to meet biological or socioeconomic goals, additional management actions may be needed to reduce fleet capacity. One option is to create permit transfer restrictions such as requiring new entrants to acquire two permits to enter the fishery or making some permits non-transferable. However, it may take many years to achieve the desired fleet size with this approach. Reducing fleet size on a faster time scale, which may be necessary in fisheries that are near collapse may require a permit buyback program, which often removes the least efficient and/or least active vessels in a fishery.

Effort limits usually require fewer management resources than catch limits, making them an attractive option for many fisheries. However, they provide managers with limited ability to achieve a specific catch level or harvest rate. And even with effort limits in place, effort often tends to gradually increase. This means that overfishing can occur even with effort limits in place. Effort restrictions that limit the number of participants can also reduce access to the fishery and employment opportunities.

Gear restrictions

Gear restrictions place limits on how the fishing gear is configured as well as prohibit certain types of gear in a fishery (e.g., prohibition on use of bottom trawls to take Spot Prawns). This could include mesh size requirements on trawl or gill nets, size of vessels, number of traps, length of nets, etc. Gear restrictions can be used in three different ways: 1) reduce the capacity or efficiency of each individual fisher, in order to reduce the amount each person can catch in a given time period; 2) modify the selectivity of the fishery so that particular sizes or species of fish are vulnerable to the gear, while others are immune; and 3) minimize or reduce habitat destruction and bycatch. Gear modifications are the primary way in which fisheries managers control for ecosystem impacts.

Spatial restrictions

Spatial restrictions, which limit or dictate the area in which fishing activities can occur, are another form of input control. They provide areas of refuge from harvest, which can reduce fishing mortality. These might be used to reduce the spatial footprint of the fishery, protect particular habitat, or remove fishing from areas where fish aggregate to spawn. Spatial restrictions can be either permanent, such as with MPAs, semi-permanent such as with **Rockfish Conservation Areas (RCAs)**, or be part of a rotational management scheme designed to spread fishing activities over a wider area. Closures can also be invoked in response to stock-related targets and limits.

Spatial restrictions are easily understood by user groups and are relatively easy to enforce in nearshore settings. However, spatial restrictions may increase crowding and competition in open areas. In addition, they require a relatively high level of understanding about habitat types, as well as how those habitats relate to the health of the fish population. While fish in the closed areas are protected from fishing, fishing

mortality may be very high in open areas, with negative consequences for the stock. Additionally, spatial management is not suitable for high-mobility species because they are likely to range beyond the extent of the spatial closure and thus become vulnerable to fishing activities.

Temporal restrictions

Temporal restrictions limit the period in which fishing activities are allowed to take place. This can be done by specifying the time of day or days of the week when fishing activities can take place. Temporal restrictions can also take the form of a seasonal limit. Seasonal limits can be used to limit fishing mortality provided there is some understanding of how fishing effort over time corresponds with harvest level. Seasonal limits are also used to protect species during important life stages. Examples include closures to protect spawning aggregations or to remove fishing effort during the reproductive season. Seasonal closures can also be used to restrict catch of non-target species. This type of management approach can limit fishing mortality and make monitoring or enforcement easier for the managing agency. It has also been used in fisheries targeting spawning aggregations to allow some spawning to take place in the absence of fishing pressure.

As with other controls, temporal restrictions have potential drawbacks. If a fishery is constrained to a specific time frame, fishers may be incentivized to deploy more gear and/or make more trips in an attempt to catch as much as possible before the fishery closes. This can lead to negative impacts from excess fishing gear on habitat and bycatch. In addition, increases in the amount or efficacy of fishing gear could undermine the ability of temporal closures to restrict fishing mortality.

Output controls

Output controls dictate what is allowed to be harvested. These include catch limits, which are restrictions placed upon the weight or number of fish that may be caught in a given period of time. Output controls also include limits on the species, size, and sex of fish that may be landed. Output controls provide a more direct mechanism to control harvest than input controls. However, output controls may require higher levels of data collection and enforcement to apply them effectively. This section discusses considerations associated with each (see Table K2 for a summary).

Catch limits

Catch limits are the most direct way to control harvest and achieve a desired harvest rate. They also provide a direct way to build a precautionary buffer into a management strategy when there is uncertainty about the dynamics of the stock. The most common form of catch limit is a TAC, which is an annual aggregate limit for all sectors (recreational and commercial), set at a level expected to maintain resource sustainability. TAC-based management will generally have higher data collection and analysis needs to identify an appropriate catch limit. This is because catch limits are usually set based on the current stock size and productivity of the stock, which in turn is usually determined through population modeling and quantitative stock assessment (see Appendix I). Additionally, to be effective, TACs also require in-season monitoring to ensure catch limits are not exceeded. This can be achieved either by monitoring the catch in real-time using self-reporting of landings (via fishers or processors), onboard observers, or dockside monitoring. As TACs generally have higher data collection, analytical, and enforcement needs than other types of controls, they may be most appropriate for higher-value fisheries with more centralized landing sites.

When a TAC is reached the fishery is closed. Because this creates uncertainty around how long the season will be open, a TAC can create a “race to fish”. This can have a number of unintended consequences. It can fuel excess capacity in terms of larger boats, more gear, etc. TACs also provide an incentive for under-reporting of catches, as well as high-grading, where fishermen discard in favor of higher value catch. These discards may result in fishing mortality that is not accounted for in the landed catch data. In

some fisheries TACs are monitored by having a series of short open periods and then counting the landed catch during the closures. These are known as “derby fisheries” and can encourage fishing when conditions are dangerous. Derby fisheries can have adverse effects on fishery profits by flooding the market and driving down the price, or by reducing the quality of the landed product due to time constraints. Allocating portions of the TAC to individuals (such as in the federally-managed Pacific groundfish trawl fishery) can help address these issues, but the costs of ensuring individual accountability through observers or EM can be high.

Trip limits are another form of catch limit, in which the total catch per trip is capped. Often this type of control is paired with a limit on the total number of trips to achieve a desired total catch level. Trip limits can be an effective means of controlling or reducing effort; however, they also require sufficient monitoring and enforcement to be effective. Similar to TACs, trip limits can encourage discards as fishermen high-grade in order to maximize the value of their catch.

Bag limits

A bag limit is a form of recreational catch limit that restricts the number of fish, invertebrates, or plants that may be landed in a day. Bag limits do not limit the total aggregate catch in the fishery unless there is some type of limit on participation as well (such as that realized through the requirement of a report card), but they may be an effective mechanism to limit harvest in small-scale fisheries. They are primarily designed to limit recreational catch to what could be reasonably utilized by an individual or family. They are usually combined with an overall possession limit to be most effective. Bag limits have the advantage of being simple for user groups to understand and relatively easy to enforce. However, bag limits do provide an incentive for high-grading, and thus may result in discard mortality.

Size, sex, and species restrictions

Size limits are another output control that can be used to regulate what is landed in a fishery. Minimum size limits prohibit the take of fish until they reach a certain size, which can ensure that all fish have the opportunity to reproduce at least once before they become vulnerable to the fishery. Minimum size limits are simple to employ, easily understood by users, and highly effective at protecting breeding capacity of the stock. However, they require an understanding of the relationships between size/age and reproductive maturity to ensure that the size limit is appropriate. Maximum size limits can be used to protect the age structure of the stock by removing fishing pressure on older fish, which are more likely to be large mega-spawners. When minimum and maximum size limits are used in concert it is known as a slot limit.

Sex restrictions are prohibitions on taking fish or invertebrates of a particular sex, usually females. These types of controls are similar to size restrictions in that they are designed to protect the breeding capacity of the stock. Prohibitions on landing a particular species is another kind of output control used to manage bycatch. These are usually implemented to reduce the catch of non-target species, especially those that are ecologically sensitive. Regulations of this type may result in regulatory discards, in which restricted species are returned to the water, sometimes dead or injured, leading to fishing mortality not accounted for in catch reporting.

Table K2. Summary of types of output controls and associated considerations. Note that multiple controls may be applied simultaneously.

Type	Description	Benefits	Considerations and limitations
Total Allowable Catch	Restricts the total catch that can be taken by all sectors in aggregate during a particular time period (e.g., ACLs)	<p>With proper data and enforcement, an effective means of achieving a desired harvest level.</p> <p>Appropriate for higher-value fisheries with centralized landing sites.</p>	<p>May create an incentive for discarding/high-grading as fishers attempt to maximize catch.</p> <p>May create a “race-to-fish” scenario. Allocating to individuals can help, but has costs.</p> <p>Requires higher levels of monitoring and enforcement than other controls.</p> <p>Difficult in multi-species fisheries due to variable resilience/stock status.</p>
Trip limits	Limits on the amount of catch that can be landed on a single trip or within a specified time period	<p>With proper accounting and enforcement, an effective means of achieving a desired harvest level.</p> <p>When combined with a TAC, can be an effective means of increasing the season length by protracting the time required to reach catch limit. This can reduce market gluts and improve price.</p>	<p>Requires higher levels of monitoring and enforcement than other controls.</p> <p>May create an incentive for discarding/high-grading as fishers attempt to maximize catch.</p> <p>Can make fishery less economically efficient.</p>
Bag limit	A limit on the daily amount a fisher can take.	Used to restrict catch in recreational fisheries.	May lead to high-grading and discard mortality as fishers attempt to maximize their catch.
Size restrictions	Minimum size limit	<p>Increases the number of times a fish will reproduce before they are caught.</p> <p>Easily understood by participants.</p> <p>Easy to enforce.</p>	<p>Requires maturity at age/size information to be applied effectively.</p> <p>May result in unaccounted for injury/mortality as undersized individuals are handled and released.</p> <p>Not appropriate for fisheries where barotrauma or other conditions result in high discard mortality.</p>
	Maximum size limit	<p>May provide some protection for the natural age structure of the stock.</p> <p>Protects larger spawning females (mega-spawners).</p>	<p>Not an effective means of protecting breeding capacity on its own.</p> <p>Not appropriate for fisheries where barotrauma or other conditions result in high discard mortality.</p>
	Slot limit (upper and lower size limit)	Provides size refuge for both juvenile and large mega-spawners.	<p>Not appropriate for slow-growing species.</p> <p>May lead to unaccounted for injury/mortality as fishers discard restricted fish.</p> <p>Not appropriate for fisheries where barotrauma or other conditions result in high discard mortality.</p>
Sex selective fishery	A restriction on the harvest of one sex (usually on females)	Prohibition on the take of external egg-bearing females (crustaceans) is another sex-selective provision that could be considered.	<p>May lead to unaccounted for injury/mortality as fishers discard restricted fish.</p> <p>Not appropriate for fisheries where barotrauma or other conditions result in high discard mortality.</p>
Species restrictions	A restriction on what species can be landed	Used to reduce bycatch of threatened or vulnerable species.	May lead to unaccounted for injury/mortality as fishers discard restricted fish.

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Appendix L – Guidance for Conducting Management Strategy Evaluation

This appendix provides an overview and best practices for conducting MSE. As with the other appendices, it is anticipated this overview will continue to be expanded and refined as part of Master Plan implementation so it can serve as an effective resource to managers and stakeholders.

Management Strategy Evaluation

The fisheries management cycle functions best when each of the components is chosen with the other components in mind. For many fisheries, the data collection protocol is designed with an understanding of the species' biology and what data can be collected given the available resources. The stock assessment should provide indicators and reference points that can be used in the HCR, and the HCR should recommend regulations that are appropriate given biological constraints, management capacity, and objectives for the stock. To make these choices, it is necessary to consider the performance of the fisheries management cycle as a unit. Each component of the strategy should be chosen to maximize the likelihood of achieving management objectives given the current level of uncertainty, as well as the management agency's capacity for governance. MSE has been successfully employed around the globe to aid managers in making decisions and achieving their goals. This appendix describes MSE and provides guidance on conducting an MSE.

What is Management Strategy Evaluation?

MSE is a simulation technique to evaluate the expected performance of management strategies prior to selection and implementation. The two main elements of an MSE are an operating model of the ecosystem and a management model of the management system. During an MSE, everything that is known about the fishery, including the population dynamics of the stock and the behavior of the fishing fleet, is simulated in the operating model. The management model incorporates the four components that make up a management strategy, including data collection, stock assessment, harvest control, and the implementation of management measures to control fishing.

The operating and management models are separate but pass information back and forth during each simulated management cycle. The information that is used is simulated data based on the actual data collection protocols in a fishery. The simulated data are then analyzed by a stock assessment component, and an indicator is produced. The indicator is passed to the HCR, which dictates a management action that should be applied during the following simulated fishing season. The management measure is then passed from the management model back to the operating model, and the following fishing season is simulated with that management control in place. This process is repeated for a pre-specified number of management cycles (e.g., 50 years), and performance metrics such as fishery yield and population status are tracked to understand how the management strategy is likely to perform in the short- and long- term.

The separation between the operating and management model is one of the strengths of MSE because it allows managers to test how well a management strategy performs when aspects of the ecological system are either unknown or are misunderstood. For example, MSE makes it possible to assess how management performance is affected when the value for a factor in an assessment methodology in the management model is different from the value actually governing the population biology in the operating model. Another strength of MSE is that the process is repeated many times with randomly-drawn parameter values to simulate either the natural variation of the system, lack of knowledge about a particular biological process, or imperfect implementation of management measures. For these reasons MSE is widely considered to be the best way to quantify the impacts of uncertainty inherent in the system being managed, and to evaluate the trade-offs in the performance of alternative management strategies.

How does Management Strategy Evaluation differ from traditional (assessment-focused) management?

The traditional approach to providing fisheries management advice has involved conducting a stock assessment using all available information to estimate the status of the resource. Uncertainty in stock status was evaluated using confidence intervals, sensitivity tests, and projection models, in which a static management policy (such as a set harvest rate or quota) was used to assess the risk associated with that management policy. MSE overcomes many of the shortcomings of this approach. MSE simulates data collection during each management cycle, and then management advice resulting from that data is fed back into the system and used to update the stock and fleet dynamics in the next time-step (Walters and Martell 2004).

Best practices for Management Strategy Evaluation

While MSE is useful for creating adaptive management strategies, the analyses can be complex and require time and resources. In the past, significant quantitative expertise was required to build and run simulation models, though recent advances have made MSE faster, more affordable, and more accessible to a wider range of fisheries, including those with limited data. The behavior of the fishery must be modeled as accurately as possible, which usually requires gathering information from stakeholders, biologists, and managers who know the fishery best. This may require an iterative process to accurately and comprehensively characterize the fishery and its management goals, determine which performance metrics are most informative, interpret results, and evaluate tradeoffs.

This section discusses the steps required to conduct an MSE (Figure L1) and provides guidance on each step. This process should typically be re-applied every five years.

1. Identify management objectives and develop performance metrics
2. Identify available information, as well as major uncertainties in system
3. Develop and parameterize operating models
4. Determine candidate management strategies and develop management models
5. Run simulations
6. Compare performance, evaluate tradeoffs, and select management strategy

Figure L1. The six steps involved in conducting management strategy evaluation.

Step 1: Identify management objectives and develop quantitative performance metrics that reflect those objectives.

The first step of any MSE process is to identify the management goals and objectives of the fishery. This discussion should involve managers and stakeholders, and include biological, ecological, and socioeconomic objectives, because different user groups may have different goals. Once a suite of management objectives is agreed upon, quantitative performance metrics that reflect those objectives should be defined. This is a very important part of the MSE process because simulation models can track a large amount of information about the health of the stock and fishery yield for every management strategy and scenario tested. Performance metrics condense this vast amount of information into a manageable suite of meaningful metrics and provide a means for comparing each potential harvest strategy directly against each other. However, translating generic, high-level policy goals and conceptual definitions of sustainability into concrete, quantifiable performance metrics can be difficult.

One method for translating goals into quantitative performance metrics is to ensure that for each management objective, three elements are defined: 1) the element to be achieved; 2) a time frame for achieving the objective; and 3) an acceptable rate of failure for achieving the objective (also known as an acceptable risk level). For example, a high-level policy goal for a fishery may include maintaining sustainable stock levels. Unsustainable levels are usually defined as those where recruitment may be impaired. For rockfish along the west coast of North America, PFMC has defined this to be 25% of unfished biomass. Managers who are translating the goal of “maintaining sustainable stock levels” into a performance metric may decide that they want their management strategy to achieve biomass levels >25% of unfished biomass over a 50-year time period with 90% probability. This performance metric clearly defines the objective (biomass above 25% of unfished), the time frame (50 years), and the acceptable rate of failure (above the objective 90% of the time or more).

Common management objectives for fisheries include maximizing economic benefits while minimizing risk to stocks (Punt 2015). As a result, performance measures for MSEs usually focus on three dimensions of performance: catch, biomass of the target species, and variability of catch. However, there are many ways that performance within these categories can be tracked, and Table L1 provides examples of the different kinds of performance metrics that have been used.

Careful consideration should be given when choosing performance metrics. The appropriate number of metrics will depend on the fisheries’ objectives, but in general it is difficult to compare more than six metrics simultaneously. Performance metrics should be chosen so that they are easy for decision-makers and stakeholders to understand. For example, a common fishery objective includes minimizing large swings in the TAC from year-to-year. Performance metric design should be an iterative process and involve stakeholders to determine which metrics are best for each situation.

Guidance:

- Performance metrics should reflect management objectives. For each management objective, define the objective, time frame, and acceptable failure rate.
- Involve stakeholders in the process to clarify management objectives and define performance metrics.
- Keep the number of performance metrics as small as possible.
- Choose performance metrics that are easily understood by a wide audience.

Table L1. Types of management objectives and example performance metrics.

Type of management objective	Example performance metrics
Population health (Target species)	Biomass
	Biomass relative to unfished biomass (B_0)
	Biomass relative to reference biomass (such as B_{MSY})
	Biomass relative to initial/historical biomass
	Lowest biomass
	Lowest biomass relative to B_0
	Probability of local depletion
	Probability biomass is above or below threshold
	Number of consecutive years biomass is above or below threshold
	Percent of older/larger individuals in catch
	Average age of catch
Catch and catch variability	Catch- total, average, or median
	Catch variability
	Catch relative to reference value
	Probability catch < threshold value
	Lowest catch
	Probability of catching fish above a certain size
	Number of consecutive years catch > threshold value
	CPUE, or catch rate
	Catch rate relative to the reference catch rate
	Catch composition (percent of each species)
Socioeconomic performance	Discounted revenue
	Costs (monitoring, enforcement)
	Profit
	Profit variability
	Profit per ton or per unit effort
	Access and distribution equity among sectors and ports
	Conflict among sectors
	Effort
	Displaced effort
	Amount of quota trading
	Employment
Ecosystem impacts	Biomass of non-target species
	Catch composition of non-target species
	Percentage of discards (by weight or number)
	Number or biomass of at-risk species
	Probability of interaction with at-risk/threatened species
	Proportion of total habitat fished

Step 2: Identify what information is known about the fishery, including major uncertainties.

The next step in conducting an MSE is to gather all the available data and information for the fishery and identify gaps in information. This should include all available data on catch, effort, biological parameters, fishery management, ecological impacts, and any other information that has been collected via monitoring.

This step serves two important purposes. First, this information will be used to develop the operating model (Step 3). Second, by collecting what is known, it will be possible to identify where the major areas of uncertainty lie in terms of the biology, environment, fishery, and management system. This is an important step because part of the MSE process involves determining which management strategies are robust to these uncertainties. For data-rich stocks, this step usually coincides with a stock assessment model, which analyzes all the available data to estimate stock status as well as other biologically important parameters. Stock assessments also provide quantitative information where there are major uncertainties. However, MSEs can be conducted for fisheries that are too data-poor to have a formal stock assessment. For these fisheries, the process of gathering information may be more qualitative, but is no less important. This can be done through consultations among stakeholders, biologists, and other experts, by borrowing biological information from closely-related stocks, or through a more formal risk assessment process such as a PSA, where participants are required to score how certain they are about each piece of information.

Guidance:

- The best available information for the fishery should be considered, and key areas of uncertainty should be identified.
- Many different forms of uncertainty should be considered, including process uncertainty, parameter uncertainty, model uncertainty, assessment uncertainty, and implementation uncertainty.
- Uncertainty scenarios should be ranked based on the participants' assessment of plausibility, and high and medium plausibility scenarios should form the basis for operating models.

Step 3: Develop a set of operating models representing the fishery.

An operating model is a mathematical representation of all the biological components of the system to be managed, as well as the fishery which targets that modeled population. Multiple operating models are usually required because of the need to cover the range of the ever-present uncertainties. The most plausible hypothesis about how the system functions may be considered the reference (or base case) operating model, and a set of “uncertainty scenario” operating models are also developed to represent the major uncertainties (Rademeyer et al. 2007). The reference operating model is typically based on the stock assessment model that best fits the data. The operating models should be developed using a widely-available programming language so that the analysis is repeatable and results reproducible. In addition, the mathematical structure of each operating model should be well documented.

Guidance:

- Operating models should be created to represent all high and medium plausibility scenarios.
- The most plausible scenario is considered the reference operating model.
- All models should be developed in a commonly-used, widely-available programming language, and should be well documented and reproducible.

Step 4: Develop candidate management strategies and create implementation models to simulate the application of those management strategies.

An implementation model that reflects how management regulations are applied in practice must also be developed for each candidate management strategy. This model describes how data are collected from the managed system (including the effect of measurement noise), how that data is analyzed during the assessment phase, and how fishing activities should be changed in the following simulated time step (HCR). Ultimately, the choice of candidate management strategies should reflect the governance and scientific capacity of the managing agency and should be realistic and implementable.

MSE developers should strive to simulate data collection as realistically as possible, with careful consideration given to the current and future sampling effort the management agency can employ. In addition, multiple error structures for the sampled data should be considered. Commonly, MSEs generate age/length composition data from the survey or fishery catch in a way that matches the distributions, which can underestimate the number of samples needed when sampling is employed in the real world. As with the operating models, implementation models should be developed using a widely-available programming language so that the analysis is repeatable and the results are easily reproducible.

Guidance:

- The choice of candidate management strategies should reflect the capacity of the managing agency.
- The implementation models should attempt to capture the various aspects of each management strategy as realistically as possible.

Step 5: Run simulations.

In this process, all the candidate management strategies (implementation models) are applied to all the uncertainty scenarios (operating models). This means that an MSE that tests six candidate management strategies on six different uncertainty scenarios will produce results from 36 different combinations. In addition, because each test simulates management over many years (usually at least 20) and includes repeated runs to understand how random variability impacts performance (frequently 1,000 individual trials), considerable time, computing power, and an organized approach to storing and summarizing results is required. The calculation of the performance metrics selected in Step 1 is coded into the MSE test so that these statistics will be readily available. Running simulations is often an iterative process as learning during the simulation process can result in developers altering either the candidate management strategies, operating models, or both.

Step 6: Compare performance, evaluate tradeoffs, and select a management strategy.

Once the simulations are run, it is necessary to examine the results and select a management strategy that best meets management objectives and is robust to the various types of uncertainty in the fishery. The analyst that conducted the MSE should participate in the evaluation process by explaining results and facilitating discussion, but the ultimate choice of which management strategy is “best” should be determined by the managing agency. Stakeholders and decision-makers should be fully involved in selecting among management strategies. This will likely be an iterative process where the analyst interacts with and responds to the needs of decision-makers. Consequently, there needs to be an investment of time in working with decision-makers to ensure they understand the information presented.

When comparing the performance metrics for each candidate management strategy, it is necessary to determine a process for deciding on the best option. Occasionally a single management strategy will

clearly dominate the others in all performance categories, but more likely there will be tradeoffs between the performance metrics (e.g., a strategy that results in high yield, but also higher risk to the population). The ideal way to select among management strategies is to define a utility function that puts an a priori weight on each performance metric (essentially, a numeric factor reflecting how important it is), and choose the management strategy that achieves maximum utility. However, this method is very difficult to implement in the real world because stakeholder groups often have different values for different performance metrics, and those values are difficult to quantify objectively. Instead, the most commonly-used method for selecting performance metrics usually involves the following steps:

1. The analyst explains all the options and presents the relative results.
2. Those management strategies that do not meet the minimum sustainability criteria are eliminated, as these strategies often cannot legally be implemented, and would likely be considered unviable by all stakeholder groups.
3. Any management strategies that are outperformed in all performance metrics are eliminated to reduce the number of options as quickly as possible.
4. Decision-makers use either a satisficing or trading-off approach to select from the remaining candidates. Satisficing involves specifying minimum performance standards for all performance measures and only considering management strategies that satisfy those standards. In contrast, trading-off acknowledges that any minimum performance standards will always be somewhat arbitrary, and that decision-makers should attempt to find management strategies that achieve the best balance among performance measures.

Climate change and Management Strategy Evaluation

Climate change and environmental variation can drive changes in a wide array of biological processes affecting fishery management, including spawning, spatial distributions, migratory patterns, gear selectivity, and diet, as well as growth, survival, mortality, and recruitment rates. Changes in any one of these parameters can profoundly affect the estimated value of fishery reference points such as B_0 , MSY , OY , etc. MSEs provide an opportunity to examine how those types of changes are likely to affect the performance of a given management strategy by modeling environmental and climate impacts on population dynamics. These simulations can be used to evaluate the benefits of adopting a management strategy that explicitly accounts for environmental and climate impacts.

Two approaches have been developed to apply MSE to evaluate the impact of environmental variation on the performance of management strategies: the mechanistic approach and the empirical approach. The mechanistic approach estimates the relationship between the environment and elements of the population dynamics of the fished species and makes predictions of population trends using the outputs from global climate models (Punt 2015). This approach can be very difficult, especially in data-poor fisheries. A key step when applying this approach is to represent uncertainty appropriately, because fishery models estimate how populations will respond to changing conditions by looking at past performance, which is not necessarily representative of changes under future climate scenarios (Reifen and Toumi 2009).

The empirical approach examines broad impacts of climate change, environmental variation, and ecosystem shifts without explicitly specifying a mechanism (Punt 2015). This is done by imposing trends in the values of key parameters of the operating model to simulate plausible changes that might occur at the stock level under climate change, without attempting to link the operating model explicitly to global climate change models. The empirical approach can be used to understand how robust a management strategy is to changing conditions even when there are no actual environmental data available to use to

relate to future changes in the parameters of the operating model. It has been recommended as a more appropriate approach for the majority of fisheries (Szuwalski and Punt 2013).

Guidance

- Stakeholders should be involved in the decision-making process, which usually requires some investment in explaining the process along the way.
- The analyst should refrain from deciding which management strategy is “best”; the decision should be made by the management agency and reflect their objectives.
- A four-step approach is usually used to eliminate unviable candidate procedures. Decision-makers will need to use either a trading-off or a satisficing approach to decide on a management strategy.

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Appendix M – Bycatch Mitigation Measures and Considerations

This appendix provides an overview of considerations associated with a range of bycatch mitigation and discard mortality measures. As with the other appendices, it is anticipated this overview will continue to be expanded and refined as part of Master Plan implementation so it can serve as an effective resource to managers and stakeholders.

Overview

As discussed in Chapter 6, bycatch can increase the time, cost, and effort required to catch a desired amount of target species and can have adverse consequences for vulnerable stocks and ecosystems. As a result, fishermen, scientists, engineers, and resource managers have developed a wide array of strategies to reduce bycatch.

The MLMA requires that bycatch be limited to acceptable types and amounts. Where unacceptable bycatch occurs in a fishery, management measures that minimize bycatch and discard mortality should be implemented. This appendix provides a non-exclusive list of common bycatch mitigation measures that have been demonstrated to minimize bycatch and discard mortality when appropriately designed and implemented. It also provides associated considerations and existing California or West Coast examples of implementation where available.

Identifying appropriate methods for addressing bycatch concerns requires an intimate understanding of the fishery in question. This includes knowledge of the fishing gear and operational practices, distribution and behavior of bycatch species, spatial and temporal characteristics of fishing activity, and other variables. In most cases, some combination of bycatch mitigation measures may be necessary to effectively address unacceptable bycatch. For example, gear modifications are often paired with incentive programs for fishermen and supplemented by a time/area closure that prevents fishing when sensitive bycatch species are most likely to be present.

Evaluating and monitoring bycatch

Information on the type and quantity of bycatch in an individual fishery is necessary to select appropriate bycatch mitigation measures. This information is not always available with sufficient certainty to identify mitigation strategies. In such cases, increased data collection may be the most appropriate short-term strategy. Data collection efforts using dockside monitoring, logbooks, observers, or fisheries-independent or -dependent studies can establish the information necessary to make informed decisions about bycatch mitigation strategies. Each of these data collection methods has its own set of considerations. For example, logbooks can be used to collect information at minimal cost to the Department, but fishermen may not have the knowledge or incentives to report completely and accurately. Dockside monitoring surveys or landing receipts can only collect data on retained species and thus will provide no information on discards. Observers are likely the most reliable and comprehensive data collection method, but costs can be prohibitive and observers may influence normal fishing activities.

No single data collection technique can effectively establish estimates of bycatch in the diverse range of state-managed fisheries. Different fishery-specific characteristics and factors must be considered when determining the appropriate methods of data collection and reporting. Standardized reporting methodologies can help ensure that effective bycatch data collection programs are developed for each fishery. See Appendix H for more details on data collection strategies.

Categories of bycatch mitigation measures and associated considerations

The International Guidelines on Bycatch Management and Reduction of Discards, prepared by the **Food and Agriculture Organization of the United Nations (FAO)** and endorsed by the United Nations Committee on Fisheries, states that best practices for bycatch mitigation measures include ensuring that all measures are: “(i) binding; (ii) clear and direct; (iii) measurable; (iv) science-based; (v) ecosystem-based; (vi) ecologically efficient; (vii) practical and safe; (viii) socioeconomically efficient; (ix) enforceable; (x) collaboratively developed with industry and stakeholders; and (xi) fully implemented” (FAO 2011). In some circumstances, however, voluntary or experimental measures may be the most appropriate.

The bycatch mitigation measures outlined below fall under seven main categories, each with general considerations regarding implementation:

1. *Gear modifications*: Modifying gear design, materials, and configuration has proven effective as a bycatch mitigation measure in many fisheries. Effective modifications are fishery-specific, depending on the type of gear used and the portfolio of bycatch species. As a result, fishery-specific studies may be necessary to establish the efficacy of particular gear configurations to mitigate bycatch. Gear modifications result in up-front and possible ongoing maintenance costs for fishermen, which can be defrayed by financial incentives. Dockside gear checks or patrols can ensure that fishing vessels are taking steps to comply with gear modification requirements, but on-board monitoring (human or electronic) is necessary to ensure full compliance.
2. *Bycatch catch limits*: Placing limits on the number of individuals or weight of bycatch in a fishery is perhaps the most straightforward way to reduce bycatch. Catch limits can include zero quotas and required release, quotas that would require full retention and reporting of bycatch, or hard caps that would close a fishery once exceeded. Depending on the design of a bycatch quota program, monitoring may be a substantial cost that's borne by participants, the Department, or both. Landing receipts or logbooks may provide some assurance of compliance, but on-board monitoring (human or electronic) is the only way to ensure full compliance. Catch limits may result in lost fishing opportunities if hard caps are imposed. To ensure that catch limits or hard caps are protective of the species without unjustifiably damaging economic opportunities, data on the abundance, productivity, and mortality of the bycatch species is required.
3. *Spatial and temporal measures*: Spatial and temporal measures restrict fishing or use of certain gear types at a time of year and/or in a geographic location when bycatch is expected. Other measures that fall under this category may dictate the manner and timing of gear deployment, such as night setting or depth restrictions. Establishing spatial and temporal measures will require sufficient scientific information to demonstrate their efficacy. Enforcement can be accomplished by patrols, VMS, or on-board observers. These measures may result in lost fishing opportunities and may have direct costs to fishermen depending on how monitoring costs are assigned.
4. *Incentive/disincentive programs*: Programs that provide incentives or disincentives related to bycatch can encourage fishermen to innovate their practices to avoid bycatch. Certain incentive programs can ease the burden of regulatory requirements on fishermen. For example, rebates, tax breaks, or other discounts/subsidies can facilitate the transition of a fishery to more selective gear. Likewise, establishing a system of performance standards (e.g., rewards and/or penalties based on bycatch rates) can spur innovation and encourage good practices. These programs will have some administrative costs but can ultimately be revenue-neutral or -positive if penalties are designed to equalize or exceed rewards. Purchasing incentive programs will have minimal enforcement needs, while performance standards may require significant monitoring to guarantee fairness.

5. *Strategies to minimize “ghost fishing”*: The ongoing effects of abandoned or lost fishing gear can be mitigated by these strategies, including gear recovery programs and design standards. These programs will have some administrative costs, particularly gear recovery programs that require vessel trips to recover gear. These costs can be defrayed by mandatory or voluntary buyback of recovered gear that is marked with ownership identification. Gear design using degradable materials may have some up-front and ongoing costs to fishermen.
6. *Full retention programs*: Full retention reduces discard mortality to zero. These programs may not improve bycatch outcomes on their own, but they can reduce waste, enable comprehensive monitoring of bycatch, and may incentivize fishermen to innovate gear or fishing practices to avoid low-value bycatch. Full retention programs may reduce overall profit from fishing due to low-value catch. These programs have minimal direct cost to the Department but may result in increased analysis and reporting needs if paired with requirements to report the type and amount of bycatch in the fishery.
7. *Other*: Several other strategies have demonstrated success in reducing bycatch or discard mortality. These include descending devices, use of predictive mapping applications to avoid bycatch hotspots, education and training programs, and improved monitoring and enforcement. Burdens on the Department and fishermen vary depending on the strategy.

In addition to the bycatch mitigation strategies outlined above, many management measures focused on target species have incidental benefits for bycatch. For example, where a target stock is overfished, a reduction in overall effort may be necessary. Such effort reductions will often also reduce total mortality of bycatch species. See Appendix K for more information.

Table M1 below provides a range of common bycatch mitigation strategies and identifies considerations and examples associated with each. Considerations include evidence for the efficacy of the mitigation measure under different circumstances, the potential economic effect on fishing communities, and implementation and enforcement needs.

Table M1. Common bycatch mitigation strategies, and associated considerations and examples.

Category	Sub-category	Concept	Available Bycatch Mitigation Measures			
			Considerations			California (or Pacific) examples
			Efficacy in mitigating bycatch	Economic effects on fishermen	Enforcement requirements	
Gear modifications	Acoustic devices (e.g., pingers)	Alert animals to presence of fishing gear. Effective for sound-sensitive species (e.g., marine mammals).	Several trials of pingers on fishing nets resulted in 70-90% reduction in cetacean bycatch (Cox et al. 2007). Pingers recommended by the International Whaling Commission in 2001 (IWC 2001).	Cost of individual pingers is low. Longer nets will require more pingers at increased cost. These costs may be offset by reductions in net damage or loss from interactions with marine mammals (NMFS 1997).	Dockside gear checks or patrols can ensure presence of pingers.	As part of the Pacific Offshore Cetacean Take Reduction Plan, all drift gillnets must have acoustic deterrent devices (50 Code of Federal Regulations §229.31(c)). Studies show a 75% reduction in cetacean entanglement (NMFS 1997).
	Visual devices (e.g., Light Emitting Devices, bait dyes, colored gear)	Alert animals to presence of fishing gear. Effective for light/color-sensitive species.	The use of LED lights along the fishing line dramatically reduces bycatch of threatened and depressed fishes in Pink Shrimp trawl nets with no effect on target catch (Hannah et al. 2015).	Cost of bait dye and lights of LED systems is relatively low.	Dockside gear checks or patrols can ensure use.	LED lights are suggested for Pink Shrimp trawl nets to reduce bycatch of Eulachon Smelt and other sensitive species, although no regulations are currently in place. Studies show a 70-90% reduction in bycatch (Hannah et al. 2015).
	Mesh size optimization	Alterations to mesh size in nets.	The use of larger mesh sizes results in a reduction of smaller and sub-legal sized bycatch (Alverson et al. 1994).	Changes to mesh size requirement may require production or purchase of all new netting, or alterations to existing netting. Cost and time required will vary.	Dockside gear checks or patrols can ensure appropriate mesh sizes.	Trawl vessels targeting California Halibut in California Halibut Trawl Grounds must use a minimum cod end mesh size of 7.5 inches (§ 8496(g-h)). Studies show a reduction in bycatch of sub-legal halibut (Schott 1975).
	Bycatch Reduction Devices (BRDs) in trawl nets	A hard grid, large-hole mesh, and/or escape hatch designed to allow escape or exclude catch of turtles, debris, large animals, free swimming fish in trawl nets.	BRDs are recognized as effective in reducing bycatch. The efficacy of specific BRDs depends on their design, the fishery in which they are used, and the profile of bycatch species (Eayrs 2007; Alverson et al. 1994).	Cost of BRDs varies considerably. Small mesh windows may cost a few dollars, while large steel grates may cost up to \$1,000 (Eayrs 2007).	Dockside gear checks or patrols can ensure presence of BRDs.	Pink Shrimp trawl nets must have BRDs to reduce bycatch of groundfish (e.g., Pacific Hake, Sablefish, Yellowtail Rockfish; §8841; California Code of Regulations Title 14 §120.1(c)). Studies show a 66-88% reduction of bycatch (Hannah and Jones 2007).
	Escape ports in traps	Allow bycatch species to escape traps.	Escape ports reduce sub-legal sized individuals in traps (Stewart 1974).	The use of escape ports in pots and traps is common practice. Any increases in the	Dockside gear checks or patrols can ensure presence of escape ports.	Lobster and crab traps must have escape openings of varying number and size (§ 9010–9011).

				minimum port size would require alterations to existing traps.		
	Streamers	A line runs from a high point of a vessel to a drag buoy towed behind. Streamers are attached to the line and scare birds away from surface lines, bait, and hooks.	Streamers reduce seabird interactions with longline gear (Melvin et al. 2004).	This measure does not require significant changes to the fishing gear or vessel and has minimal costs (Sato et al. 2012).	Dockside gear checks or patrols can ensure presence of streamer lines.	Groundfish longline vessels in Alaska state and federal waters must have streamers (50 Code of Federal Regulations §679.24(e)(3–4); Alaska Administrative Code Title 5 §28.055). Streamers are most necessary for use with pelagic longlines, which are not currently used in California.
	Hook selection	Some hooks types, such as circle hooks, may result in reduction in bycatch and/or increase in post-release survival of bycatch.	Circle hooks can reduce rates of bycatch and post-release mortality in longline fisheries or hook-and-release fishing (NMFS 2008; PFMC 2000). Hook size also influences bycatch mitigation.	Transitioning hook type or size will have relatively low cost to fishermen. May impact catch rates of target species.	Dockside gear checks or patrols can ensure presence of appropriate hook type and size.	Use of circle hooks required for some salmon fishing (California Code of Regulations Title 14 §27.80(a) and §182(c).
	Bait selection	Use of different baits can increase selectivity.	The use of fish instead of squid as bait reduces bycatch of turtles and sharks in longline fisheries (NMFS 2008).	Transitioning bait type will usually have minimal cost to fishermen but may impact fishing efficacy.	Dockside gear checks or patrols can ensure presence of appropriate bait.	No existing regulatory examples in California.
	Marine mammal entanglement gear modifications	Several modifications to the material or configuration of gear have been proposed to reduce marine mammal entanglements in lines (CDFW and OPC 2017; PSMFC 2017).	Suggested gear modifications include reducing length of vertical and trailer lines to minimize slack and changing rope color and material. Preliminary evidence suggests reducing slack and accessory lines may have the greatest positive effect (CDFW and OPC 2017).	Adjusting length of lines may take some time when changing set location across depths. Breakaway lines may have more materials cost and potential for lost gear. Straightforward gear modifications are likely less costly than a Take Reduction Team (PSMFC 2017).	Dockside gear checks or patrols can ensure appropriate gear configuration.	Updated best practices guide for crab fishing strongly recommends reducing slack in vertical lines and the number of accessory lines and trailer buoys (CDFW and OPC 2017). Measures are not mandatory at this time.
Bycatch catch limits	Quotas/catch limits/hard caps /triggers	Reduce absolute numbers of bycatch. May have no/minimal effect on post-release mortality. Can be vessel- or fishery-specific and	Catch limits reduce landings of bycatch. Defensible quotas or hard caps should be based on the abundance, productivity, mortality,	Costs to fishermen may include monitoring costs and any lost fishing opportunities (O’Keefe et al. 2012; Patrick and Benaka 2013). For example, hard cap limits	Requires significant monitoring and reporting to achieve compliance. High monitoring needs. Hard caps typically require 100% monitoring (NMFS 1997).	Bycatch of sturgeon, halibut, salmon, Steelhead and Striped Bass may not be taken by or possessed on any herring fishing vessel (California Code of Regulations Title 14 §163(e)).

		transferable or nontransferable.	and ecosystem role of species and subject to effective monitoring. Quotas can function as incentive to change fishing gear or practices to avoid bycatch (Alverson et al. 1994). Quotas can exacerbate discard mortality and derby fishing unless paired with comprehensive tracking of catch and consequences for quota exceedance (Marine Fish Conservation Network 2004).	lead to fishery closures when exceeded.		<p>Federal groundfish management on the west coast allows for and utilizes sector- and vessel-specific total catch limits for some bycatch species and prohibits retention of others (50 Code of Federal Regulations §660.55(m)). These bycatch limits have led to early season closures several times (e.g., 73 Federal Register §53,763).</p> <p>Proposed hard caps for marine mammal and sea turtle interactions in California drift gillnet fishery were withdrawn in 2017 due to potential economic impacts (82 Federal Register §26,902).</p>
Spatial and temporal measures	Closures with temporal (time) and/or spatial (area) dimensions	Restrict fishing or use of certain gear types at a time of year and/or in a geographic location when bycatch is expected.	Time/area closures can reduce bycatch when target and bycatch species segregate spatially or temporally (Alverson et al. 1994). The occurrence of bycatch species can be gleaned from behaviors and physiological traits of the species (Dunn et al. 2011).	Depending on the size and complexity of time/area closures, they could be either an inconvenience for or adversely affect fishermen (Erickson and Berkeley 2008).	Closed areas must be monitored and enforced. Patrols or VMS (see below) are likely necessary to ensure compliance.	<p>Depth and season restrictions apply in Cowcod Conservation Areas to protect several rockfish species (California Code of Regulations Title 14 §27.50).</p> <p>Certain areas of the California Habitat Trawl Grounds are closed to fishing to protect bycatch, as well as habitat and ecosystems. These closures have spatial but no temporal dimension (§8495(c)). CDFW data show a range of bycatch and discard percentages for each of the closed areas that are now avoided (CDFG 2008).</p> <p>Spatial restrictions can also be voluntary. The California Groundfish Collective and The Nature Conservancy work together to develop fishing plans to manage bycatch risk in the Pacific groundfish fishery (see: www.cagroundfish.org).</p>

	Dynamic ocean management	Adaptive closures or avoidance schemes based on real-time information sharing between government, scientists, and fishermen. May be mandatory or voluntary.	Implementation of dynamic ocean management can both reduce overall restrictions on fishing communities and mitigate bycatch concerns (Dunn et al. 2016).	Complexity of the program and possible information reporting may present some cost or inconvenience to fishermen. Possible benefits by replacing large static closures with smaller dynamic closures.	Closed areas must be monitored and enforced. Patrols or VMS (see below) are likely necessary to ensure compliance with mandatory closures.	Proposed use of the “EcoCast” model to avoid areas of predicted bycatch in California drift gillnet fishery Exempted Fishing Permit (NMFS 2016). University of Massachusetts Dartmouth School for Marine Science & Technology Bycatch Avoidance Program collects the geographic location of yellowtail bycatch from scallop fishermen in New England. Each day, the data are compiled in an email notice describing spatial areas to avoid based on bycatch of yellowtail from the previous day (O’Keefe and DeCelles 2013). Use of Sea State in the Pacific Whiting fishery cooperative to avoid bycatch.
	Altering the time or depth of gear setting	Can influence bycatch by avoiding parts of water column or times of day in which bycatch is most active.	The time or depth of setting can reduce certain types of bycatch in certain fisheries. For example, setting drift gillnets lower in the water column reduces cetacean and sea turtle bycatch (NMFS 1997). Likewise, night setting can reduce seabird bycatch in longline fisheries (Petersen 2008).	Minimal direct cost. Possible lost opportunity costs, but study on depth setting requirements for the California drift gillnet fishery show minimal effect on target catch rates. Potential loss of catch may be offset by reductions in net damage or loss (NMFS 1997).	Human or EM and/or patrols required to effectively enforce.	As part of the Pacific Offshore Cetacean Take Reduction Plan, all drift gillnets must have extenders, which ensure nets are a minimum of 36 feet below the surface of the water (50 Code of Federal Regulations §229.31(b)). Studies show a 25% reduction in marine mammal bycatch (NMFS 1997).
	Limit soak time	Reducing the amount of time gear is in the water can reduce bycatch and improve survival of discards.	Mortality of catch increases with increased soak time in pelagic longlines (Erickson and Berkeley 2008). Appropriate soak time will vary by fishery.	Minimal direct cost. Possible lost opportunity cost, but studies show that limiting soak time has no effect on target catch of some species (Erickson and Berkeley 2008).	Human or EM and/or patrols required to effectively enforce.	All traps have maximum soak times of 96 hours (§9003).
Incentive/ disincentive programs	Performance standards	Reward (e.g., increase quota, longer season, monetary reward) or	Rewards and/or penalties can incentivize compliance	This program could provide rewards for voluntary reductions in	May require 100% monitoring.	NA

		penalize fishermen based on conformity with pre-determined bycatch or bycatch mortality performance standards.	and innovations in fishing practice (PFMC 2007).	bycatch. May provide for penalties as well.		
	Permit attrition programs or buybacks	Buying out capacity of certain permit types or allowing transition to other permit types.	Selectively-targeted buybacks can facilitate transition to more selective gear or reduce overcapacity (Squires et al. 2007).	Possible costs to outgoing fishermen, depending on administration of the program. May result in increased revenues if overcapacity is addressed (Squires et al. 2007).	Dockside gear checks and/or patrols needed to ensure phased-out gear types are not in use.	A buyback was conducted in the Pacific groundfish fishery in 2005, however, the motivation was primarily related to target stock sustainability.
	Gear recovery programs	Government program or incentive for fishermen. Focused on recovering lost gear.	Gear recovery programs are an established method to reduce ghost fishing (Macfadyen et al. 2009).	No cost to fishermen, unless recovery costs must be reimbursed by identified gear owners. Possible compensation for fishermen that participate in recovery.	No enforcement needs.	California Lost Fishing Gear Recovery Project has removed more than 60 tons of fishing gear from California waters since 2006 (Seadoc 2009). Also see Senate Bill 1287 (McGuire).
Strategies to avoid/reduce ghost fishing by lost or derelict gear. Lost gear is known to continue catching target and non-target species (Macfadyen et al. 2009).	Use of degradable materials or destruct devices in gear design	Use of materials in gear design that will destruct over time and allow trapped catch to escape.	Use of biodegradable materials in nets and pots reduces ghost fishing (Macfadyen et al. 2009).	Use of biodegradable gear is likely to have upfront and ongoing maintenance costs for fishermen.	Dockside gear checks or patrols can ensure appropriate gear configuration. Full observer coverage necessary to ensure 100% proper use.	All traps must have one destruction device (§ 9003). Approved destruction devices are outlined in regulation (California Code of Regulations Title 14 §180.2).
	Ownership identification on gear	Establishes accountability and places more responsibility on the owner to track and recover their lost gear.	Required marking of gear facilitates gear recovery programs and encourages responsible fishing (Macfadyen et al. 2009).	Minimal costs to fishermen. Fishermen incentivized to do this already to indicate gear ownership.	Enforcement efforts not likely necessary, as this is common practice with non-regulatory incentives.	All traps must be marked with a buoy that identifies the operator (§9006). Herring gillnets must be marked with a buoy that identifies the vessel number (California Code of Regulations Title 14 §163(f)(2)(F)).
	Require full retention of all or a portion of a vessel's catch	Reduce discards and increase utilization of species that would otherwise be dead discards. Useful when retained catch cannot be released alive. Must consider the status and productivity of bycatch species. This	Full retention programs can be effective when tailored to avoid increases in total mortality of overfished species. Retention programs enable more comprehensive enumeration of bycatch and encourage	Possible costs to fishermen if required to land species with lower economic values (PFMC 2007).	Must be accompanied by an appropriate monitoring and enforcement strategy. Full monitoring coverage only way to ensure 100% compliance.	Participants in EM Exempted Fishing Permits in the Pacific groundfish fishery are required to operate under full retention rules with limited exceptions for some species (see: http://www.pcouncil.org/groundfish/rawl-catch-share-program-em/em-fps/).

		does not necessarily minimize mortality.	fishermen to alter their activities so they are less likely to encounter non-target species (PFMC 2007).			
Full retention programs	Restrictions on offal discharge	Require offal discharge away from lines to distract seabirds, or prohibit discharge.	Discharging offal on the opposite side of the vessel from gear deployment minimizes seabird bycatch (Cox et al. 2007).	Minimal costs to fishermen.	Full monitoring coverage only way to ensure 100% compliance.	Groundfish longline vessels in Alaska state and federal waters must discharge offal in a manner that distracts seabirds from baiter hooks (50 Code of Federal Regulations §679.24(e)(2)(v); Alaska Administrative Code Title 5 §28.055).
Other bycatch mitigation, accountability, and data collection strategies	Training	Share fishing methods or proper handling and release techniques to minimize bycatch and maximize post-release survival.	Education and training programs are a recognized method to mitigate bycatch concerns (PFMC 2007).	Government funded trainings may have some attendance cost to fishermen. Costs can be defrayed by travel reimbursements or stipends.	Minimal enforcement costs. Administration of training program will have monetary costs that depend on the length and complexity of trainings.	As part of the Pacific Offshore Cetacean Take Reduction Plan, all drift gillnet vessel operators must attend skipper education workshops after notification from NMFS (50 Code of Federal Regulations § 229.31(d)). This program is expected to facilitate successful implementation of the take reduction plan and accompanying regulations (NMFS 1997).
	Descending and de-hooking devices	Increase post-release survival of bycatch	Appropriate use reduces post-release mortality (Hannah and Matteson 2007).	Cost of devices vary from homemade to commercial devices (CDFW 2014).	Dockside monitoring to ensure all vessels are equipped.	The Department currently encourages the use of a variety of descending devices for rockfish (CDFW 2014). When descending devices are utilized, survival rates increase.
	Observers and Electronic Monitoring	Observers and EM can collect data on bycatch and fishing operations. Observers can function as a spotter for protected species and/or report violations.	Observer and EM programs can ensure compliance with many regulations and support management decisions through data collection. Possibility of inaccurate data due to the presence of observers or EM influencing fishing behavior (Alverson et al. 1994; NMFS 2013). Observers may be most useful for emerging or experimental fisheries with no data on their	Costs to fishermen will depend on the cost-sharing arrangement between government and fishermen for observers (NMFS 2013). Observers can have significant logistical costs to fishermen.	In some fisheries, observers report violations themselves, while in others law enforcement officers can use the data. Observer programs are some of the most expensive and funding is a primary concern (Department of Commerce 2003; NMFS 2013). EM can reduce these costs, but typically collect more limited information focused on accountability.	Tanner Crab permittees must have observers on board who collect a variety of information including bycatch, incidental take, and discards (California Code of Regulations Title 14 §126(a)(8)). This observer program was vital for understanding the effects of this relatively new fishery and establishing its management approach (Commission 2005).

			effect (Commission 2005)			
	Vessel monitoring systems	VMS allows monitoring of the location of vessels.	VMS is a more cost-effective method to ensure compliance with area closures (Department of Commerce 2003).	Equipment and communication costs are estimated at \$3,250–\$6,750 up front and \$1,750 annually per boat. Costs to fishermen will depend on the cost-sharing arrangement between government and fishermen (Department of Commerce 2003).	Monitoring personnel required. High potential costs of implementation, but the VMS program costs are significantly less than traditional surveillance methods using ships and aircraft (Department of Commerce 2003).	Certain vessels in the west coast groundfish fishery must carry and operate a VMS unit when at sea (50 Code of Federal Regulations §660.14). VMS data is communicated to NOAA’s office of law enforcement for use in focusing patrol efforts, preventing violations, and as evidence in prosecutions (see: http://www.nmfs.noaa.gov/ole/about/our_programs/vessel_monitoring.html).
	Avoiding protected species through operational techniques	Using spotters or fleet communications to avoid bycatch hotspots; establishing procedures (e.g., back-down procedure for purse seines) to release protected species caught in gear.	Changes in operational techniques and patterns can effectively avoid bycatch of large or easily identifiable protected species.	Possible lost opportunity costs if large bycatch species impede fishing efforts.	Patrols or observers may be necessary to ensure compliance with required procedures.	Use of Sea State and operational and communication protocols in the Pacific Whiting Conservation Cooperative designed to avoid bycatch (see: http://www.pacificwhiting.org).

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Appendix N – Habitats, Gear Impacts, and Management Strategies

This appendix provides a general overview of potential fishing impacts on some California marine habitats. As with the other appendices, it is anticipated this overview will continue to be expanded and refined as part of Master Plan implementation so it can serve as an effective resource to managers and stakeholders.

Overview

California's marine habitats are vast and diverse with a wide range of fisheries that interact with them. Fortunately, significant mapping and research efforts have provided an array of resources for managers to use. These include:

- CDFW Marine Biogeographic Information and Observation System
<https://www.wildlife.ca.gov/Conservation/Marine/GIS/MarineBIOS>
- United States Geological Survey California Seafloor Mapping Program
<https://walrus.wr.usgs.gov/mapping/csmp/>
- California State University, Monterey Bay Seafloor Mapping Lab statewide database
<http://seafloor.otterlabs.org/SFMLwebDATA.htm>
- Essential Fish Habitat Data Portal
<http://efh-catalog.coas.oregonstate.edu/overview>

While these resources provide detailed information and spatial data regarding habitats and their distribution, this appendix provides an overview of concepts for understanding potential fishing impacts to habitats.

Concepts for understanding habitat resilience

Not all habitats respond the same way when subjected to the same fishing activities. For instance, an area of soft muddy habitat that is trawled may show no ecological changes, while even one pass of a trawl in deep rocky habitat could destroy coral habitat that could take decades to recover (Auster and Langton 1999; Lindholm et al. 2015). For the purposes of fishery management, biological and geological habitat components are typically the most important when evaluating potential impacts from fishing activities. Biological habitat components include organisms that provide physical structure that can increase growth, survival, and productivity, such as structure-forming invertebrates. Many seafloor habitats are comprised of structure-forming organisms, or biogenic structures. Kelp, other algae, seagrass, sea whips, and sea pens, are some of the more common biogenic structures in California waters. Plant and algae species can typically regrow quickly, while structure-forming invertebrates (corals, pens, etc.) are often slow growing or are slow to repopulate depleted areas. Geological habitat components include nonliving structures where organisms can seek shelter and feed, such as rocky crevices that protect juvenile fish from predators, burrows, depressions, and mounds (Baillon et al. 2012).

Common habitat classifications

Soft sediment seafloor

This habitat is characterized by expanses of unconsolidated sediments, such as sand and silt. Because they are unconsolidated, the sediments shift and are frequently disturbed by bottom currents, though the intensity of this disturbance lessens with depth. This prevents many sessile organisms from growing. However, species like sea whips and sea pens are exceptions and can commonly be found in deep (50-2,600 meters) soft sediment (Stone 2006). Sea whips can create miniature forests in high

concentrations. Studies have found that sea whip aggregations are frequently associated with several groundfish species (Brodeur 2001). Sea pen fronds have been observed to be important habitat for rockfish and other fish species larval settlers once they leave their planktonic life stage in the water column (Bailon et al. 2012). For roundfish, these organisms can provide habitat-forming structure (Auster et al. 2003). Sea whips have a thin rigid stem that is vulnerable to breakage. Studies have found evidence that they can break with very little force and begin to die over the course of a year following breakage or abrasion (Malecha and Stone 2009). Lindholm et al. (2009) found a negative correlation between trawling activity in California and density of sea whips.

The most abundant physical structures within soft sediment habitat are depressions and crests. They can be created by flatfish or rays as they kick up the sediment, or by bottom currents (these structures are then referred to as wave form depressions). In shallower soft sediment habitats that experience stronger currents these depressions are especially important forms of shelter for flatfish and juvenile roundfish (Auster et al. 1996).

Fishing impacts: Fishing activities that contact the seafloor in these habitats are primarily traps and pots for crabs, lobster, groundfish, and hagfish, as well as bottom trawling for California Halibut, groundfish, and sea cucumbers. Other bottom-tending gear used in California such as bottom longline and **set nets** have a smaller footprint in terms of area impacted and have limited impacts on the bottom (Chuenpagdee et al. 2003). The impacts from bottom trawling to physical structures created in the sediment may be temporary (Lindholm et al. 2015). The impacts to biogenic habitat such as sea whips and pens is potentially more significant and long-lasting (Wilson et al. 2002; Lindholm et al. 2009).

Mixed substrate seafloor

These seafloor habitats are comprised of low-relief cobble and boulders, sometimes mixed with silt and mud. Structure-forming organisms such as anemones, sponges, and algae may be found covering these rocks. In shallow mixed substrate habitats that are subject to frequent disturbance from high wave action, long-lived sessile organisms are rare and species diversity is lower (Collie et al. 2000). Other areas may be home to soft sediment species as well, such as sea whips and pens that can sometimes grow in the sediment that aggregates between cobbles. Deeper mixed substrate habitats tend to be populated by species that are more vulnerable to disturbance, such as branching corals and sponges (Asch and Collie 2008). This habitat has been shown to provide shelter to small groundfish species and juvenile rockfish as they transition to deeper offshore waters (Yoklavich et al. 2000). Small scale habitats such as amphipod tubes that form encrusting colonies over cobbles have been shown to be vital to many fish species throughout their life stages (Auster et al. 1991). These structures can be vulnerable to disturbances significant enough to move or disturb the rocks on which these encrusting organisms grow, however they can recover from disturbance faster than sponges and corals (Henry et al. 2006).

Fishing impacts: Trawling has been shown to have varied impacts on the biomass of biogenic habitat (Freese et al. 1999; Freese 2001; Henry et al. 2006). The higher and more varied the relief of the substrate, the more likely it will be that habitat will be damaged (Auster et al. 1996). In areas that lack corals and sponges and are instead covered with encrusting species like coralline algae, there may be little to no detectable differences in their biomass even after repeated trawling (Henry et al. 2006). In deeper mixed substrates where corals and sponges are more common, there have been significant decreases in biomass and biogenic structures following trawling activity (Freese et al. 1999; Freese 2001). Traps and bottom longlines have less impact given their smaller spatial footprint and lower intensity of bottom contact (Auster and Langton 1999).

Rocky seafloor

Hard rock, shale, or compacted substrate allows for a wide variety of organisms to grow on their surface. At greater depths the rock is often covered with sponges, anemones, and branching corals that provide food and shelter for crustaceans and fish (Auster et al. 1991, 2003). Vast expanses of skate eggs have been found in deep reef in the Southern California Bight (Love et al. 2008). In rocky areas with high relief, the rock itself provides shelter for mobile species and is closely associated with rockfish species (Yoklavich et al. 2000). Deep offshore bare rock faces are also vital nurseries. In California's waters, these deep rock faces are frequently covered in corals and sponges. Corals in deep rocky reefs are home to high levels of biodiversity. They provide shelter for small organisms and are correlated with aggregations of larger fish species (Tissot et al. 2006; D'Onghia et al. 2010).

Fishing impacts: Deep rocky reef is the most susceptible to long-lasting damage from fishing activity (Watling and Norse 1998; Freese et al. 1999). The corals that provide habitat are extremely long-lived, slow-growing and often very fragile. Even minor lacerations can lead to mortality in these species (Henry and Hart 2005). Bottom trawling poses the greatest potential threat to this habitat, however spatial restrictions and footrope requirements that reduce access to high relief areas mitigate this risk in many locations. Other bottom-tending gear types, even those with relatively small spatial footprints such as bottom longlines, can have impacts on deep rocky reefs.

Kelp Forest

Kelp forests are among the most productive and biodiverse habitats on the planet (Mann 1973). Kelp forests are well adapted to strong disturbance forces from storms and wave action. Kelp has very large dispersal distances and canopies can regrow within months of a storm event. The distribution of kelp forest is constrained by physical factors including light, substrate, sedimentation turbidity, nutrients, water motion, salinity, and temperature (Steneck and Dethier 1994). If water becomes too turbid or if kelp blades become smothered by sediment or algal growths, then kelp cannot receive enough light to grow. California kelp beds experience seasonal die-offs from warming waters and winter storms, but quickly regrows in the spring and summer. However, extreme marine heat waves can have more severe and longer-lasting effects.

Many commercially and recreationally important species such as California Sheephead, Spiny Lobster, abalone and seabass reside in kelp forests. Several juvenile rockfish and bass species rely on kelp fronds for shelter from predators in their juvenile stage (DeAlteris et al. 2000). Urchins and abalone are voracious kelp grazers, requiring large amounts of kelp to grow. Kelp forests are sustained through complex food-web interactions; removal or disruption of one species has led to massive kelp deforestation events on the West Coast (Steneck et al. 2002). Managers must be mindful of the physical disturbances that can hinder kelp growth, as well as prevent the depletion of species that maintain healthy ecosystems.

Fishing impacts: While there is some limited entangling of gear and impacts from vessels, fishing has minimal direct impacts on kelp.

Common gear types

Habitat impacts and appropriate management strategies will be unique to each fishery. However, Table N1 below provides an overview of common gear types used in California and the impacts and management responses that are often associated with them.

Table N1. California gear types, associated habitat impacts, and common mitigation measures.

Common gear types	Common gear interactions	Habitat risks	Common management response	California examples
Bottom trawl	Net, footrope, and doors dig into sediment and organisms on the seafloor; can create large sediment plumes in soft habitat (DeAlteris et al. 2000).	Contact with gear can kill biogenic habitat and burrowing species and alter species composition; can reduce food and shelter for other fish species (Bergman and Stanbrink 2000).	Limiting trawling to more resilient soft bottom habitats; use of lighter touch gear to reduce bottom contact and sediment plume (O’Niell and Summerbell 2011).	Footrope regulations and closures of Essential Fish Habitat areas protect sensitive habitat (California Code of Regulations Title 14 §27.51); designation of California Halibut Trawl Grounds with requirements for light touch gear (§8494 – 8497).
Set nets	Weights pulled along sea floor as net is hauled up; net itself snags and may pull up organisms growing on seafloor (Chuenpagdee et al. 2003).	Area of seafloor that weights contact may lose structural species and fragile species may catch and break on net (Auster 1998).	Limit length of net to reduce long hauls; limit use to areas of low relief with few structure-forming organisms.	NA
Pots and traps	Gear rests on seafloor; storms may cause them to drag; can drag during hauling.	Structure-forming organisms or high-relief habitat may be damaged as gear is dragged during hauling or storms; large numbers of traps can have a cumulative impact (Jenkins and Garrsion 2013).	Limit number of traps per line; limit use in high relief habitat.	Trap limits cap the total amount of traps being fished at the same time, thereby limiting total impacted area (§8276.5).
Drift gill nets	Net hangs from buoys in water column and rarely contacts habitat.	NA	NA	NA
Purse seine	Net only contacts bottom when deployed in very shallow water.	Has potential to impact bottom in shallow locations, but risk is relatively low (Dayton et al. 1995).	Limit use in heavily-vegetated shallow waters.	NA
Mid-water trawl	Trawl doors and net are dragged through water column, rarely touching seafloor with most of the weight supported by the water (Sala et al. 2009).	Has potential to impact bottom, but risk is low.	NA	NA
Hook-and-line	Light line suspends hook above seafloor, sometimes very light weight or hooks come into contact with seafloor.	Gear may snag on structure-forming organisms, but risk is relatively low (Dayton et al. 1995).	NA	NA
Bottom longline	Weighted longline with multiple hooks must be dragged across seafloor to retrieve, but it contacts a very small area.	Gear may snag on structure-forming organisms, but risk is relatively low (Chuenpagdee et al. 2003).	NA	NA

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Appendix O – Socioeconomic and Community Considerations

This appendix draws information and conclusions from a report by California Sea Grant (Pomeroy et al. 2017) that was prepared during the information gathering phase of the Master Plan amendment process. As with the other appendices, it is anticipated this overview will continue to be expanded and refined as part of Master Plan implementation so it can serve as an effective resource to managers and stakeholders.

As discussed in Chapter 7, the following questions are provided to help managers systematically consider the socioeconomic impacts of management when developing an ESR, FMP, or rulemaking package. They are suggested as a starting point for building information and understanding about the human dimensions and socioeconomics of the state's fisheries to support management consistent with the MLMA. Most of the questions can be applied across fishery sectors: commercial (including CPFV, recreational, and subsistence. Further definition and operationalization of the questions and terms is fishery-specific.

SOCIOECONOMIC OBJECTIVES

Sustainable use

1. How do people use the state's fishery resources?
2. What social, cultural, and economic benefits do fishery participants derive from fishing?
3. What aesthetic, educational, scientific, and non-consumptive recreational benefits do non-fishery participants derive from the state's marine resources?
 - a) Scuba and free diving and associated newsletters/blogs by diving organizations
 - b) Photography and filmmaking
 - c) Scientific research inside and outside of MPAs
 - d) Public education through dissemination of results of above
4. What is necessary (and sufficient) to sustain resource use?
5. Is the fishery's human system sustainable (viable ecologically and socioeconomically)?
6. How do fishery management actions affect:
 - a) Fishery participation?
 - b) Fishery activity/production?
 - c) Infrastructure?
 - d) Fishing communities?

Long-term well-being of fishing-dependent people observed

1. How are people dependent on fishing for food, livelihood, or recreation?
2. How does fishing contribute to the well-being of:
 - a) Fishing-dependent people?
 - b) Fishing communities?
 - c) Fishing economies?
3. What conditions/factors affect people's fishing for food, livelihood or recreation?
4. How do changes in management, individually and cumulatively, affect their long-term well-being?

Adverse impacts on small-scale fisheries, fishing communities and economies minimized

1. How does management affect the function of:
 - a) Small-scale fisheries?
 - b) Fishing communities?
 - c) Fishing economies?
2. How does management affect the well-being of:
 - a) Small-scale fisheries?
 - b) Fishing communities?

- c) Fishing economies?
- 3. What are the cumulative impacts of management on:
 - a) Small-scale fisheries?
 - b) Fishing communities?
 - c) Fishing economies?

Catches allocated fairly

- 1. What are the criteria for allocating resources among fishery participants (e.g., equal shares, need, fishing history)?
- 2. How is fairness defined and perceived by fishery participants?
- 3. Do allocation options meet criteria for fairness?
- 4. What are the social and economic impacts and implications of allocation options for:
 - a) Fishery participants?
 - b) Fishing communities?
 - c) Fishing economies?

Prevent/reduce excess effort

- 1. What constitutes excess effort in the fishery?
- 2. What factors contribute to excess effort in the fishery?
- 3. How does excess effort affect the fishery's human (as well as ecological) system?
- 4. What are the impacts and implications of measures to reduce excess effort for the fishery's human system?

MANAGEMENT SYSTEM OBJECTIVES

Proactive/responsive to changing environmental, market, or other socioeconomic factors and concerns

- 1. What environmental factors or concerns affect the fishery?
- 2. What market (or broader economic) factors or concerns affect the fishery?
- 3. What social factors or concerns affect the fishery?
- 4. Are there new/emerging opportunities in the fishery?
- 5. Are there new/emerging challenges or problems in the fishery?
- 6. What are the impacts and implications of changing factors, concerns or opportunities for the fishery's human system?

Conflict resolution

- 1. Are there actual or potential conflicts related to gear, access to the resource, or other aspects of the fishery?
- 2. What are the impacts and implications of conflict for the fishery's human (as well as the ecological) system?
- 3. What are the options for avoiding, mitigating, or eliminating conflict?
- 4. What are the impacts and implications of measures to avoid, resolve, or mitigate conflict?

ECOLOGICAL SYSTEM OBJECTIVES

Sustainable resource

- 1. How do fishing practices affect the long-term health of the resource?
- 2. What are the options for modifying or eliminating fishing practices that negatively affect the long-term health of the resource?
- 3. How do those options affect:
 - a) Fishery participation?
 - b) Fishery activity/production?
 - c) Infrastructure?

d) Fishing communities?

Healthy habitat

1. What are the impacts of fishing practices (gear, equipment, and their use) on habitat?
2. How do measures to maintain, restore, and/or enhance habitat affect the fishery's human system?
3. How do fishery participants' responses (e.g., changes in practices) to management change affect the achievement of fishery objectives?

Restore/rebuild depressed fisheries

1. What factors contribute to the depressed fishery?
2. What are the impacts and implications of the depressed fishery for the human system?
3. How do management options for rebuilding the depressed fishery affect the human system?
4. How do human system responses, in turn, affect the fishery's human and ecological systems?

Bycatch-limited

1. What fishing practices are associated with unacceptable types and amounts of bycatch?
2. What are the social and economic impacts of modifying these practices to address bycatch concerns?
3. What are the implications of modifying these practices for fishery's human and ecological system?

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Appendix P – Partnerships

This appendix draws information and conclusions from a report by The Nature Conservancy that was prepared during the information gathering phase of the Master Plan amendment process (Wilson et al. 2016). It provides additional details regarding the potential role of partnerships in fisheries management. It also elaborates on the varying levels of capacity and longevity that stakeholder organizations should possess to effectively partner with the Department on certain tasks. As with the other appendices, it is anticipated this overview will continue to be expanded and refined as part of Master Plan implementation so it can serve as an effective resource to managers and stakeholders.

Fishery partnerships

As discussed in Chapter 8, partnerships between agencies, Tribes and tribal communities, fishing communities, NGOs, funders, and others span a broad continuum and differ in how responsibility and authority are shared. Regardless of the exact arrangement, the principles of partnerships typically infer the sharing of some management or governance tasks with non-government actors, including research and monitoring, regulatory scoping, decision-making, enforcement and surveillance, and conflict resolution.

Where a particular fisheries partnership falls on this continuum depends on numerous features, particularly the complexity of the task to be addressed and the capacity of the partnering entities. On the low end of this continuum, individuals might participate in a one-time stakeholder engagement process that requires minimal investment and commitment. The opposite end of this continuum includes formal partnerships typically laid out in a Memorandum of Understanding that details the partnering entities' contribution to a shared management goal to be achieved by sustained collaboration over a long time period. Between these two extremes lie numerous opportunities for partnerships with varying formality, investment, and duration. Key to forming a successful partnership is understanding the capacity of partnering individuals or entities to fulfill what is expected of them. The discussion below identifies specific common tasks that the Department engages in as part of management. These tasks are generally ordered by the degree of capacity and longevity required on the part of stakeholders (see Figure P1).

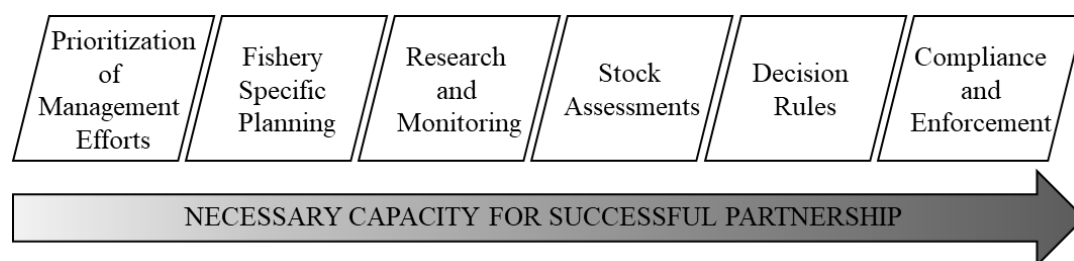


Figure P1. A continuum of partnership-based approaches (adapted from Wilson et al. 2016). The management tasks and types of partnerships are arranged along this continuum in terms of how much organizational capacity, funding and longevity is required for successful partnerships to help meet management objectives or tasks.

All partnerships require investment. In considering new partnership opportunities to improve fisheries management, the Department will need to evaluate whether a proposed partnership is mutually beneficial. The investment of funds, staff time, and other resources must be weighed against the benefits that will be realized from the partnership. As detailed below, some management activities likely lend themselves to beneficial partnerships more than others. Nevertheless, well-conceived fisheries partnerships can enhance the Department's ability to fulfill its mission and achieve the objectives of the MLMA.

Benefits of partnerships

When designed effectively and thoughtfully, partnerships are a powerful tool to support short- and long-term management and conservation goals, as well as strengthen the scope and integrity of data used to inform management decisions. Empowering Tribes and tribal communities, fishermen, local community members, and NGOs to become active partners in management can help tailor regulations and decisions to reflect current fishing practices and realistic on-the-water conditions. Localized knowledge and expertise can provide additional context to improve approaches to management. Studies have found that fishermen that possess an understanding of the rationale and legitimacy for certain decisions typically operate more responsible fishing practices and exhibit better compliance (McCay and Jentoft 1996).

In the face of increasingly variable ocean conditions, partnerships provide an effective mechanism to promote ecological and social resilience as discussed in Chapter 11. Fisheries management systems that rely on cooperative approaches and partnerships are often better equipped to address environmental change than conventional, top-down approaches (McClenachan et al. 2015). Resource users and harvesters, such as fishermen, are often first to notice changes in the environment (Dietz et al. 2003). Furthermore, effective climate change adaptation in marine fisheries demands improved knowledge of future ecosystem states. Developing collaborative partnerships with university researchers provides the opportunity to integrate best-available climate science directly into fisheries management decisions.

While the involvement of stakeholders as partners can require an investment of resources to support high start-up costs (Nielsen and Vedsmand 1997; Coglán and Pascoe 2015), the long-term investment in building support and cultivating stewardship offers ecological, economic, and social benefits, as well as direct benefits to fisheries managers. Below are examples of the ecological, economic, social, and direct benefits that have been realized through fisheries partnerships.

Potential ecological benefits

- Maintenance of sustainable stock levels that are represented by long-term increases in abundance and stock health (Gutiérrez et al. 2011; Defeo et al. 2014).
- Improved conservation of sensitive habitats, nursery grounds, and spawning grounds (Pinkerton 2009).

Potential economic benefits

- Decreased cost of management for government agencies, especially in high-value fisheries (Coglan and Pascoe 2015).
- Increased or maintained revenue streams through stabilized landings, and prevention of fishery collapse by ensuring assessments and harvest levels reflect actual stock sizes (Gutiérrez et al. 2011).

Potential social benefits

- Increased community empowerment (Gutiérrez et al. 2011) and a more democratic and participatory system where the interests of government, fishermen, and community members become better aligned.

Potential benefits to the Department

- Increased support for cost and task-sharing opportunities (Pinkerton 1994; Pinkerton 2009), creating the potential for more efficient and productive management.

- Support and buy-in for fisheries management regulations and policies leading to enhanced compliance and better working relationships with industry.

Success of partnerships

Lessons learned in California and elsewhere provide some guidance and best practices for forming successful partnerships. The following elements are crucial to realize the potential of partnerships to contribute to fisheries management in California:

- The need for durable and lasting fisheries organizations and strong fishing leadership.
- The important role of change agents.
- Access to consistent funding by stakeholder organizations.
- Multi-directional generation and exchange of knowledge/information.
- Presence of strong top-down governance and management regulations.
- Ability to build trust and social capital.
- The degree to which management decisions are decided upon in an open and transparent process.

Fisheries organizations and fishing leadership

Fisheries organizations, from legislatively-mandated arrangements to volunteer associations, can differ in their motivation and capacity largely depending on the size and diversity of the fleet. Typically, high-valued fisheries with complex regulations tend to be better organized and have identifiable leadership that can play a direct role in informing and/or overseeing management decisions. Organizations that have a formal legal structure can more readily offer more secure partnerships with agencies like the Department. Fishery organizations that do not have a legal structure have greater opportunities with being successful in long-term partnerships if they are designed and/or equipped to be durable, resilient, and flexible333333.

Change agents

Through their role as intermediaries, external change agents or “bridging organizations” can help empower fishermen, scientists, and Department staff to enhance their capabilities and available resources (Pomeroy et al. 2001). Change agents can provide resources and expertise in plan development, brainstorming, problem solving, information gathering and sharing, and participatory facilitation and communication. Change agents are often NGOs, academic and research institutions, or development agencies that rarely play a role in decision-making. Rather, they are objective and seek to expedite the partnership process by setting in place a process of discovery and social learning. External change agents’ connection with local communities, their ability to focus on community objectives, and linkages with donors and other supportive organizations are factors that favor their role.

Consistent funding

Partnerships take time to become established and can take years to evolve into a process that can support collaborative decision-making. Consistent funding sources for fishery organizations and agencies contribute to the success of partnerships, providing the security for both resource managers and fishermen to invest time and resources in establishing relationships, identifying common goals, implementing collaborative efforts, and evolving from lessons learned.

Typically, there is infrastructure established to support fisheries partnerships that evolve beyond initial start-up funds and grow to diversify their funding portfolio. Fundraising and project management skills, good financial judgment, and political savvy increase a partnership’s likelihood of long-term viability and success. For example, partnerships involving researchers and/or NGOs skilled in grant writing and aware of funding cycles can play important roles in the long-term sustainability of a partnership. Additionally,

these entities may have mechanisms in place to receive funding from various sources (e.g., NGOs) and the Legislature has clearly recognized the need and value for alternative sources of revenue to fund the Department's necessary marine conservation, restoration, resource management, and protection responsibilities (§710.7(c)). Roles and responsibilities of those charged with developing and implementing strategies to acquire partnership funding should be fully outlined to ensure everyone involved in the partnership is operating within the same expectations.

Information exchange

Generating and/or sharing information between partners can take many forms. Informal, one-on-one conversations between fishermen and resource managers can be used to address clarifying questions or to share information about what fishermen are experiencing on the water. Agency staff may use surveys to poll fisheries lacking in fisheries-independent data, and researchers may request fishermen help to interpret fisheries-dependent data.

Involving fishermen in the gathering, interpretation, and reporting of fisheries management data is considered a gateway or entry point to more comprehensive forms of collaborative management (Trimble and Berkes 2013). Fishermen involved in these projects typically see value in their participation in a collaborative research team and view their involvement as direct recognition by resource managers and academic scientists of the quality and importance fishermen's input in shaping research questions and designing surveys (Pinkerton 2009). Involving fishermen from the "ground up" helps build trust in the scientific process, credibility in the results, and creates an atmosphere where fishermen play a role in championing the research project within their fisheries, ports, and communities (Pinkerton 2009). The exchange of ideas and information can be equally as valuable to Department staff involved in the partnership who gain local and experiential knowledge (Hovel et al. 2015).

Anticipated changes in regulations

Resource managers, agency staff, decision makers, and funders are increasingly interested in understanding the motivations for the continued participation and mobilization of fisheries partnerships. Anticipated changes in management regulations can act as a catalyst for activating or reenergizing fisheries partnerships. International experiences show that fisheries management regulations that are developed without the support of fishermen are less likely to succeed due to limited involvement, and therefore acceptance or agreement (Hanna 1995).

Establishing trust and developing social capital

Trust is an essential building block to successful fisheries partnerships and efficient fisheries management. Investment in relationship-building and establishing confidence across partnership participants should be considered and integrated. Solid and long-lasting relationships can also act as an incentive to maintain ongoing collaborative efforts. The core concept of social capital is "interactions among individuals" with the inherent goal to strengthen social interactions in and between groups concerned with a given issue.

Potential role of partnerships in management

Six fundamental management tasks that can benefit from fisheries partnerships and the degree of stakeholder capacity required to effectively partner on each are described in Table P1.

Table P1. Overview of the level of capacity needed for stakeholder groups to effectively partner with the Department to accomplish particular management tasks (adapted from Wilson et al. 2016).
The three attributes (representativeness, funding, and longevity) reflect a prospective partner’s capacity.

Management Task	STAKEHOLDER CAPACITY		
	Representativeness	Funding	Longevity
Prioritization of Fisheries Management	Medium	Low	Low
Fishery Specific Planning	High	Medium	Low
Research and Monitoring	Low	Medium	Medium
Stock Assessment	High	High	Medium
Decision Rules	High	Medium	High
Compliance and Enforcement	High	High	High

- *Representativeness* is defined by whether the group represents the broader constituency through democratic or otherwise egalitarian means. If a low level of representativeness is required, it means that relatively few members of the fishery may participate effectively in a partnership. A high level of representativeness indicates that to successfully partner in a particular management task, a more representative constituency is needed.
- *Funding* refers to the ability to raise funds for participatory processes. A small group of fishermen may score on the low end, whereas a marketing association (e.g., California Sea Urchin Commission) or NGO may score towards the higher end.
- *Longevity* refers to the ability of the group to participate as a lasting partner without concern for erosion of duties and responsibilities over time. A small group of stakeholders may not be as durable as an academic institution for example.

Management Task 1: Prioritization of management efforts

As described in Chapter 2, the Department has many responsibilities and limited capacity. Prioritization approaches that incorporate the expertise and perspectives of stakeholders can help identify the fisheries in most urgent need of management attention. Stakeholder engagement, and structured partnerships with groups like OST, has and will continue to play key roles in setting priorities. Prioritization does not require an ongoing or durable partnership with the same entities, and partners only need minimal capacity to participate.

Management Task 2: Fishery-specific planning

Partnerships can facilitate the fishery management planning process in several ways, including by helping to provide or secure external funding and outside expertise. Additionally, stakeholders, and fishermen in particular, have vital roles to play in the assembly and interpretation of EFI, the development of practical and focused research protocols, and the identification of appropriate management strategies and control rules. The approach to incorporating additional stakeholder input will vary based on the dynamics of the fishery. For example, for the Pacific Herring FMP, the nature of the fishery allowed for a small, focused steering committee to work closely with the Department and have a high degree of involvement in process management and decision-making (Pacific Herring Discussion Group 2015). Other fisheries, such as California Halibut, are more complex in terms of user groups, gear types, and port perspectives and thus a different approach to engagement will be necessary. The benefits of partnerships in fishery-specific planning extend beyond the FMP model to non-FMP fishery-specific documents, such as the development of ESRs as described in Chapter 3.

The primary benefit of a partnership-based approach to planning is that it can attract the funding and provide the organization that allows for comprehensive management reform where it would otherwise not be possible. This can facilitate regulatory changes that enhance the biological and economic sustainability of the fishery. It can also focus limited research funding on the most instructive areas. Further, this partnership-based approach empowers individuals and promotes buy-in to the process and its results. To partner with the Department and help initiate and advance planning efforts, stakeholder groups need to be representative and have the capacity to help organize the effort, seek funding, and communicate with their constituents. Given the shorter-term, project-based nature of fishery planning, the durability of the stakeholder group is not as much of a priority issue as it is for longer-term efforts.

Management Task 3: Research and monitoring

CFR, where fishermen and the fishing industry are actively involved in the design and implementation of research and monitoring that support management, is key to helping the Department manage fisheries in a cost-effective way. CFR can help the Department in the following ways:

- Expand the capacity to conduct research and fill information gaps that the Department currently does not have staff or expertise to do. Given that Department capacity and resources for research are not likely to increase in the near-term, external partnerships are a potential vehicle to achieve more.
- Play a key role in conducting research, potentially enabling staff to focus more on an oversight and management role.
- Lend credibility and trust to management approaches by avoiding “cloistered” approaches (either the Department doing science and making management decisions alone, or an academic doing research and bringing “the answer” to the agency).
- Involve key stakeholders to ensure that the resulting management approach has more buy-in and is designed to achieve desired outcomes.

There is a distinction between the levels of capacity and durability required for ad-hoc research versus long-term monitoring. Generally, research is more short-term, and project-based. Stakeholder partners do not need to be representative of the fleet or have significant capacity beyond being able to reliably participate in the research. They also do not need to be particularly durable given the typically short-term nature of the work. By contrast, monitoring involves regular, consistent sampling over time to build a time series of data.

Partnerships require organizations that have sufficient capacity to engage over time and are sufficiently long-standing that the Department can be reasonably assured that efforts to incorporate the group into monitoring will be worthwhile and will not pose a threat to the stability and integrity of the monitoring effort. The organization does not need to be particularly representative as the perspectives of the broader fleet are not directly at issue.

Management Task 4: Stock assessments

In the face of limited resources for carrying out full stock assessments, alternative assessment approaches present an opportunity for increased stakeholder participation in data collection, determination of appropriate performance indicators and reference points, and selection of appropriate stock assessments. Partnerships can play a role in facilitating, developing, and carrying out both empirical and model-based stock assessment approaches for improved fisheries management. Partners can be leveraged to assist with stock assessments through a variety of avenues, several of which are described below.

Similar to the potential collaborations and partnerships described in Task 3 regarding research and monitoring, universities and other academic institutions can play an important role in supporting stock

assessments. A strong out-of-state example is the University of Washington and NOAA's Joint Institute for the Study of the Atmosphere and Ocean (<http://www.jisao.washington.edu/about-jisao>), which funds graduate students to work on applied fishery management issues, in particular stock assessments primarily for federally-managed fisheries. Private research institutions, stakeholder working groups, and NGOs are also capable of fulfilling several duties associated with assessments. As described in Chapter 5, NGO and academic partners worked with the Department to apply data-moderate stock assessments to a suite of California fisheries and develop a California-specific DLM tool. A working group on data-limited fisheries, funded through the Science for Nature and People Partnership, developed a decision support system for choosing an appropriate management strategy for data-limited fisheries (Dowling et al. 2016).

The use of fishing industry funds to help hire independent contractors to fulfill stock assessment requirements is an approach that the Department has used before that is embraced by a number of national governments across the globe (Castilla and Fernández 1998). The California Sea Urchin Commission has funded independent research for many years to determine biological characteristics important to the long-term sustainability of the fishery (Ebert et al. 1994). Such funding has also been leveraged to understand the biological and economic value of adjusting the minimum size limit in the fishery. In the Pacific Herring fishery, the San Francisco Bay Herring Research Association, an NGO formed with money from the Cosco-Busan spill, funded a stock assessment in partnership with herring fishermen.

To effectively engage in partnerships focused on assessments, stakeholders need a comparatively high degree of organization. Assessments are technical and even simplified approaches require sufficient funding to conduct. The use of industry funds to support assessments implies adequate representativeness to collect funding and sufficient structure and strategy to decide how those funds should be spent. Academic institutions typically have the capacity required to engage in assessment-based research and the technical abilities to help select and conduct assessments. Because assessment work is comparatively short-term and project-based, proven stakeholder group durability is potentially less of a concern.

Management Task 5: Harvest Control Rules

To achieve harvest sustainability, managers are charged with prescribing a system of decision rules that meet target objectives for fisheries management. The development of HCRs is arguably the single most important component of a management strategy. Development of decision rules that meet multiple objectives can be enhanced through active participation among managers, scientists, industry participants, and constituents (FAO 1995). Using static decision rules such as the prescription of a TAC set at a fraction of historical landings or an assumed unfished spawning stock biomass (Restrepo et al. 1998; Berkson 2011), often fail to meet the needs of a diverse set of stakeholders.

As discussed in Chapter 11, with climate change there is a need to develop adaptive decision rule frameworks that allow for rapid adjustments to management measures without the need for lengthy legislative or otherwise bureaucratic approaches to fishery management. Such processes need to be transparent, objective, and simple in order to be readily integrated into state fisheries management. Working with partners to help develop, test, and implement these systems is critical for helping prepare for an uncertain future that will require nimbleness and flexibility in decision-making.

Partners can participate in the development of decision rules in many ways, including via an MSE process as discussed in detail in Appendix L. MSE is a procedure that allows for the objective and explicit consideration of tradeoffs between alternative management strategies including the management measures and control rules that link assessment outcomes with the management response (Smith 1994). The use of MSE as a guide for selection and implementation of decision rules must be informed by partners since it is dependent on a number of assumptions about stakeholder objectives, ecological dynamics, and behavior of fishermen. MSE can streamline decision-making and can reduce the costs of management when appropriately designed.

There is a continuum of potential stakeholder involvement with the development and adjustment of HCRs. On the lower end, stakeholders do not need to be as well organized. The Department can solicit specific input from stakeholders without concerns regarding the durability of organizations or their capacity. This is a form of stakeholder engagement. On the other end, in more formal and structured approaches, stakeholders will need to be more organized and need greater capacity to engage in framework approaches described above. Given the potential for direct consequences, fishermen in MSE working groups need to be representative of the interests of the broader fleet. The durability of stakeholder organizations is of particular concern if structured adaptive management processes identify stakeholder organizations by name. However, as in the White Seabass FMP, adaptive management structures need not be dependent on particular organizations.

Management Task 6: Compliance and enforcement

Effective law enforcement, as well as consistent voluntary compliance with fishery management measures, is critical for protecting California's marine resources and the fisheries and communities that depend on them. Given the state's more than 1,100 miles of coastline and numerous existing fishery regulations, the Department faces some significant logistical, economic, and capacity challenges in achieving desired compliance and enforcement outcomes across the state.

The Department has already incorporated partnerships into its compliance and enforcement. In addition to partnering with managers and industry groups and providing specific fisheries-related training for allied enforcement agencies and tribal entities, the Department has:

- Provided outreach and education to MPA Collaborative Network members on regulations pertaining to MPAs and what to do if they encounter a potential violation.
- Provided support and specialized training for the Natural Resource Volunteer Program, whose members provide education and outreach regarding marine regulations in partnership with the Department.
- Furthermore, CalTIP (Californian's Turn in Poachers and Polluters) now has a dedicated mobile device application for ease of use in reporting violations (see: <http://caltiponline.org/>).

Building off these successful existing partnerships and looking to models from around the country and the world, almost every aspect of a comprehensive compliance and enforcement strategy can be improved by expanded partnerships. However, due to the sensitive nature of enforcement activities, any partnerships must be formed with a great deal of consideration and forethought.

Engaging fishing leaders in the development of important regulations and management changes can improve outcomes, increase buy-in and awareness, and support high-levels of voluntary compliance as well as peer-to-peer education. Industry cooperatives, advisory committees, sport fishing groups, and other organizations can provide significant assistance in improving the awareness and understanding of existing and new relevant regulations by working directly with the Department to organize and host workshops and education sessions and distribute informational materials to members. These groups could also take on significant responsibilities in encouraging best practices among their members to support management and enforcement objectives.

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Appendix Q – Peer Review under the Marine Life Management Act

This appendix draws information and conclusions from a report by OST that was prepared during the information gathering phase of the Master Plan amendment process (OST 2017). It provides details regarding best practices and resources to help managers plan for and navigate the peer review process, including a peer review checklist, TOR and a sample report template, and summary of scientific peer reviews of Department work products from the period of 2001 – 2017 (see Table Q1). As with the other appendices, it is anticipated this overview will continue to be expanded and refined as part of Master Plan implementation so it can serve as an effective resource to managers and stakeholders.

Best practices for common work products

Draft Fisheries Management Plan review

As discussed in Chapter 10, the scientific components of FMPs are subject to external peer review. Scientific analyses, including stock assessments, should be peer reviewed before they are used as a basis for identifying management strategies. Review of methodologies, complex models, or stock assessments supporting an FMP should occur separately from review of a full draft FMP.

Review of a complete draft FMP should occur late in development when a full high-quality draft is completed, and preferably before public comment so that the science has been reviewed and any issues addressed. Reviewers should not be used as FMP development teams or advisory committees.

Following the operating procedures of the PFMC, an FMP peer review should evaluate statistical, biological, economic, social, and other scientific information, analyses, analytical methodologies, literature, research, and information relevant to decision-making. Rather than a line-by-line assessment, an FMP review should consider addressing the following questions:

- *Do the scientific and technical components within and supporting the FMP form a rigorous framework that can support sound fishery management decisions?*
- *Are there critical discussions or literature that should be factored into the FMP that would substantially strengthen the document?*
- *Are the models' interpretations technically sound, appropriate, and supported by the best available data?*
- *Are the proposed reference points within and supporting the FMP scientifically sound and supported by the best available data? Are the thresholds sufficient and appropriate for identifying important changes/trends in stock status?*
- *Are research and monitoring needs comprehensive enough to allow the Department to collect and maintain EFI necessary to achieve management targets for the stock? Are there any priority gaps in research and monitoring that should be addressed or included?*

If the FMP is at the draft stage and the supporting scientific analyses, models, and methods have already been reviewed, the draft may not necessitate a highly-processed technical review and a written review may be more appropriate. A follow-up webinar and/or workshop review could be conducted if enough concern were to emerge during the review process.

Methodology reviews

Methodology reviews are appropriate when a major new data source is introduced, when a new tool is developed for consideration in management, or when a major change is made to a method or model.

Ideally, the scientific and technical merits of a new methodology proposed for use should be reviewed before the methodology is applied in an FMP or other management work product to help ensure any issues have been resolved. A reviewed model can then be included in an “accepted” toolbox for use in fishery management, and any future application will not need the same level of review, unless there are exceptional circumstances.

The scope of a methodology review will vary depending on the work product under review, but should consider addressing the following questions:

- *Are the analytical methods used appropriate and technically sound?*
- *Are the research, data collection, and analyses comprehensive and representative of the best available science, and do they support the methodology?*
- *If it is a new methodology proposed for use, how does it improve upon existing approaches, and how can it be applied in support of management targets for the stock?*
- *What research and/or monitoring are needed to improve the methodology in the future?*

Remote panel reviews, panel workshops, and/or journal peer reviews are modes of peer review most appropriate for methodologies since they tend to be novel, untested, and can be subject to controversy.

Stock assessment and Management Strategy Evaluation reviews

Stock assessments use fishery-dependent and -independent data to describe the past and current status of a fish population or stock to help managers make predictions about how a fishery will respond to current and future management measures. MSE are simulations that compare different combinations of data collection efforts, methods of analysis, and subsequent management actions in order to identify an appropriate strategy or understand the effectiveness or associated risk of an existing management strategy. Stock assessments have only been completed for a handful of marine species in California due to the resource-intensive nature of the exercise and the data required for a fishery. However, as more data-poor, rapid stock assessment and MSE methods become available, the Department will likely conduct more frequent assessments and evaluations that require peer review. A stock assessment and/or MSE review may consider posing the following questions to the review team:

- *Are the underlying assumptions, data inputs, model parameters, and other pertinent information scientifically sound and appropriate?*
- *Are additional sensitivity runs, analyses, or data required to support the peer review process?*
- *Does the stock assessment or MSE represent the best available scientific information to inform the development of HCRs? Are there any deficiencies in the input data or analytical methods?*
- *What additional research and monitoring are needed to improve the assessment and fishery management in the future?*
- *What data sets were considered and rejected for the final model, and why were they rejected?*

The mode of peer review most appropriate for a stock assessment or MSE is a panel workshop because of the need for group discussion and additional data analyses. In addition to reviewers, stock assessment and MSE review workshops often include the FMP management team and Department scientists, as well as additional stock assessment and MSE experts. Stock assessment review processes have been well established for federal fisheries management. Groups like South East Data Assessment and Review and NOAA PFMC Stock Assessment Review Panels may provide informative examples of successful approaches that vary in detail and level of time and analyses required.

Review of science supporting focused rulemaking or routine management measures

Routine management measures are those that are likely to be adjusted annually or more frequently, and may include changes to conservation area boundaries, trip limits, bag limits, and size limits among other measures. The science supporting these measures has often been previously reviewed or relies on expert judgment. Given the need for timeliness, the mode of peer review most appropriate for science supporting focused rulemaking or routine management measures may vary. Often, the mode will likely fall under internal review or external expert written review depending on the significance and implications of the rulemaking. With controversial issues it should be determined whether the benefits of a panel review with public, stakeholder, and agency input may be worth the costs of the more extensive process.

Additional considerations

Stakeholder buy-in of a review process and outputs may be of particular importance for highly-politicized, controversial, or sensitive fisheries. Understanding who key stakeholders are and how they are likely to react to a review can help identify the best ways to engage them in the process. The Department should consider whether a transparent process is consistently applied across all reviews, or whether stakeholder involvement is determined on a case-by-case basis depending on the needs of a review. See Appendix G for strategies regarding stakeholder engagement.

Terms of reference and sample report template

TOR documents outline general procedures and responsibilities that contributors should aim to adhere to when conducting a formal process such as developing and peer-reviewing a work product. A TOR is typically developed for each type of review (e.g., stock assessment review, methodology review) and for each fishery. TOR documents detail the objectives, approaches, reporting requirements, and responsibilities of participants. They are made publicly available to enhance transparency. Each individual review will likely have unique requirements that can be defined in a specific TOR document or scope of work.

Drawing on experience of the PFMC, the Department should develop TORs that include information on:

- Review process goals and objectives.
- Roles and responsibilities of participants.
- Structure and qualifications of the review panel participants.
- Structure of meetings and/or workshops.
- Process for requesting additional data or analyses.
- Guidelines for dealing with uncertainty and areas of disagreement.
- Guidance on structure of the review report (see below).

Sample Council TOR reports

- *Terms of reference for the Groundfish and Coastal Pelagic Species Stock Assessment Review Process for 2017-2018* (June 2016) at http://www.pcouncil.org/wp-content/uploads/2017/01/Stock_Assessment_ToR_2017-18.pdf
- *Terms of reference for the Methodology Review Process for Groundfish and Coastal Pelagic Species for 2017-2018* (June 2016) at http://www.pcouncil.org/wp-content/uploads/2017/01/Methodology_ToR_CPSGF-2017-18.pdf

- All Center of Independent Experts reports append the review scope of work, which includes the TOR. These are available by year and title at <https://www.st.nmfs.noaa.gov/science-quality-assurance/cie-peer-reviews/peer-review-reports>

General Fisheries Peer Review Checklist

Below is a checklist that should be used by the Department and review coordinating bodies to plan for a peer review process. Note that timelines often shift, so review coordinators should maintain a high level of flexibility (given that end products are often time sensitive).

PEER REVIEW SCOPING

4-6 months prior to start of a review

Department

Determine whether product is subject to or exempt from review

- ☐ If review is required, determine whether review is *internal* or *external*
- ☐ If external, contract with an appropriate review coordinating body

1-2 months prior to start of review

Department

- ☐ Deliver draft report to review coordinating body

Review Coordinating Body

- ☐ Work with the Department to develop a specific TOR or scope of work indicating:
- ☐ Mode and level of review
 - Roles and responsibilities of all parties involved in the review
 - Process, timeline, and budget
 - Level of stakeholder involvement
 - Required reviewer expertise and an appropriate number of reviewers
 - Product(s) from the review
- ☐ Select and convene reviewers
- ☐ Have reviewers complete and sign a conflict of interest policy and a non-disclosure agreement (if required)
- ☐ Develop review instructions based on draft report and specific TOR
- ☐ Develop collateral (e.g., webpage, communication materials, stakeholder listserv)

CONDUCT PEER REVIEW

Reviews take from 6 weeks to several months

Review Coordinating Body

- ☐ Distribute specific TOR, review materials, and review instructions to reviewers
- ☐ Administer review based on mode selected (e.g., individual written reviews, panel workshop, etc.)
- ☐ Gather and submit additional data and analyses requests to the Department
- ☐ Develop draft product(s)
- ☐ Manage reviewers approval of/sign-off on final product
- ☐ Deliver product to the Department for a management preview prior to public release

- ☐ When appropriate, conduct a results briefing with the client and/or stakeholders
- ☐ Post final report online and distribute to interested partners and stakeholders

PEER REVIEW FOLLOW-UP

Revisions to the product under review may occur from several weeks to several months after delivery of the review report

Review Coordinating Body

- ☐ Facilitate discussions between reviewers and the Department as they consider review feedback and revise the work product
- ☐ Where appropriate, present results of review in a public meeting (e.g., Commission public meeting)
- ☐ Work with the Department to develop text to include in the final work product that appropriately represents the review process and outcomes

Table Q1. Summary of scientific peer reviews of Department work products from the period of 2001 – 2017 (adapted from OST 2017).

Work product reviewed	Review year	Review type	Coordinating entity	Review format	Public participation	Number of reviewers	Review output
Draft Nearshore FMP	2001	FMP	Sea Grant	1-day workshop	None	6	Individual written reports, consolidated report
Draft White Sea Bass FMP	2001	FMP	Sea Grant	1-day workshop	None	4	Individual written reports, consolidated report
Draft Market Squid FMP	2002	FMP	Sea Grant	2-day workshop	None	5	Compiled summary report written by review panel (internal)
Draft Abalone Recovery and Management Plan	2002	FMP	Sea Grant	2-day workshop	None	4	Compiled summary report from California Sea Grant (internal)
Model Supporting the Herring Stock Assessment	2003	Methodology	Sea Grant	2-day workshop	None	3	https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=31413
Sheephead Stock Assessment	2004	Stock assessment	Department	Meeting	Unknown	3	https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=33801
California Halibut Assessment	2011	Stock assessment	Department	3-day workshop	Workshop open to public (with public comment)	3	https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=36258&inline
Spiny Lobster Stock Assessment	2011	Stock assessment	Department	2-day workshop	None	3	https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=41074&inline
Abalone Density Estimation Method	2014	Methodology	OST	Multiple remote meetings and a 1-day workshop	Several remote meetings open to public (with public comment)	6	http://www.oceansciencetrust.org/wp-content/uploads/2016/11/Abalone-Executive-Summary-FINAL.pdf
Draft Spiny Lobster FMP	2015	FMP	OST	Multiple remote meetings	None	4	http://www.oceansciencetrust.org/wp-content/uploads/2016/11/Lobster-FMP-Scientific-Review-Report-6-9-15.pdf
White Seabass Stock Assessment	2016	Stock assessment	Pfleger Institute	2-day workshop	Workshop open to public (with public comment) and many participants	2	http://www.capamresearch.org/sites/default/files/WSB_SA_2016_Review_Report_Final.pdf
Pacific Herring Stock Assessment	2016/2017	Stock assessment	Department	2-day workshop	No public	3	In progress

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California Ocean Science Trust (OST). 2017. Scientific Peer Review: Guidance and Recommendations for the California Department of Fish and Wildlife. Accessed at <http://www.oceansciencetrust.org/wp-content/uploads/2017/06/CA-Fisheries-Peer-Review-Guidance-6.26.17.pdf>

MLMA Master Plan Amendment Tribal and Stakeholder Review of Revised Draft 2018 Master Plan				
Table 1. Response to comments received by the Fish and Game Commission on the revised draft 2018 Master Plan.				
Comment #	Name & Affiliation	Comment Format & Date	Summary of Comment	Response
1	Sarah Sikich and Jocelyn Enevoldsen, Heal the Bay	Written recommendation to the Commission dated 4/13/2018	Expression of support: We thank the Commission and Department for your commitment to using the best available science in the ecosystem-based management of California's ocean resources, and for your dedication to ensuring transparency and public accessibility in the decision-making process. Congratulations for completing this draft of the Master Plan. Heal the Bay has been actively involved in the process to update the Master Plan and we view the revised draft Master Plan, and the outlined management actions, as beneficial to the sustainable management of California's fisheries.	Support noted.
2			Expression of support: Overall, we are supportive of the revised draft Master Plan for implementing the MLMA. Specifically, we are encouraged by the prospect of implementation of a scaled approach to fisheries management that upholds the tenants and goals of the MLMA. This streamlined approach will allow the Department to focus needed attention on priority fisheries, and will efficiently advance the objectives of the MLMA, especially given limited resources. We are also excited about the Online Fisheries Portal, and we look forward to the increased public accessibility and transparency that this tool will provide, while simultaneously giving the public a better understanding of the immense amount of work required of the Department to manage California's fisheries.	Support noted.
3			Expression of support: We were actively involved in several stakeholder engagement processes during the development of the draft Master Plan, and we wish to extend thanks to Commission and Department staff who diligently worked to incorporate the input of stakeholders with differing views. These stakeholder discussions were often very nuanced and sometimes contentious, and we were impressed with the facilitation of these groups, which allowed stakeholders from different sectors to dig deep and engage in meaningful discussion. Thank you for this inclusive process. Specifically, we are pleased with the inclusion of the series of Bycatch Inquiries in Appendix K.	Support noted.
4			Expression of interest in supporting implementation efforts: During the various draft Master Plan stakeholder engagement processes, important lessons were learned that can inform future stakeholder processes throughout the implementation of the MLMA. We look forward to working with the Commission and the Department to understand the strengths of these processes, as well as understanding areas where staff could have benefited from more support, in the hopes that we can help make MLMA implementation as efficient, inclusive, and comprehensive as possible.	Support noted.
5			Expression of support: We are very supportive of the emphasis placed on partnerships to assist the Department in achieving the extensive management objectives of the MLMA, especially in light of limited funding. Engaging in meaningful partnerships with stakeholders will enable the Department to fulfill its obligations more efficiently and with broader buy-in, resulting in stronger management for sustainable California fisheries.	Support noted.
6			Recommendation: Encourage the Commission and the Department to capitalize on future partnership opportunities to delegate and share responsibility with partners, who can provide much needed support and knowledge.	The Department looks forward to continuing to engage in meaningful partnerships.
7			Recommendation: Move the interim priority list from the body of the draft Master Plan into an appendix. We understand that the interim priority list is a draft product that excludes important ecological information and stakeholder input, and is not intended to inform management priorities in its current form. Additionally, we understand that the Department and Commission plan to conduct a subsequent process after adoption of the Master Plan to more fully flesh out and finalize the priority list incorporating Ecological Risk Assessment outcomes, as well as socioeconomic and climate change analyses. Including the interim priority list in the body of the draft Master Plan is potentially confusing and may lead to misconceptions by stakeholders, as it appears that the Department will prioritize management action for the fisheries currently listed in the High Priority category (ie. Hook-and-Line fishery for Sheephead) over fisheries currently listed in the Low Priority category (ie. Trap fishery for Dungeness Crab). We recognize the challenges facing the Department in implementing the Ecological Risk Assessment and other prioritization processes, as staff and funding resources are limited, and time is required for partners to conduct the assessments. However, we feel that it is critical to include a complete priority list, as this is a central feature of the Master Plan.	The interim list of priority fisheries has been moved from Chapter 2 to a new appendix (Appendix E). As resources and capacity permit, the Department intends to conduct the prioritization approach within the framework for MLMA-based management to generate a more comprehensive priority list of fisheries and provide it to the Commission within one year of Master Plan adoption.
8			Recommendation: Request that the Commission direct the Department to provide a detailed and specific work plan and timeline for completing the prioritization process with the adoption of the final Master Plan if the Commission wishes to proceed with an interim priority list rather than a final priority list. The work plan and timeline should include milestones for meeting objectives during the one year period referred to in the draft Master Plan.	As resources and capacity permit, the Department intends to complete a more comprehensive approach to prioritization described within the framework for MLMA-based management within one year of Master Plan adoption. The Department has several projects underway, including further testing of the Data-limited Methods Toolkit, developing Enhanced Status Reports, and scoping the design and development of the California Fisheries Portal. The Department looks forward to completing Ecological Risk Assessments and developing a workplan once the Master Plan is adopted and there is additional clarity regarding the resources available for implementation.
9	Louis Botsford and J. White, University of	Written recommendation to the Commission dated	Expression of support: We are pleased to see the Commission spending this effort to improve management of California's fisheries through revision of the Master Plan.	Support noted.

10	California at Davis and Oregon State University	4/12/2018	Expression of support: We were pleased to see the paragraph in the Executive Summary on “Integrating Marine Protected Areas into fisheries management. The paragraph states that accounting for these Marine Protected Areas “is a key aspect of MLMA implementation. And further that “If successful, integration of the Marine Protected Area network into fisheries management is expected to provide significant benefits to fisheries and resources alike.” We could not agree more.	Support noted.
11			General statement: We were surprised and disappointed to find that the integration of Marine Protected Areas was not included in the remainder of the document in any functional way, other than in the last appendix (Appendix P) of the document. Marine Protected Areas are, of course, mentioned throughout the remainder of the document, but mainly in inconsequential ways. For example, their obvious benefits are mentioned several times (e.g., protect habitat, protect age structure, and precaution), but these are only vaguely linked to fishery status and management, if at all. Another reason for their mention is that that they presumably supply an experimental control for us to judge the effects of fishing and climate because they are unfished. The problem with this is that they are not isolated pristine ecosystems; a challenge that is addressed in Appendix P.	The role and benefits of Marine Protected Areas in fisheries management are discussed in several places in the Master Plan. Marine Protected Areas are considered during the prioritization approach as they are included in the Ecological Risk Assessment (see Chapter 2), and in Appendices H-J as an important component to data collection efforts, conducting stock assessments, and determining Harvest Control Rules. Text has been added to Chapter 5 to better integrate Marine Protected Areas into considerations for achieving stock sustainability objectives.
12			Expression of support: Appendix P is a reasonably complete and well informed view of how Marine Protected Areas have been quantitatively linked to fishery management so far. It lists the types of Marine Protected Areas and the benefits of Marine Protected Areas. Importantly, it poses the question of whether, in fisheries management, the effects of Marine Protected Areas should be considered “on the table or off the table.”	Support noted.
13			Recommendation: Include a description of the need to quantify the effects of Marine Protected Areas in a way that can be used to contribute directly to fishery management. The reader is left thinking that we have two ways of managing marine resources (i.e., Marine Protected Areas and conventional fisheries management), and it is impossible to connect them. There is no mention in the main text of the role of Marine Protected Areas in stock assessment, setting control rules, and so forth, except to mention them as a potential reference point for data-poor fisheries. In our view a Master Plan document would be the natural place to set guidance for these questions, rather than have them decided later on a stock-by-stock basis. Management of both fisheries and Marine Protected Areas need to proactively address the connections between the two.	Please see response to comment 11.
14			Recommendation: Include a description of what would be desirable in the future. As monitoring and adaptive management of the Marine Life Protection Act Marine Protected Areas begins to increase our understanding of their function, and we eventually have a long enough period to see the effects of Marine Protected Areas on fishery yield, we will need the means to quantitatively assess these Marine Protected Areas. This will be enhanced by our increasing ability to model ocean currents and connectivity.	Added reference to the need to determine an approach to quantitatively assess Marine Protected Area impacts in Chapter 5 when discussing data collection strategies.
15	Greg Helms, Ocean Conservancy	Written recommendation to the Commission dated 4/13/2018	Expression of support: Overall, the revised draft lays out a practical, robust, science-based and ecosystem-inclusive framework for managing California’s fisheries, and we appreciate the responsiveness of the Department to our input in many aspects of the revised draft.	Support noted.
16			Expression of support: In November 2017, Ocean Conservancy and five other organizations submitted detailed comments on the initial draft plan. We thank the Department for incorporating several of our comments into the revised draft, notably in the areas of climate ready fisheries and updating management strategy evaluations. These changes improve the overall plan and will improve the management of marine life in California’s waters.	Support noted.
17			Recommendation: Urge the Commission to consider Master Plan adoption and implementation as a whole process—each step should not be considered in a vacuum as each step affects the effectiveness and success of the whole. The response from the Department on some of our recommendations was that they were more appropriate to the implementation process of the Master Plan than the Master Plan itself. We appreciate this feedback, and look forward to working with the Commission over the initial implementation of the Master Plan to ensure that on-the-water benefits are realized quickly for our fisheries. However, we do encourage the Commission to consider the revised draft in light of the complex and important fishery management interventions to come, and the crucial processes of prioritizing Commission and Department investments in revising management of California’s marine fisheries. Our comments reflect our priorities and recommendations in this light, recognizing the Commission’s important role in stewarding the planning and implementation of sustainable management of California fisheries and ecosystems.	Request for the Commission consideration.
18			Expression of support: Ocean Conservancy strongly supports the revised draft Master Plan’s emphasis on prioritizing management efforts based on ecological and socio-economic criteria to more consistently meet fishery challenges like stock sustainability, minimization of bycatch and habitat protection, while managing within resource and funding constraints. We believe realizing these crucial benefits will require a commitment to the comprehensive prioritization described in the revised draft.	Support noted.
19			Expression of support: We also appreciate the revised draft’s language indicating that the interim priorities list provided at page 8 offers only a preliminary notion of potential management priorities developed under the comprehensive prioritization envisioned by the draft Master Plan, and support language addressing re-evaluation of priorities over time and the role of emerging fisheries.	Support noted.

20			Recommendation: Recognizing the necessity of adequate funding and resources, we urge application of the full suite of assessment tools described in Chapter 2 to identify and rank target species vulnerability, ecosystem risk factors, and economic and social opportunities so these are addressed according to their need as management measures for fisheries are crafted or revised. The Framework for MLMA-based Management flow-chart presented on page 4 in the revised draft places a prioritization component consisting of ecological risk assessment and socio-economic criteria at the top of the revised approach to implementing the MLMA. Thus, prioritization is the critical first step to fulfill unmet MLMA management areas, including stock sustainability, bycatch, and habitat impacts, into each subsequent facet of the Master Plan. We note that a systematic prioritization process presents the opportunity to track and communicate progress in applying MLMA management standards to the range of California marine fisheries, as well as to illustrate the benefits of sustained adequate funding for fisheries management.	Please see response to comment 8.
21			Expression of support: Combined with comprehensive prioritization of management needs, the more flexible and streamlined management vehicles (e.g. Enhanced Status Reports, Focused Rulemaking, and Scaled Fishery Management Plans) proposed in Chapter 3 present an effective approach to more targeted, objective-based and cost-efficient progress in applying the MLMA's sustainability vision to the range of California's active fisheries. These additional fishery management scales have the potential to better apply limited Department resources to core sustainability and ecosystem challenges.	Support noted.
22			Recommendation: Request that the Commission consider replacing the term "should" with "shall" in describing the outline of "what should be included" for scaled management document (Enhanced Status Reports, Focused Rulemaking, and Scaled Fishery Management Plans) contents since the majority of these are requirements of the MLMA, denoted by sections of the California Fish and Game Code, which would help to ensure full application of key MLMA management guidance is the norm. In our view, the outlines of what "should be included" in each scaled management document will help organize the MLMA's core requirements to ensure they are addressed in management.	Request for Commission consideration.
23			General statement: Prioritization and scaling fishery management action are tightly interrelated and sequential, and it will be essential to follow the Framework for MLMA-based Management in order to fully realize the potential of the Master Plan.	Agree.
24			Expression of support: We view both ecosystem values and the Ecological Risk Assessment tool to assess them as an essential ingredient in fulfilling MLMA's ecosystem management focus across the range of MLMA implementation — from prioritizing among species to establishing focal areas for management within Enhanced Status Reports and scaled management actions. We appreciate the stakeholder engagement with which the Ecological Risk Assessment was developed and look forward to its broad application and refinement.	Support noted.
25			Expression of support/ Recommendation/ Expression of interest in supporting in supporting implementation efforts: The revised draft places a well-reasoned emphasis on the sustainability, health and resilience of fish stocks and on the flexibility of management systems and fishing communities as key bulwarks in facing the challenges of climate-ready fisheries. We urge special management precaution be applied to stocks with particular vulnerability to climate change effects; thus we appreciate the Revised Draft's expanded text regarding targeted climate vulnerability assessments. We look forward to helping identify partnerships and resources available to apply these assessments as appropriate.	Support noted.
26			Expression of support: We support inclusion of the critical MLMA requirement to establish overfishing criteria among the elements an Enhanced Status Report should address (Cal. Fish & Game Code §7086). And we agree with the Department that the prioritization process may dictate that action to address needs identified in a fishery's Enhanced Status Report be deferred until higher priority fisheries and threats are addressed.	Support Noted. The MLMA requires Fishery Management Plans to establish criteria to determine whether overfishing is occurring (Section 7086(a)). Overfishing criteria will be included in the Enhanced Status Reports of fisheries where they have been established. However, establishing new overfishing criteria through Enhanced Status Reports would not provide sufficient opportunity for stakeholder and Commission input. Additionally, for many fisheries, there is insufficient information to develop criteria. For these fisheries, an assessment of trends in landings over time may be the best indicator for determining whether a fishery is depressed. Even if overfishing criteria have not been established, Enhanced Status Reports will identify the data streams and indicators that the Department tracks to monitor trends in the fishery. Text has been added to Chapter 3 to clarify the distinction in the requirements of the MLMA for addressing overfishing criteria and depressed fisheries in Fishery Management Plans and Enhanced Status Reports.
27			Recommendation/ Expression of interest in supporting in supporting implementation efforts: For non-priority fisheries which are by definition smaller and lower-impact, Enhanced Status Reports could account for the need to pursue other needs before amending management measures for a non-priority fishery, and establish an interim approach to identifying overfishing criteria with a simple fishery control rule. Such rules could identify the current effort or catch in the fishery, and express catch or effort parameters around these levels to serve as overfishing criteria. This approach could both expand the utility of Enhanced Status Reports as well as introduce an element of active management to a higher range of fisheries. We look forward to developing these approaches with the Commission and the Department as the important work on scaled management begins.	Enhanced Status Reports are not the appropriate venue for establishing Harvest Control Rules or other new management measures. They can, however, be used to describe reference points currently in use and offer recommendations for potential management actions should reference points be exceeded.

28			Expression of support/ Recommendation/ Expression of interest in supporting in supporting implementation efforts: We are especially appreciative of expanded text in the revised draft supporting the role of multiple management measures in addressing complex and sometimes competing management goals. With this large suite of options available to managers, we believe it will be critical to more directly link these techniques with their applications in the Master Plan by identifying the specific types of fisheries (e.g. higher and lower priority, risk and data availability) and their most appropriate management scales and harvest strategies. Doing so, in our view, should be a particular focus of implementation planning following adoption of the final Master Plan.	Support noted. Given that each fishery is unique, it is difficult to identify as a matter of policy the most appropriate combination of Harvest Control Rules and management measures. Appendices J and K seek to provide guidance without being prescriptive.
29			Expression of support/ Recommendation: Encourage the Commission and Department to recognize and account for the expertise and resources necessary to utilize these tools. It is our expectation that successful implementation of the Master Plan will require supplemental scientific and technical resources beyond what exists at present. We appreciate the sections in the revised draft describing scientific peer review and management partnerships, both of which will play a role in ensuring the best available information is applied to management. It must be a shared commitment to plan for and secure these resources and capacity.	Support noted. The Department looks forward to continuing to engage in meaningful partnerships and working to secure resources to help implement the Master Plan after adoption.
30	Louise Ramirez, Ohlone/Costanoan-Esselen Nation	Written recommendation to the Commission dated 4/17/2018	General statement: Ohlone/Costanoan-Esselen Nation (OCEN) objects to all excavation in known cultural lands, even when they are described as previously disturbed, and of no significant archaeological value. Our definition of respect is no disturbance.	The amendment to the Master Plan is focused on the sustainable management of state managed marine fisheries and does not involve any excavation or ground disturbing activities. Consequently, there are no archeological or cultural resource reports for the project.
31			Recommendation: OCEN's Tribal leadership desires to be provided with/included in: (1) archaeological reports/surveys, including subsurface testing, and presence/absence testing; (2) mitigation and recovery programs; (3) Cultural and Tribal mitigation measures reflect request for OCEN Tribal Monitor; (4) reburial of any of our ancestral remains and burial artifacts; (5) placement/return of all cultural items to OCEN; (6) a Native American Monitor of Ohlone/Costanoan-Esselen Nation, approved by the OCEN Tribal Council is used within our aboriginal territory.	The amendment to the Master Plan is focused on the sustainable management of state managed marine fisheries and does not involve any excavation or ground disturbing activities. Consequently, there are no archeological or cultural resource reports for the project.
32	Seth Atkinson and Lisa Suatoni, Natural Resources Defense Council	Written recommendation to the Commission dated 4/18/2018	Expression of support: Overall we strongly support the revised Master Plan, and we commend the Department for its thorough and inclusive process over the past few years to reach this point. The revised Master Plan contains a number of innovative concepts. Enhanced Status Reports are a good idea, particularly in the form of public-facing "online fisheries portal" pages. Scaled management will help California deploy resources in an efficient manner, and the attention given to Management Strategy Evaluation in the revised Master Plan is a step forward. And explicitly recognizing climate change is critical in bringing California fisheries management into the 21st century.	Support noted.
33			Recommendation: Request the Commission to state a clear commitment that the revised Master Plan will serve as the primary document for guiding fisheries management in California, and to direct the Department to follow the policies and procedures in the revised Master Plan to the best of its ability. The draft Master Plan—like any plan—is only meaningful to the extent it is actually implemented. For example, the draft Master Plan discusses Management Strategy Evaluation and the advantages this tool can offer, but it is another matter entirely to actually build the agency's scientific capacity and run an Management Strategy Evaluation tool for California fisheries. And even running a Management Strategy Evaluation tool is not enough; what matters is whether the results are acted on in a meaningful way.	Request for Commission consideration. The Department looks forward to continuing to work with the Commission to implement the Master Plan after adoption. Please see response to comment 8 for projects underway to build knowledge and expertise.
34			Recommendation: Request the Commission to encourage the Department to use partnerships with outside entities for Master Plan implementation. Third parties such as universities, non-governmental organizations, and industry groups offer significant capacity that the Department can and should leverage to work on implementation projects. All of the steps in implementing the revised Master Plan are going to be challenging in their own way, and will require troubleshooting, innovation, and careful consideration of resources and staffing. There is a lot of work to be done, and the Department will not be able to do everything by itself.	Request for Commission consideration. The Department looks forward to continuing to engage in meaningful partnerships as described in the Master Plan.
35			Recommendation: Encourage the Commission to request a commitment to, and timetable for, running Ecological Risk Assessment. Ecological Risk Assessments are the main tool for identifying risks to other species and the ecosystem. We do not have specific views as to the best Ecological Risk Assessment platform; the important thing is simply getting a workable version and using it. Actually running Ecological Risk Assessments, and using the results for prioritization, is what will make the Master Plan's "comprehensive prioritization framework" more than merely Productivity and Susceptibility Analysis outcomes.	Request for Commission consideration. As resources permit, the Department expects to conduct the prioritization approach described in the Master Plan to generate a more comprehensive priority list of fisheries and provide it to the Commission within one year of Master Plan adoption.
36			Recommendation: Encourage the Commission to instruct the Department to create a defined process for stakeholder input when conducting Ecological Risk Assessments. Stakeholder involvement can create buy-in for the results of an Ecological Risk Assessment, and can yield important information that otherwise would not enter the process. While the revised Master Plan states that Ecological Risk Assessments should involve public input (page 10), little detail is provided. More specificity about exactly how stakeholders will be allowed to participate (via web forms, in-person meetings, or other means) would help set expectations.	Request for Commission consideration. The Department is in preliminary planning discussions to evaluate approaches for conducting Ecological Risk Assessments, including determining the most effective approach to stakeholder engagement considering Department staff capacity and available resources.
37			Recommendation: The draft Master Plan should specify that the results from Ecological Risk Assessments will be included in Enhanced Status Reports, and accordingly posted on the "online fisheries portal" pages, or if an Enhanced Status Report page is finished before the Ecological Risk Assessment is run, the content of the Ecological Risk Assessment can be used as a cross-check to confirm that the information in the Enhanced Status Report is accurate. The Department should make sure the substance is consistent between these two places.	The outline for Enhanced Status Reports presented in Chapter 3 does not include the results of Ecological Risk Assessments. However, results from the Ecological Risk Assessments will help to inform the content of Enhanced Status Reports. Overall prioritization results will be made available to the public on the Department website. The California Fisheries Portal is not expected to be complete when prioritization results are first available.

38			Recommendation: Encourage the Commission to request the Department strengthen the language on page 10 of the draft Master Plan to indicate that the consideration of Ecological Risk Assessment results will be a routine part of the management scaling process. We recommend using the Ecological Risk Assessment results during the management scaling stage to help identify management changes that are needed for a fishery. The usefulness of an Ecological Risk Assessment is not limited to prioritization; because Ecological Risk Assessments serve to flag important areas where a fishery may be having impacts, they can also serve to identify issues that need management attention. This need not be a formal or quantitative process, and can be as simple as Department staff scanning the results of an Ecological Risk Assessment, taking a few notes, and carrying those notes over into the scaled management stage.	Request for Commission consideration. Chapter 3 discusses the role of Ecological Risk Assessment results in the determination of the most appropriate management scaling approach and identification of management changes needed for a fishery.
39			Recommendation: The management scaling inquiry include an examination of whether and to what extent the Department and/or Commission has pre-existing regulatory authority over a fishery. By incorporating this question into the management scaling inquiry, the Department can ensure that any fishery over which regulatory authority may be lacking receives either a scaled Fishery Management Plan or full Fishery Management Plan, rather than just targeted rulemaking. This will ensure a strong basis for all Commission rulemakings. While the MLMA generally grants regulatory authority to the Commission in the context of Fishery Management Plan implementing regulations, various other sections of the Fish & Game Code contain mandates for regulation of certain fisheries, species, and gears. Targeted rulemakings can rely on this pre-existing authority to the extent it is available. There may situations where the subject of a targeted rulemaking is not covered by any pre-existing grant of authority to the Commission; in these cases it may be advisable to prepare a Fishery Management Plan in order to clarify the Commission's authority to regulate.	Text has been added in Chapter 3 stating that the development of a Fishery Management Plan may be appropriate when a change in statute provisions is required to address management needs. Fishery Management Plans have the unique authority to make a fishery management statute inoperative through implementing regulations (Section 7071(b)).
40			Recommendation: When publishing Enhanced Status Reports as pages on the "online fisheries portal," the Department should make certain to include all of the headings listed in the Enhanced Status Report table of contents (page 14), even if no information is available on that particular topic. Doing so—and stating explicitly that no information is available if that is the case—will allow readers to identify information gaps, and will help the Department to focus research attention on needed areas. While the revised Master Plan suggests this will be done (page 15), we recommend the text be strengthened to more clearly signal the Department's intent.	This is the intent. Text was modified in Chapter 3 to add clarity.
41			Recommendation: Recommend the following changes to the specific topic headings in the Enhanced Status Report table of contents (page 14): 1) Bifurcating the section on "Habitat for the fishery and known threats" into one section on habitat for the target species (including known threats to that habitat), and a different section on habitat impacted by the fishery. These can be very different things. 2) Restructuring the following headings in Section 2: "Existing conservation and management measures that contribute to a sustainable fishery," "Limitations on fishing for target species," and "The procedure to establish and periodically review and revise any catch quota." These headings describe an inter-related bundle of issues, but provide less-than-clear dividing lines between the topics. The Department might consider restructuring them into: (a) fishery management measures, (b) the management process for that fishery, and (c) factors bearing on the sustainability of the fishery. Other ways of lumping and splitting may also be appropriate; our point here is just to note that the existing headings are rather difficult to understand. Also, regardless of how this suggestion is resolved, somewhere Harvest Control Rules should be explicitly discussed, including an explicit statement when no Harvest Control Rule exists for a fishery. 3) Clarifying the headings in Section 3 and 4. Some of the headings in Sections 3 and 4 of the table of contents appear redundant or divided oddly. We understand the reason for the current structure is to specifically call out the elements of a "research protocol," but from a typical fisheries management perspective it would make more sense to keep all of the monitoring topics together (current/past monitoring, future monitoring needs) and distinct from the research topics (research needed to gather Essential Fishery Information, opportunities for collaborative research, etc.). As we understand it, monitoring refers to measures such as observers, logbooks, cameras/sensors, and landing tickets, all of which collect information about the fishery. Research would be topics like biological studies, fishery-independent surveys, habitat impact studies, and so forth—generally not collected in the course of fishing activity.	Several revisions to the outline for Enhanced Status Reports were made to better structure information, reduce redundancy, and provide clarity around intended goals of the various sections. The habitat of the target species is described in Chapter 1 and a description of threats and measures to minimize adverse effects on habitat caused by fishing are addressed in Chapter 3. Chapter 3 and Chapter 4 have has been revised to provide more structure and clarity.
42			Recommendation: Recommend the Commission direct the Department to establish some kind of process allowing for stakeholder input on Enhanced Status Reports. This could be a web form for commenting on sections of the Enhanced Status Report via the "online fisheries portal," a mailing address for written comments, in-person stakeholder review meetings for draft Enhanced Status Reports (or bundles of Enhanced Status Reports), or any number of other methods. The purpose is both to create buy-in for the results and to tap into the extensive knowledge held by diverse stakeholders.	Request for Commission consideration. The Department looks forward to working with the Commission and stakeholders to determine the best approach to stakeholder engagement for Enhanced Status Reports that considers Department staff capacity and available resources.
43			Recommendation: Remove the following sentence "This revised format ensures that a basic standard of MLMA-based management is applied across all fisheries in a consistent fashion" on page 13. Simply cataloging information about a fishery is not the same as actually managing a fishery, and this sentence could be read as suggesting the contrary.	This sentence has been removed.
44			Recommendation: Request the Commission to express clear support for the use of Management Strategy Evaluation, and in particular, the Data-limited Methods Toolkit. NRDC strongly encourages the use of Management Strategy Evaluation to identify optimal management procedures for California-managed stocks, particularly in cases where traditional stock assessments are not available. Management Strategy Evaluation platforms like the Data-limited Methods Toolkit offer the potential to improve management of California fisheries, by identifying and setting minimum performance criteria, clarifying risks and trade-offs, and helping to select appropriate data-limited management procedures.	Request for Commission consideration.

45			Recommendation: Management Strategy Evaluation is not likely to be applied to many California fisheries unless the Department's capacity for building and running simulation models like the Data-limited Methods Toolkit is addressed. There is a dramatic need to increase the number of people within the Department who can execute quantitative fisheries analysis. Current staffing levels provide little capacity for the Department to review and evaluate Management Strategy Evaluation results—much less actually set up and run the models. This is a critical flaw in the revised Master Plan's vision of using Management Strategy Evaluation to guide California fisheries management. Urge the Commission to think about this problem, discuss it explicitly during open public meetings and with the Department, and consider what would be required in terms of budgeting and hiring to create a bare minimum capacity within the Department for running Management Strategy Evaluation models and understanding their results.	Request for Commission consideration. The Department looks forward to working with the Commission to discuss an approach to implementing the Master Plan after adoption considering current Department staff capacity and available resources, and possibilities for expanding efforts should the opportunity for additional capacity and resources within the Department arise. The Department also looks forward to continuing to engage in meaningful partnerships to help achieve application of the framework for MLMA-based management.
46			Recommendation: The Department define and include in the Master Plan a process for stakeholder participation in Management Strategy Evaluations. Specifically, defining a specific process for engaging stakeholders in Appendix J at both the performance metric-setting stage (page J-3) and the parameterization stage (J-5) and strengthening the language in Chapter 5 of the main document (bottom of page 31) to indicate that stakeholders will be involved in the Management Strategy Evaluation process. Bringing in stakeholders can create essential buy-in for the outcomes of an Management Strategy Evaluation, and setting a defined process for stakeholder involvement in the Master plan would help set expectations among stakeholders beforehand. The need for stakeholder involvement is particularly relevant for the step of setting performance metrics and parameterizing the operating model.	The important role of stakeholder engagement in Management Strategy Evaluation is discussed in Appendix L. However, given that the needs of every fishery are unique, it is not possible to commit to an overarching process for engaging stakeholders at the various stages of the Management Strategy Evaluation process. The appropriate level of stakeholder engagement will depend on the complexity, needs, and risk posed to the fishery, and available Department staff capacity and resources.
47			Recommendation: The Department to consider writing up some guiding principles for interim management action, when Management Strategy Evaluation results indicate management intervention is needed but before formal action (whether in the form of targeted rulemaking or Fishery Management Plan) can be taken. Appendix J, or possibly Appendix I, would be the likely place to do this.	New management measures must be implemented through regulation, which would place the subject fishery at the "Enhanced Status Report plus rulemaking" level on the scaled management continuum. There is no level in between "Enhanced Status Report" and "Enhanced Status Report plus rulemaking." However, increased or targeted monitoring efforts may be appropriate given the results of Management Strategy Evaluation and prior to the adoption of new management measures. How such efforts should be directed would be informed by the specific Management Strategy Evaluation results.
48			Recommendation: Urge the Commission to direct the Department to construct a standardized process for aggregating and organizing fisheries data, and recommend the Department add text to Chapter 5 and Appendix F with specific policies for data aggregation and organization. This means drawing up specific steps that will be taken to format fisheries data and store it in a single location. For example, the operating model data tables in the Data-limited Methods Toolkit could (and we believe should) be used as a storehouse for all California fisheries data going forward. This would enable much more streamlined Management Strategy Evaluation runs and stock assessments in the future, requiring less scientific capacity and allowing higher throughput. To this end, we recommend adding text to Chapter 5 and Appendix F with specific policies for data aggregation and organization. The existing text in the revised Master Plan does not accomplish this purpose. Specific places to add guidance on this would be pages 27-28 in Chapter 5, and some combination of pages F-1, F-7, F-8, F-12, or F-14 in Appendix F. A cross-reference in Appendix J should be added as well. Chapter 10 should also include a statement that one of the tasks to be completed in the peer review process is to ensure all data are housed in a standardized format and location, to enable future use. The table of contents for Fishery Management Plans (page 17) also should be edited, to add a heading for "Data Modernization/Standardization" under Section 6 of the Fishery Management Plan outline. For some reason, this heading shows up in the Enhanced Status Report table of contents (page 14) under Section 4 but it appears to have been dropped in the Fishery Management Plan table of contents (page 16).	The Department is simultaneously exploring data modernization, Management Strategy Evaluation, and the development of a California Fisheries Portal. These efforts provide a valuable opportunity to consider if, how, and where such data may be aggregated and organized as part of Master Plan implementation after adoption.
49			Recommendation: Recommend the following editorial changes to Chapter 5 and Appendices G & J: 1) On page 26, there appears to be a typo stating "OP" rather than "OY." 2) On page 26, we recommend changing the phrase "In other words, it requires" to "This has generally involved developing." This change would convey that abundance estimates are a standard approach, but are not necessarily the only way to manage stocks sustainably; it also would bring the language more in line with the following paragraph, which explains that other approaches exist. 3) On page 27, we recommend changing "ideally" to "traditionally," as there are a number of situations where non-biomass-based management can perform suitably. 4) And a small correction on page J-3: assuming the relevant reference point set by federal managers for "unsustainable" biomass is the Minimum Stock Size Threshold (MSST), also known as the overfished threshold, then that level is 25% of Bzero, not 10% of Bzero. The latter is where fishing is supposed to stop entirely, under the "40-10 rule"; it is well below the overfished level.	The text was modified to incorporate the recommended editorial changes in Chapter 5 and Appendix L.

50			<p>Recommendation: Rebuilding is a crucial subject in fisheries management. It is one of the most difficult problems for managers to deal with, and can have significant consequences for industry. Because of its importance, we recommend rebuilding receive its own freestanding section within Chapter 5 or Appendix H and address the following:</p> <p>1) Clarify the meaning of a few terms defined in the MLMA, including "depressed" and "overfished", and provide guidance around the criterion that a "reduction in take" must be the principal means for rebuilding the population. Specifically, the statutory definition of "depressed" suggests fisheries are to be classified as depressed primarily on the basis of a trend, rather than a level of biomass. While trends can be useful proxies in data-limited situations, the Master Plan should clarify that the concept of a depressed fishery is intended to mean a diminished size of a fish stock—often thought of in terms of biomass or abundance or spawning potential—and not a trend, strictly speaking. The Master Plan also should address the definition of "overfished" and provide some guidance around the criterion that "a reduction in take" must be the principal means for rebuilding the population. In some ways, a reduction in take always is the principal means for rebuilding, as it is the only thing fishery managers have direct control over. We recommend the Master Plan provide interpretive guidance stating that "overfished" is a broad concept, and in most cases a stock that is depressed also will be overfished. This is important because the rebuilding provisions for Fishery Management Plans are keyed to the term "overfished." A broad view of this term also is consistent with the legislative intent expressed in the findings and policy sections of the MLMA, which indicate that all depressed fisheries should be rebuilt to sustainable levels.</p> <p>2) Clarify the meaning of the MLMA provisions for rebuilding under Fishery Management Plans, which we understand were intended to resemble the federal statute but ended up phrased in somewhat less clear terms. This discussion should start with the conceptual difference between overfishing (the act of removing fish at an unsustainable rate) and being overfished (the status of a fish stock that has significantly reduced biomass, abundance, or reproductive potential). The Master Plan then should explain that the MLMA language that Fishery Management Plans must "prevent, end, or otherwise address overfishing and to rebuild the fishery" represents two separate requirements—one to deal with overfishing, and one to rebuild—each of which is freestanding and independent of the other. It also may be useful to clarify that the MLMA's timeframe language is intended to mirror the federal statute, and accordingly applies to rebuilding situations, not overfishing situations. Finally, the Master Plan should explain that the language in the Act requiring Fishery Management Plans to contain "criteria for identifying when the fishery is overfished" means that Fishery Management Plans should have reference points for both overfishing (i.e., F-rates or similar proxies) and overfished status (i.e., biomass or other threshold).</p> <p>3) Articulate that reference points are the key to rebuilding. Only by specifying criteria for when a fishery is depressed do managers know when to trigger rebuilding measures, and where to shoot for in rebuilding. More generally, a stock's status is only meaningful relative to a reference point. Because reference points play such a fundamental role, the Master Plan should underscore the Department's commitment to considering—and ideally, identifying—reference points for all fisheries.</p>	While the draft Master Plan was not revised to include a freestanding section on rebuilding fisheries, text was revised and/or added to to Chapters 3 and 5 to address these comments.
51			<p>Recommendation: Rebuilding is a crucial subject in fisheries management. It is one of the most difficult problems for managers to deal with, and can have significant consequences for industry. Because of its importance, we recommend rebuilding receive its own freestanding section within Chapter 5 or Appendix H and address the following:</p> <p>4) Articulate that Enhanced Status Reports are to be the initial vehicle for considering and identifying reference points. The Enhanced Status Report outline in Chapter 3 appropriately contains a section heading on reference points and rebuilding (page 14). This is important, because Enhanced Status Reports apply to all stocks, not just those with Fishery Management Plans. While some stocks may go on to receive a Fishery Management Plan, it is neither necessary nor appropriate to wait for a Fishery Management Plan to consider reference points.</p> <p>5) Articulate that the MLMA's status reporting provisions provide the basis for Enhanced Status Reports addressing reference points. Status reporting is required for all stocks—not just those with Fishery Management Plans—and implies the need for reference points, since reference points are what enable a stock's status to be determined. Moreover, the MLMA directly requires the Department to identify depressed stocks, discuss the causes, and explain the rebuilding plan for each depressed stock, irrespective of whether it is under a Fishery Management Plan. There is ample legal basis for including in all Enhanced Status Reports a field for reference points, and for filling in this field whenever possible.</p> <p>6) Articulate that criteria for determining depressed/overfished status can be set for data-limited stocks as well as data-rich stocks. Reference points do not have to take the form of classic Maximum Sustainable Yield-based biomass thresholds, but instead can be set with various proxies and triggers, such as declines Catch Per Unit Effort or landings. There is a wide literature on how to do this, and the Data-limited Methods Toolkit may be helpful in modeling the performance of various reference points as embodied in Harvest Control Rules.</p> <p>7) Articulate that ramp-down Harvest Control Rules should be used whenever possible, as they contain built-in rebuilding plans. As biomass (or another relevant indicator) decreases, a ramp down Harvest Control Rule will reduce catch (or effort) to the point where, below a certain critical threshold, no fishing is allowed. These Harvest Control Rules tend to perform well in simulation modeling, and if they are set in a sufficiently precautionary manner, they can help to avoid rebuilding situations to begin with.</p> <p>8) Articulate that rebuilding stocks should be reviewed periodically for adequate progress. Progress reviews are an important part of rebuilding, because they check on whether the rebuilding measures actually are having the desired effect. To this end, the Master Plan should explain that rebuilding measures will be reviewed for adequate progress periodically, and the Department should develop (either outside the Master Plan or in the new Chapter 5 / Appendix H section on rebuilding) standardized rules for increasing the stringency of management actions to be taken if time is passing and the stock is failing to make adequate progress in rebuilding. This kind of progress review easily falls within the Department's statutory authority under the status reporting and rebuilding provisions of the MLMA.</p>	While the draft Master Plan was not revised to include a freestanding section on rebuilding fisheries, text was revised and/or added to to Chapters 3 and 5 to address these comments.

52			Recommendation: The Master Plan should address how rebuilding interacts with the new framework for MLMA management. Specifically, the need for rebuilding should weigh heavily in the prioritization process. There are stocks that are known to need rebuilding, yet lack Fishery Management Plans; these stocks should be at the top of the priority list. The need for rebuilding also should be a strong factor in the management scaling component—probably best addressed under the inquiry regarding the degree of management change needed. Rebuilding entails difficult harvest level and allocation decisions, and stocks in need of rebuilding are likely to requires more intensive management.	While the draft Master Plan was not revised to include a freestanding section on rebuilding fisheries, text was revised and/or added to to Chapters 3 and 5 to address these comments.
53			Recommendation: Make the following editorial changes to Chapter 5 and Appendix H relevant to the topic of rebuilding: 1) Add a bullet to the list of MLMA provisions on page 26, stating that the Act requires the Department to identify depressed fisheries, indicate the causes, describe steps being taken to rebuild, and recommend any further steps necessary to rebuild the fishery (citing Cal. Fish & Game Code § 7066(b)). 2) Add a citation to this same statutory provision (§ 7066(b)) after the first sentence of the first bullet on page 30.	The text was modified to incorporate the recommended editorial changes.
54			Recommendation: Edit the opening paragraph of Chapter 11 of the draft Master Plan (page 62) to clearly acknowledge that ensuring that fisheries remain sustainable and resilient in the face of climate change will require adjustments to the traditional fisheries management system. The Master Plan should state directly that managing California fisheries in the face of climate change will require monitoring, analysis, and management strategies that go beyond traditional fisheries management.	The Department asserts that the MLMA is an effective framework for fisheries management even in the face of a changing climate and that some of the strategies of the MLMA, such as adaptive management, are more important than ever given the uncertainties associated with climate change. The Master Plan highlights this and identifies a range of specific approaches for adapting to climate change in Chapter 11.
55			Recommendation: Recommend the discussion of developing science and policy structures to better deal with shifting fish distributions in the face of climate change be strengthened by: 1) Expanding the discussion in Chapter 11 (bottom of page 66) to explain that shifting fisheries and emerging fisheries are distinct things, and acknowledge that the Commission’s Emerging Fisheries Policy needs more detail in order to address fisheries that are emerging due to climate change. Also acknowledge the need to develop a policy on managing fisheries that are experiencing range shifts. Stocks that are experiencing range shifts tend to have a higher risk of overfishing and collapse; fishing pressure on the leading and trailing edges should be minimal in order to maintain genetic diversity and promote ecological resilience. 2) Providing a cross-reference in Chapter 5 under “considerations in identifying data collection strategies” (page 28), mentioning the value of electronic monitoring in enabling spatial information to be collected and synthesized. This can be a key tool in helping to track changes in fish distributions, as port landing information generally has insufficient spatial resolution. Chapter 11 mentions this fact briefly (page 67), but it should be noted as well in Chapter 5. 3) Stating the need to develop an expert working group to evaluate permit transfers and gear switching. The draft Master Plan acknowledges the importance of permitting systems (page 66), but states that analysis will be limited to the Department and Commission; a wider working group could be useful in identifying specific action or next steps.	The Department does not feel that the Commission’s Emerging Fisheries Policy needs more detail in order to react to fisheries that emerge due to climate change. Text was added to Chapter 11 to address recommendations regarding the data collection section and the value of a working group to evaluate options for flexible permitting.
56			Recommendation: Recommend the discussion of promoting ecological and evolutionary resilience in fisheries management in the face of climate change be strengthened by: 1) Highlighting the value of Management Strategy Evaluation in identifying management approaches that are robust to uncertainties in species’ responses to climate change. The value of Management Strategy Evaluation in generating defensible, tactical management guidance, taking into consideration climate uncertainties, should be featured somewhere in Chapter 11. One possible place for doing so would be in the list of points under “Maintaining ecological resiliency” (pages 66-67). 2) Editing the following sentence in the “Manage for genetic diversity” bullet (page 65): “This may be difficult due to a lack of information about the genetic makeup of marine populations, but a precautionary management approach may help by decreasing existing stressors” to say instead “This may be accomplished through a variety of management approaches including maintaining large populations, maintaining size/age distributions, and maintaining connectivity across metapopulations.”	The text was modified in Chapter 11 to highlight Management Strategy Evaluation as a potential tool to identify management approaches that are robust to uncertainty in the response of a species to climate change, and to reflect the recommended edit to managing for genetic diversity. Additionally, Appendix L also includes a discussion of climate change considerations.
57			Recommendation: Recommend providing stronger language in the draft Master Plan regarding California’s commitment to addressing climate change in fisheries management. One important place to do so would be in the lead-in text introducing management approaches for dealing with climate change (page 64), which currently contains only a weak indication of commitment (“The following sections provide an overview of some management approaches that may be applicable to California’s fisheries.”).	The text was modified in Chapter 11 to better articulate California’s commitment to addressing the impacts of climate change on fisheries management.
58			Recommendation: Add one more bullet to the list of seven different types of information on climate change that Enhanced Status Reports should address (pages 67-68) to include the anticipated effects on the human side of the fishery due to climate change. This could include expected effort shift in or out of the fishery, longer transit times for fishermen as species distributions change, altered timing of harvest seasons, expected conflicts resulting from shifting distributions, and similar sorts of fishery dynamics.	The anticipated effects of climate change on human impacts were included as a new bullet in the list of different types of information that Enhanced Status Reports should address in relation to climate change. The specific recommended examples of changes to the human dimension of fisheries were included (see Chapter 11).

59			Recommendation: Edit the text in Chapter 2 to be more clear in the intent that climate impacts or climate vulnerability, to the extent they are understood, will be integrated into the prioritization scheme. Formal Climate Vulnerability Analysis results would provide a clear, boiled-down metric that is amenable to integration into an Ecological Risk Assessment or could be used as a stand-alone factor when doing the comprehensive prioritization. But even without Climate Vulnerability Analysis results, the Department will have ample information (albeit in narrative long-form) in the Enhanced Status Report section on climate change. Absent a Climate Vulnerability Analysis, the fishery's "climate profile" (the information described in Chapter 11 comprises a sort of "climate profile" for each fishery—a narrative description of the anticipated effects of climate on the fishery) should be reviewed and translated into an expert opinion on whether the fishery should be bumped up or down the prioritization list. This can be done rapidly and informally, and to the extent Climate Vulnerability Analysis results become available later, the informal version can be replaced with a formal methodology that relies on Climate Vulnerability Analysis results. The revised Master Plan suggests this may be done, but the language ("Until such results are available, the Department will consider augmenting the Ecological Risk Assessment results . . .") (page 10) should be strengthened to signal a clear intent.	The prioritization approach described in Chapter 2 seeks to consider climate vulnerability to the extent information is available by allowing the Department to adjust prioritization binning where appropriate. Additionally, it is not clear that the development of Enhanced Status Reports will be completed by the time prioritization is conducted.
60			Recommendation: Strengthen the commitment to consider climate change under the management scaling component. This can be done before Climate Vulnerability Analysis results are available, simply using expert judgment and the fishery's "climate profile" in the Enhanced Status Report. And when Climate Vulnerability Analysis results become available in the future, expert judgment can be replaced with a formal methodology using Climate Vulnerability Analysis results. The revised Master Plan suggests the possibility of doing this ("information on species' climate vulnerability as it becomes available will provide additional insights . . .") (page 17), but should be strengthened to signal a clear intent.	Anticipated climate impacts, to the extent they are known, will be integrated into scaling through the assessment of management need.
61			Recommendation: The revised Master Plan also should strengthen its mandate for addressing climate change in Management Strategy Evaluations. Appendix J contains a discussion of how simulation modeling can approach climate change, including both mechanistic and empirical approaches (pages J-7 to J-8). This discussion is good; we recommend also mentioning the subject in the main body of the Master Plan (likely page 67), and noting the ability of Management Strategy Evaluation to simulate different futures and help prepare the management system for climate change. We also recommend adding references to climate in the Management Strategy Evaluation discussion in Chapter 5 (page 31), and adding language to Appendix J (likely page J-7) signaling the Department's intent to integrate climate into Management Strategy Evaluations when possible.	Climate change was included in the discussion of Management Strategy Evaluation in Chapter 5 and Management Strategy Evaluation was added as an additional management approach that may help to maintain ecosystem resilience in fisheries affected by climate change in Chapter 11. Please see Appendix L for a discussion of the role of climate change in Management Strategy Evaluation.
62			Recommendation: Make the following editorial change to Chapter 11 in the section on "Changing ocean chemistry" (page 64): Correct the opening sentence "California is already experiencing...", which suggests that ocean acidification is caused by climate change, whereas in reality ocean acidification and climate change are two independent consequences of greenhouse gas emissions, and also make sure that Chapter 11 more generally refers to both climate change and ocean acidification.	The text was modified in Chapter 11 to incorporate the recommended editorial change.
63			Expression of support/ Recommendation/ Expression of interest in supporting in supporting implementation efforts: The state should strive to set a standard for sustainable, science-based, and climate-ready fisheries management through implementation of the MLMA. The revised Master Plan is a good first step toward this goal, and we encourage the Commission and Department to complete the revision process and adopt the revised Master Plan. The real test will come in enacting the policies and principles contained in the revised Master Plan over the years to come. To this end, we recommend the Commission express a public commitment to use the Master Plan, and to seek all resources necessary for effective implementation of the revised Master Plan.	Support noted.
64	Gene Whitehouse, Chairman, United Auburn Indian Community of the Auburn Rancheria	Written recommendation to the Commission dated 3/30/2018	General statement: The United Auburn Indian Community of the Auburn Rancheria (UAIC) is concerned about development within its aboriginal territory that has potential to impact the lifeways, cultural sites, and landscapes that may be of sacred or ceremonial significance. The UAIC would like to consult on this project.	The amendment to the Master Plan is focused on the sustainable management of state managed marine fisheries and does not involve any excavation or ground disturbing activities. Consequently, there are no archeological or cultural resource reports for the project.
65			Recommendation: UAIC requests: 1) Copies of any archaeological reports that are completed for the project in order to ascertain whether or not the project could affect cultural resources that may be of importance to the UAIC. 2) Copies of future environmental documents for the proposed project so that we have the opportunity to comment on potential impacts and proposed mitigation measures related to cultural resources.	The amendment to the Master Plan is focused on the sustainable management of state managed marine fisheries and does not involve any excavation or ground disturbing activities. Consequently, there are no archeological or cultural resource reports for the project.
66	Greg Helms, Ocean Conservancy	Verbal testimony at Commission meeting on 4/18/2018	Expression of support: Very supportive of tools and processes as described in draft Master Plan. Ecological Risk Assessment, scaled management, etc., tools that will hopefully come together with processes to achieve the goal of better, faster, cheaper implementation of MLMA, sustainability, and ecosystem considerations under resource constraints. A lot of us are eager to get to next stage and get more applied.	Support noted.
67			Recommendation: Urge the Commission to consider the Master Plan with an eye to implementation issues. Understand you have to draw the line somewhere about how prescriptive a plan can be, but a lot of comments we submitted had responses along the lines of 'this is for implementation.'	Request for Commission consideration.
68			General statement: Two big issues to come after adoption: 1. Enhanced Status Reports- Going to be really important. There are things we think you can do to tick off MLMA requirements without changing rulemaking and management measures. Hope we can engage in public process about these. 2. Prioritization- Don't think Productivity and Susceptibility Analysis is the whole picture. The prioritization process will unlock the chance to focus management efforts and inject MLMA themes (sustainability, ecosystems). The process is currently not done and we understand why that is the case.	Comments noted. The Department looks forward to conducting the prioritization approach within the framework for MLMA-based management that considers more than the Productivity Susceptibility Analysis of fisheries.

69			Recommendation: Encourage the Department to share what the Enhanced Status Report/prioritization processes might look like, including scheduling, expectations, access, and timeline for implementation.	Please see response to comment 8.
70	Jocelyn Enevoldsen,	Verbal testimony at	Expression of support: Support the draft Master Plan.	Support noted.
71	Heal the Bay	Commission meeting on 4/18/2018	Recommendation: Move the interim priority list from the body of the draft Master Plan into an appendix, and provide a work plan and timeline with milestones to complete the priority list within a 1-year timeframe should the Commission wish to adopt a Master Plan with an interim priority list rather than a final list. Current draft Master Plan includes interim priority list that does not yet include bycatch, habitat, climate change and socioeconomic analyses, which are required by the MLMA. Concerned that including the interim priority list in the body of the Master Plan may lead to misconceptions about management priorities. Recognize challenges, including limited resources and high workload of Department staff. However, priority list is the crux of the Master Plan and we want to ensure that highest impact fisheries receive timely investments of public fisheries management dollars.	Please see response to comments 7 and 8.
72	Paul Weakland, Commercial fisherman	Verbal testimony at Commission meeting on 4/18/2018	General statement: MLMA enacted in 1999, still not implemented because the Department continually changed what was going to be done. Amendment has many more exceptions to the rules, including the need for parameters, language, concepts and formulas to be easily understood by people of average intelligence. The Department will not include timelines [regarding priority list] because they don't want to be restricted by them.	Comment noted.
73	Seth Atkinson, Natural Resources Defense Council	Verbal testimony at Commission meeting on 4/18/2018	Expression of support/ Recommendation: Urge the Commission and Department to use the Master Plan [once adopted]. A lot of good work has gone into it and we and others would like to see the good work honored and the framework, steps, and priorities used and addressed. A plan is only useful to the extent it is used.	Comment noted.
74			Expression of support/ Recommendation: Prioritization and scaling management concepts are solid. Urge Department and Commission to complete the Ecological Risk Assessment so the priority list is more than Productivity and Susceptibility Analysis results and to use a uniform table of contents for all Enhanced Status Reports and make them available online.	The Department looks forward to conducting the prioritization approach within the framework for MLMA-based management to generate a more comprehensive priority list of fisheries. As stated in Chapter 3, all Enhanced Status Reports will follow the same outline and be accessible via the California Fisheries Portal.
75			Recommendation: Edit the text in Chapter 2 to be more clear in the intent that climate impacts or climate vulnerability, to the extent they are understood, will be integrated into the prioritization scheme. Formal Climate Vulnerability Analysis results would provide a clear, boiled-down metric that is amenable to integration into an Ecological Risk Assessment or could be used as a stand-alone factor when doing the comprehensive prioritization. But even without Climate Vulnerability Analysis results, the Department will have ample information (albeit in narrative long-form) in the Enhanced Status Report section on climate change. Absent a Climate Vulnerability Analysis, the fishery's "climate profile" (the information described in Chapter 11 comprises a sort of "climate profile" for each fishery—a narrative description of the anticipated effects of climate on the fishery) should be reviewed and translated into an expert opinion on whether the fishery should be bumped up or down the prioritization list. This can be done rapidly and informally, and to the extent Climate Vulnerability Analysis results become available later, the informal version can be replaced with a formal methodology that relies on Climate Vulnerability Analysis results. The revised Master Plan suggests this may be done, but the language ("Until such results are available, the Department will consider augmenting the Ecological Risk Assessment results . . .") (page 10) should be strengthened to signal a clear intent.	Please see response to comment 58.
76	Geoff Shester, Oceana	Verbal testimony at Commission meeting on 4/18/2018	Expression of support/ Expression of interest in supporting in supporting implementation efforts: Support for Master Plan, and believe that the amendment process has incorporated our input/comments over the past two years. Especially grateful for the inclusion of Bycatch Working Group efforts, language, and products into draft Master Plan. Excited to move into implementation phase.	Support noted.
77			Recommendation: Urge Department to complete Ecological Risk Assessment and provide clarity around priority list. We share concerns about the need for clarity in the priority list, including which Fishery Management Plans and Enhanced Status Reports are coming next. We think this deserves concerted effort in implementation phase so the public can comment on a list of the Fishery Management Plans/Enhanced Status Reports/regulatory processes in the next 2-5 years that are needed to fill gaps in MLMA requirements as identified by the risk assessment. The current priority list is concerning. List is being published and adopted, but not really the intent of the Commission and Department moving forward. Not sure what the solution is, but perhaps clear timeline and commitment to completing the priority list is what the Commission adopts.	Please see response to comment 7.
78	Chuck Bonham, Director of California Department of Fish and Wildlife	Discussion item at Commission meeting on 4/18/2018	General statement: Reminder that speaks to some of the public comments- Department's budget change proposal that implements Governor Brown's budget request that the Department receive \$50.6 million has specific set of positions and funding for modeling/implementation of this effort, and also climate change efforts and management and changing conditions in the ocean.	Comment noted.
79	Eric Sklar, President of	Discussion item at	Expression of support: Enormous and timely effort to the amend the Master Plan.	Support noted.

80	the California Fish and Game Commission	Commission meeting on 4/18/2018	General statement: I leave it up to the Department to decide whether there needs to be some additional work on prioritization to address stakeholder concerns before the June Commission meeting. The Commission is open to adjustments following the adoption of the Master Plan.	Support noted. The interim priority list of fisheries has been moved from Chapter 2 to a new appendix (Appendix E). The Department looks forward to conducting the prioritization approach within the Master Plan to generate a more comprehensive priority list of fisheries and providing it to the Commission within one year of Master Plan adoption. Text has been modified/added to provide clarity to the discussion of the approach to prioritization.
81	Jacque Hostler Carmesin, California Fish and Game Commissioner	Discussion item at Commission meeting on 4/18/2018	Expression of support: Appreciates the outreach to Tribes and sorry to hear that the Department has not received responses. Very happy with the tribal consultation chapter.	Support noted.
82			Request: Is there an opportunity to include traditional knowledge within the Master Plan?	Text has been added in Chapter 12 that articulates the Department's commitment to considering and incorporating traditional knowledge provided by engaged Tribes and tribal communities to successfully implement the Master Plan after adoption.
83			Request: Is it possible to have reference to working with tribal people and traditional knowledge somewhere in the Master Plan?	Text has been added in Chapter 1 and Chapter 12 to reference the Department's consultation and communications with Tribes and tribal communities during the Master Plan amendment process. Appendix B also provides additional details on our efforts to engage with Tribes and tribal communities to provide informational updates and solicit feedback. Please also see response to comment 82.



Photo Credit: Romero Cardozo

2018 Marine Life Management Act (MLMA) Master Plan

Dr. Craig Shuman, California Department of Fish and Wildlife

California Fish and Game Commission
Sacramento, CA
June 20, 2018



2015

2016

2017

2018

Engagement with California Tribal Governments

Stakeholder Engagement

Phase I: Build Knowledge

Information Gathering Projects

Tribal Engagement

Stakeholder Engagement

Draft Framework for MLMA-Based Management

Phase II: Amend Master Plan

Tribal and Stakeholder Input

Prepare Initial Draft 2018 Master Plan

Public Review and Comment

Prepare Revised Draft 2018 Master Plan

Phase III: Review and Possible Adoption by California Fish and Game Commission

Submit Revised Draft 2018 Master Plan

Commission Meetings

Public Review and Comment

TODAY- Possible Adoption of 2018 Master Plan



Phase III: Review and Possible Adoption

- Initiated February 2018
 - Submission of revised draft 2018 Master Plan to Commission
 - Three-meeting process for review and discussion
 - Public review and input
 - Feedback from Commissioners
- June 20, 2018: Possible adoption of 2018 Master Plan



2018 Master Plan

- Standardized approach to achieving MLMA mandates and objectives
- New framework for prioritization and scaled management
- Guides research, monitoring, and Essential Fisheries Information data collection efforts
- Not prescriptive, promotes transparency and strategic management
- Informed by stakeholder guidance and input, highlights importance of stakeholder involvement during Master Plan implementation



Comments on Revised Draft

- Received several public comment letters and documented verbal testimonies at April 18-19, 2018 Commission meeting
 - Prioritization, management strategy evaluation, ecological risk assessment, enhanced status reports, partnerships, climate change
- Expressions of support for the revised draft 2018 Master Plan
- Appreciation of Department's efforts to consider and address stakeholders' priorities, concerns, and recommendations



Summary of Final Draft Revisions

- Increased clarity around prioritization approach
 - Interim priority list of fisheries moved to appendix
- Better integration of Marine Protected Areas and climate change into management considerations
- Revisions to Enhanced Status Report outline to better reflect the MLMA required contents for Fishery Management Plans
- Expanded guidance regarding stock sustainability
- Highlighted engagement with Tribes and tribal communities



Next Steps

- The Department will work with the Commission, Tribes and tribal communities, and stakeholders to develop a work plan for applying the framework for MLMA-based management
 - Based on current resources to help focus efforts and establish a shared set of goals and expectations
 - Additional efforts that may be accomplished with supplemental resources and partnerships



Next Steps

- **Data-limited Methods Toolkit**
 - Continue evaluation of toolkit for pilot fisheries
- **Enhanced Status Reports (ESRs) & Ecological Risk Assessments (ERAs)**
 - Develop ESRs and conduct ERAs for interim priority list of fisheries
- **California Fisheries Portal**
 - Continue scoping phase to inform design and development
- **Other Projects**
 - Data review, E-Tix transition, Box Crab EGP, etc.



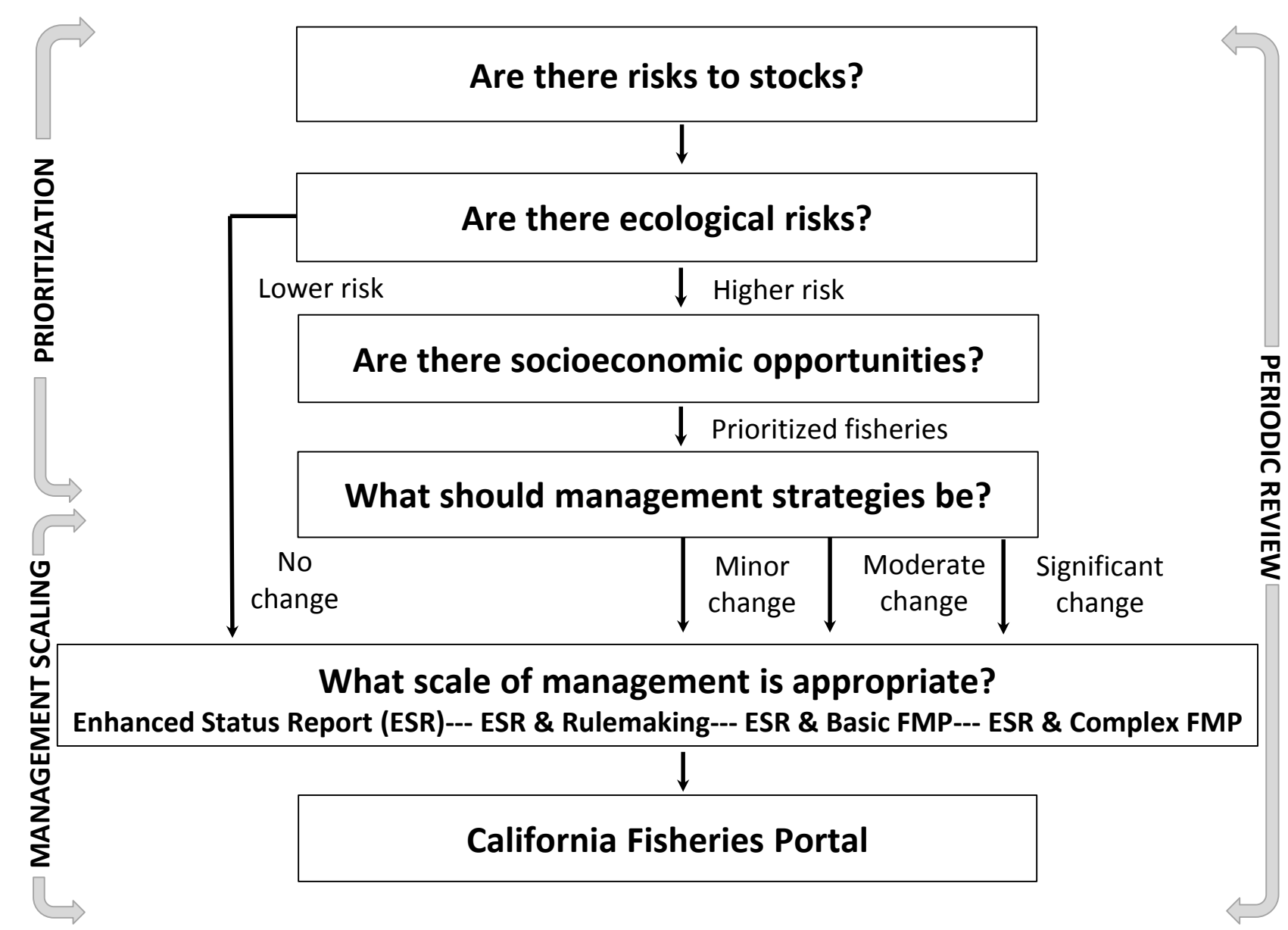
Thank You

- More information
<https://www.wildlife.ca.gov/Conservation/Marine/MLMA>
- Questions or comments
MLMA@wildlife.ca.gov

Additional Slides

Framework for MLMA-based Management

- Prioritizes and scales the intensity of management to the risks and potential benefits for each fishery
- Full application will require sufficient resources and collaboration among the Department, Commission, Legislature, Tribes, and stakeholders





*California Ocean Litter Prevention Strategy:
Addressing Marine Debris from Source to Sea*

DRAFT
PROPOSED FINAL DRAFT

April 13, 2018

Acknowledgment: The California Ocean Litter Prevention Strategy was developed through expert input from numerous California stakeholders. Funding was provided by the California Ocean Protection Council (OPC) and NOAA Marine Debris Program (NOAA MDP). Many thanks go to the workshop participants and others who contributed to the Strategy and will participate in its implementation. We would also like to thank Miho Ligare and Nina Venuti of California Sea Grant, Eben Schwartz of the California Coastal Commission, and Angela Howe of the Surfrider Foundation for their participation on the workshop planning team. We also thank NOAA MDP staff for assistance with workshop facilitation and note-taking, and for their help preparing the document for publication. The Strategy was drafted by California Sea Grant (M. Ligare and N. Venuti) under the direction of OPC (Holly Wyer) and NOAA MDP (Sherry Lippiatt).

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LIST OF ACRONYMS AND ABBREVIATIONS

AB	Assembly Bill
ACC	American Chemistry Council
BACWA	Bay Area Clean Water Agencies
BASMAA	Bay Area Stormwater Management Agencies Association
BMP(s)	Best Management Practice(s)
CalRecycle	California Department of Resources Recycling and Recovery
CASA	California Association of Sanitation Agencies
CCC	California Coastal Commission
CDFW	California Department of Fish and Wildlife
COPA	California Ocean Protection Act
CPSC	California Product Stewardship Council
CSU	California State University
CSUCI	California State University, Channel Islands
CSULB	California State University, Long Beach
DBW	California State Parks Division of Boating and Waterways
DTSC	California Department of Toxic Substances Control
EPA	United States Environmental Protection Agency
EPR	Extended Producer Responsibility
ESRM	Environmental Science and Resource Management
FGC	California Fish and Game Commission
FTIR	Fourier Transform Infrared
GPS	Global Positioning System
IGISc	Institute for Geographic Information Science
NOAA	National Oceanic and Atmospheric Administration
NOAA MDP	National Oceanic and Atmospheric Administration Marine Debris Program
OPC	California Ocean Protection Council
PRCC	Plastic Recycling Corporation of California
SB	Senate Bill
SCAP	Southern California Alliance of Publicly Owned Treatment Works
SCCWRP	Southern California Coastal Water Research Project
SDSU	San Diego State University
SFEI	San Francisco Estuary Institute
SFSU	San Francisco State University
State Water Board	California State Water Resources Control Board
UC	University of California
UNEP	United Nations Environment Programme
WTO	World Trade Organization

GLOSSARY OF COMMONLY USED TERMS

Cleanup: To remove litter from waterways, beaches, and the ocean. Examples of cleanup methods include manual litter removal, installation of trash skimmers in ports, and diving to recover lost fishing gear.

Common Ocean Litter Items: Items that are most prevalent in ocean litter found in or on California's waterways, coastlines, or ocean, as defined by relevant datasets (e.g., California Coastal Cleanup Day data). Currently, based on Coastal Cleanup Day data, the most common ocean litter items in California are cigarette butts and food and beverage packaging (California Coastal Commission, 2017).

Control: To intercept litter before it ends up in waterways, on beaches, or in the ocean. Examples of litter control methods include street sweeping, stormwater capture devices, storm drain cleaning and maintenance, and additional options and opportunities for proper waste disposal.

Land-Based Ocean Litter: Items that became litter on land (via land-based activities) and subsequently entered the aquatic environment.

Lead Organization: Lead Organizations are committed to implementing an Action Item, given organizational and funding constraints. Lead Organizations will serve as the point of contact for NOAA and OPC for progress reports and check-ins throughout the Strategy's six-year timeframe, and will take a leadership role in communicating and coordinating with other collaborators/Partner Organizations on the Action Item.

Marine Debris: Any persistent solid material that is manufactured or processed and directly or indirectly, intentionally or unintentionally, disposed of or abandoned into the marine environment or the Great Lakes (15 C.F.R. Part 909 Section 909.1). For the purposes of this document, the term “ocean litter” will be used as a synonym for “marine debris.”

Ocean-Based Marine Debris: Items that entered the marine environment via activities that occurred at sea. Ocean-based items are typically referred to as “marine debris” rather than “ocean litter” in this document, as it is more appropriate to refer to larger items like vessels or gear as “debris” rather than “litter.”

Partner Organization: Partner Organizations will serve a supporting role in implementing an Action Item, in collaboration with Lead and other Partner Organizations.

Single-use product: An item that is conventionally disposed of after one use.

Source Reduction or Waste Prevention (used interchangeably): Practices that result in a net reduction in the generation of solid waste. Source reduction includes, but is not limited to, changes in the design, manufacture, purchase, or use of materials and products (e.g., reducing

packaging, replacing disposable products and materials with reusable products and materials). Source reduction does not include steps taken after the material becomes solid waste. (Definition taken from California's Public Resources Code Section 40196 and informed by EPA, 2016).

DRAFT

EXECUTIVE SUMMARY

Ocean litter is a pervasive problem at local, regional, and global scales with a wide range of consequences to human health, the environment, and the economy. Immediate, collaborative action to reduce and prevent ocean litter will ensure that California communities, environments, and economies remain productive and vibrant. The Ocean Protection Council (OPC) and the National Oceanic and Atmospheric Administration's Marine Debris Program (NOAA MDP) present this update to OPC's 2008 *An Implementation Strategy for the California Ocean Protection Council Resolution to Reduce and Prevent Ocean Litter*. The 2018 *California Ocean Litter Prevention Strategy: Addressing Marine Debris from Source to Sea* (Strategy) will provide structure and guidance for OPC and California stakeholders to efficiently address this pressing issue over the next six years.

Much of OPC's work on ocean litter began in 2007, when OPC adopted a resolution entitled "Reducing and Preventing Marine Debris." OPC then initiated a steering committee to publish an Implementation Strategy in 2008, which laid out a plan to implement the resolution. The 2008 Strategy served as a powerful and effective document to promote action on addressing ocean litter in California. Since 2008, many of the actions described in the document have either been accomplished or are in progress. For example, the single-use plastic carryout bag ban was ratified by California voters in 2016, and the State Water Resources Control Board's Trash Amendments were adopted in 2015. While we have made great strides in addressing ocean litter in California, our understanding of the issue has changed considerably in the last decade. For example, the investigation of microplastics' presence in aquatic ecosystems and impacts on marine life has increased dramatically over the last ten years.

OPC and the NOAA MDP have partnered to update the 2008 Strategy. The NOAA MDP is authorized by the United States Congress through the Marine Debris Act, signed into law in 2006 and amended in 2012. The Act requires the program to "identify, determine sources of, assess, prevent, reduce, and remove marine debris and address the adverse impacts of marine debris on the economy of the United States, marine environment, and navigation safety." The NOAA MDP has prioritized supporting and facilitating the creation of collaborative action plans around the country. Similar to other regions, this 2018 update expands the previous Strategy to include projects of a variety of scales and scopes so that entities including government agencies, industry, academia, nonprofits, and tribes can collaborate on meaningful contributions to reducing ocean litter in California.

The content of the Strategy was generated from a wide range of stakeholder input, gathered during two workshops and two rounds of public comment between May 2017 and February 2018. The Strategy includes OPC Priorities to address ocean litter and stakeholder-identified Goals, Objectives, and Action Items to address ocean litter.

The OPC Priorities are tailored to how OPC works and outlines the activities OPC will take on over the next six years to address ocean litter. This means that the priorities are framed around

developing and implementing policy, coordinating among state agencies, providing funding for catalytic and innovative projects, and providing the best available science for government decision-making. The OPC Priorities were developed by OPC staff and were revised through stakeholder feedback and public comment. The OPC Priorities are meant to support and enhance many of the Goals, Objectives, and Action Items developed by California stakeholders. The OPC Priorities are structured into three goals:

1. **OPC Goal 1 – Land-based Ocean Litter:** Protect marine ecosystems and the communities that rely on them by promoting policies to prevent litter from reaching the ocean.
2. **OPC Goal 2 – Microplastics and Microfibers:** Increase understanding of the scale and impact of microplastics and microfibers on the marine environment and develop solutions to address them.
3. **OPC Goal 3 – Fishing and Aquaculture Gear:** Reduce debris from fishing and aquaculture-related activities in the ocean.

In contrast to the OPC Priorities, the Stakeholder Goals, Objectives and Action Items were developed and revised by a wide range of stakeholders including grassroots organizations, fishermen, scientists, wastewater treatment managers, and the plastics industry. Stakeholders were engaged through two workshops and through public comment periods on the draft document. The first workshop provided an opportunity to brainstorm Action Items, and the second workshop provided an opportunity to refine the Goals, Objectives, and Action Items in the first draft of the Strategy. The stakeholder section of the Strategy is structured around six Goals, five of which are dedicated to land-based litter, and one of which is dedicated to ocean-based debris. Nested under each of these Goals are Objectives, which outline approaches for achieving the Goals. Each Objective includes specific Action Items, which are concrete and measurable tasks that stakeholders can implement to contribute to an Objective and prevent or reduce ocean litter.

Broadly broken into land- and ocean-based litter categories, the six stakeholder Goals of this Strategy are as follows:

Land-based Ocean Litter

1. **Goal 1:** Reduce the use of common ocean litter items through mandates and incentives targeting public institutions and businesses.
2. **Goal 2:** Reduce the prevalence of common ocean litter items through changes in product production, design, and management.
3. **Goal 3:** Improve waste management and interception of litter on land before it enters the ocean.
4. **Goal 4:** Conduct and communicate research on existing and emerging issues related to land-based ocean litter.
5. **Goal 5:** Generate behavior change by educating and engaging communities and individuals to reduce ocean litter.

Ocean-based Marine Debris

6. **Goal 6:** Reduce the sources of ocean-based debris and maximize the efficiency of ocean-based debris cleanup.

The Strategy prioritizes source reduction Goals and Action Items, as agencies and experts agree that source reduction is the most effective tactic to address ocean litter. The Strategy focuses primarily on land-based litter, because most of the litter found on Coastal Cleanup Day is land-based. Furthermore, the Goals, Objectives, and Action Items included in the Strategy are driven by the data we have on ocean litter. Many of the Action Items focus efforts on “common ocean litter items,” or ocean litter items that are most prevalent in or on California’s waterways, coastlines, or ocean, as defined by relevant datasets. The use of this terminology directs stakeholders to focus on the litter items that are most abundant in the environment, while also allowing for flexibility and adaptability, as the most common ocean litter items may change over time. This document relies on Coastal Cleanup Day data to define the most common ocean litter items found across the state. Currently, cigarette butts and food and beverage packaging are the most common ocean litter items found in California.

Most of the Strategy’s Action Items are accompanied by a list of Lead and/or Partner Organizations. These organizations have volunteered to implement the Action Items. Given the many dynamic and influential ocean litter stakeholders in California, the Strategy provides an opportunity for organizations to take a leadership role on Action Items that align with their respective goals and mandates. Additional organizations may contribute to Actions over the lifetime of the Strategy. OPC and NOAA MDP are committed to providing overall leadership and coordination of tracking Strategy implementation progress, facilitating communication between partner organizations, and sharing updates among interested stakeholders.

In summary, this document provides a holistic, collaborative strategy for addressing ocean litter in California, with a focus on reducing land-based litter at its source. It focuses on high impact Action Items that entities can commit to working on over the next six years. The document provides both guidance and flexibility so that Lead and Partner Organizations can work collaboratively to pursue funding (where needed) and implement these Action Items. Partnership across sectors is necessary to reduce and prevent ocean litter and ensure a healthy coast and ocean for current and future generations of Californians.

Section I:

2018 California Ocean Litter Prevention Strategy

OPC Priorities and Stakeholder Goals, Objectives, and Actions to Address Ocean Litter in California



Ballona Creek. Photo Credit: Bill MacDonald, Algalita Research Foundation

2018 CALIFORNIA OCEAN LITTER PREVENTION STRATEGY: ADDRESSING MARINE DEBRIS FROM SOURCE TO SEA

The ocean is an important part of California's economy, culture, and quality of life. California's ocean economy accounts for \$41.9 billion in gross domestic product (NOAA ENOW, 2014), and provides over 500,000 jobs. Sixty-eight percent of Californians live in a coastal county (NOAA OCM, 2015), and the state's beaches are iconic for both tourism and recreation. Despite the large scale of the ocean, human impacts, through changes in land use and pollution, may reduce the benefits the ocean provides. Many ocean pollution problems originate on land, and in some cases, far inland from the coast. These pollution problems can range from nutrients, to contaminants of emerging concern, to ocean litter.

Ocean litter, like many other forms of pollution, is primarily land-based (Sheavly, 2007). Unlike other forms of pollution, ocean litter is very visible and its impacts are evident to stakeholders and the public. Ocean litter pollutes beaches and waterways, entangles marine life, smothers sensitive habitat, and is ingested by marine organisms. For more information on the impacts of ocean litter, please see "Impacts of Ocean Litter" in the Literature Synthesis in Section II.

2018 Strategy Update Process

In 2016, the OPC and the NOAA MDP initiated a partnership with California Sea Grant to update the 2008 OPC Strategy to Reduce and Prevent Ocean Litter. The Strategy planning team also included California Coastal Commission and Surfrider Foundation. Representatives from organizations active in conservation, research, waste reduction, and education, as well as representatives from industries, tribes, local governments, and State and Federal agencies were invited to participate in two workshops in 2017 aimed at generating Action Items that would help solve the problem of ocean litter in California. All of the stakeholder Action Items included in this Strategy document were identified by workshop participants.

The first of the two workshops, held in May 2017 in Oakland, California, allowed participants to discuss the problems associated with ocean litter and brainstorm potential solutions to the

presence of ocean litter in California. One hundred and forty-eight Action Items to reduce and prevent ocean litter were identified during this workshop. Following the first workshop, the planning team reviewed the list of Action Items generated by participants and condensed similar ideas to create a list of 61 Action Items. The planning team then organized this new list into a draft Strategy, which was circulated among the workshop participants and posted on OPC's website for public review and comment in September 2017. The second of the two workshops, held in November 2017 in La Jolla, California, allowed for further discussion and refinement of the Strategy's Action Items, and gave organizations the opportunity to commit to taking a role in implementing proposed actions. At the second workshop, OPC provided stakeholders with an outline of its Priorities to address ocean litter to support and enhance the Goals, Objectives, and Action Items developed by the stakeholders. Each workshop was attended by approximately 50 participants. Materials from the two workshops, including agendas, participant lists, and a complete list of ideas for Action Items generated by workshop #1 participants are posted on the OPC website (<http://www.opc.ca.gov/programs-summary/marine-pollution/ocean-litter-strategy-2018/>).



Coyote Creek, San Jose. Photo Credit: San Francisco Baykeeper

Following the second workshop, the planning team revised the draft Strategy to incorporate public comment received after the first workshop, discussion generated during the second workshop, and feedback provided on OPC's Priorities. The second draft of the Strategy was posted on OPC's website and circulated to workshop participants for a second round of public comment in January 2018. The Strategy was revised and finalized based on this second round of public comment.

Structure of Document

The 2018 *California Ocean Litter Prevention Strategy: Addressing Marine Debris from Source to Sea* includes OPC Priorities to address ocean litter and stakeholder-identified Goals, Objectives, and Actions to address ocean litter. The OPC Priorities outline the work OPC will take on over the next six years, and these Priorities complement and enhance the Goals, Objectives, and Actions identified by the stakeholders. OPC Priorities are structured into three goals:

1. **OPC Goal 1 – Land-based Ocean Litter:** Protect marine ecosystems and the communities that rely on them by promoting policies to prevent litter from reaching the ocean.
2. **OPC Goal 2 – Microplastics and Microfibers:** Increase understanding of the scale and impact of microplastics and microfibers on the marine environment and develop solutions to address them.
3. **OPC Goal 3 – Fishing and Aquaculture Gear:** Reduce debris from fishing and aquaculture-related activities in the ocean.

The stakeholder section of the Strategy is structured around six Goals, five of which are dedicated to land-based litter, and one of which is dedicated to ocean-based debris. Nested under each of these Goals are Objectives, which outline approaches for achieving the Goals. Each Objective includes specific Action Items, concrete and measurable tasks that stakeholders can implement to contribute to an Objective and prevent or reduce ocean litter.

Broadly broken into land- and ocean-based litter categories, the six stakeholder Goals of this Strategy are as follows:

Land-based Ocean Litter

1. **Goal 1:** Reduce the use of common ocean litter items through mandates and incentives targeting public institutions and businesses.
2. **Goal 2:** Reduce the prevalence of common ocean litter items through changes in product production, design, and management.
3. **Goal 3:** Improve waste management and interception of litter on land before it enters the ocean.
4. **Goal 4:** Conduct and communicate research on existing and emerging issues related to land-based ocean litter.
5. **Goal 5:** Generate behavior change by educating and engaging communities and individuals to reduce ocean litter.

Ocean-based Marine Debris

6. **Goal 6:** Reduce the sources of ocean-based debris and maximize the efficiency of ocean-based debris cleanup.

The 2018 Strategy document includes the following:

OPC Section

- **3 Goals:** The three Goals focus on land-based ocean litter, microplastics, and fishing and aquaculture gear.
- **3 Priority Objectives:** Each Goal is followed by a Priority Objective. They describe how OPC would approach achieving its Goals. These Priority Objectives are framed around how OPC works, and support and enhance the Goals, Objectives, and Actions developed by California stakeholders in the Stakeholder Section.
- **24 Action Items:** Listed under each Objective. These Actions are concrete and measurable tasks that OPC can implement to meet its Objectives.

Stakeholder Section

- **6 Goals:** The first five Goals are dedicated to land-based ocean litter, while the last Goal is dedicated to ocean-based litter. These Goals focus on source reduction, research, behavior change, control, and cleanup.
- **17 Objectives:** Nested under each Goal, these Objectives are approaches that may be taken to achieve a Goal.
- **64 Action Items:** Listed under each Objective, Action Items are concrete and measurable tasks that stakeholders can implement to contribute to an Objective and prevent or reduce ocean litter.

Scope of Document

Data-driven Goals, Objectives, and Action Items

The Goals, Objectives, and Action Items included in this document reflect the need to base actions taken to address ocean litter in California on the most accurate available data. The term “common ocean litter items” is used frequently throughout the document to refer to the most prevalent ocean litter items found in California’s waterways and ocean waters, and on its coastlines. The use of this terminology directs stakeholders to focus on the debris items that are most abundant in the environment, while also allowing for flexibility and adaptability, as the most common ocean litter items may change over time.

While the need for a comprehensive, statewide litter dataset is identified in the Action Item tables below (see Action Item 4.1.4), for now, this document relies on California Coastal Cleanup Day data to define the most common ocean litter items found in the state (see Table 1 for the list of the top 10 litter items removed from California’s coastlines and inland waterways on Coastal Cleanup Day from 1989-2014). While cigarette butts are the most prevalent ocean litter item in California, it is important to note that seven of

Table 1. Top ten litter items removed on California Coastal Cleanup Day, 1989-2014 (California Coastal Commission, 2017).

Litter Item	Count	Percentage
Cigarettes/Cigarette filters	6,992,106	37.76%
Food wrappers/Containers	1,940,013	10.48%
Caps/Lids	1,619,071	8.74%
Bags (paper and plastic)	1,462,726	7.90%
Cups/Plates/Utensils	1,014,229	5.48%
Straws/Stirrers	736,595	3.98%
Glass beverage bottles	600,871	3.24%
Plastic beverage bottles	475,799	2.57%
Beverage cans	455,433	2.46%
Construction material	330,711	1.79%

the ten most common litter items represent a form of food and beverage packaging (food wrappers/containers, caps/lids, cups/plates/utensils, straws/stirrers, glass beverage bottles, plastic beverage bottles, and beverage cans; see Table 1). Together, these items comprise 36.95% of the ocean litter found in California, making food and beverage packaging nearly as prevalent as cigarette butts. During implementation of this Strategy, stakeholders may also use more detailed, localized datasets, when available, to determine common ocean litter items in their region or to help define their scope of work.

Focus on Land-based Litter and Lost Fishing and Aquaculture Gear

The majority of the Strategy’s Goals focus on land-based litter. Approximately 54% of the debris found on California beaches is land-based (Sheavly, 2007), and a large portion of the marine debris community in California focuses their work on land-based litter. The remaining Goals are dedicated to ocean-based debris and focus almost entirely on lost fishing and aquaculture gear. The focus on fishing and aquaculture gear stems from the participation of fishing and aquaculture stakeholders at the workshops, and from targeting the types of ocean-based debris where NOAA and OPC can make the greatest impact.

Emphasis on Source Reduction and Prevention

This document prioritizes source reduction Goals and Action Items, as agencies and experts agree that source reduction is the most effective tactic for addressing ocean litter. Source reduction, or waste prevention, as defined by California’s Public Resources Code Section 40196, refers to practices that result in a net reduction in the generation of solid waste. Source reduction includes, but is not limited to, changes in the design, manufacture, purchase or use of materials and products. This may include, among other things, reducing packaging, and replacing

disposable products and materials with reusable products and materials (Public Resources Code Section 40196; EPA, 2016). According to the State of California, source reduction does not include steps taken after the material becomes solid waste, such as incineration or recycling (Public Resources Code Section 40196). Source reduction is considered by the US EPA to be the most preferred method for dealing with waste, and can help reduce ocean litter by decreasing the amount of trash there is to control, cleanup, and dispose (EPA, 2017).

Furthermore, source reduction creates significant opportunities for industry to take initiative and responsibility for the products they produce. By altering their production, operation, and raw material use, industries can prevent litter at the source. Institutions, businesses, and consumers can also play a role in source reduction. For example, the State is the single largest purchasing entity in California, purchasing billions of dollars of products each year (Suh *et al.*, 2017). As a result, the State can have a significant impact on, and set a good example for, preventing and reducing waste at the source through procurement policies that prioritize reusable items. Institutions and businesses can also benefit from these procurement changes, as they often lead to reduced costs associated with the purchase of disposable items, and the transportation, disposal, or recycling of waste (Maryland Department of the Environment, 2017; Clean Water Action, 2017). Consumers can contribute to source reduction by making changes in their own purchasing habits and supporting businesses that exhibit sustainable purchasing practices.

Efforts to engage in source reduction are occurring throughout California. Numerous local jurisdictions have passed restrictions on the use of expanded polystyrene in foodware, and single-use plastic carryout bag bans. An assessment of plastic in Southern California coastal waterways found that local jurisdictions with bag bans had significantly fewer plastic bags in their watersheds than jurisdictions without bans. On average, areas with ordinances had 1/3 of the number of plastic bags that were found in areas without ordinances (Moore *et al.*, 2016). In 2016 state voters ratified the statewide single-use plastic carryout bag ban, which prohibited stores from providing single-use plastic carryout bags, and required that stores charge a fee for a reusable bag. Although no formal analysis has been conducted, Coastal Cleanup Day data indicates that the prevalence of single-use plastic bags as a portion of the total number of items collected during Coastal Cleanup Day has decreased from 7.42% in 2010, when the first local bans were implemented, to 2.82% in 2017, after the statewide single-use plastic carryout bag ban went into effect (information provided by California Coastal Commission staff, 2018).

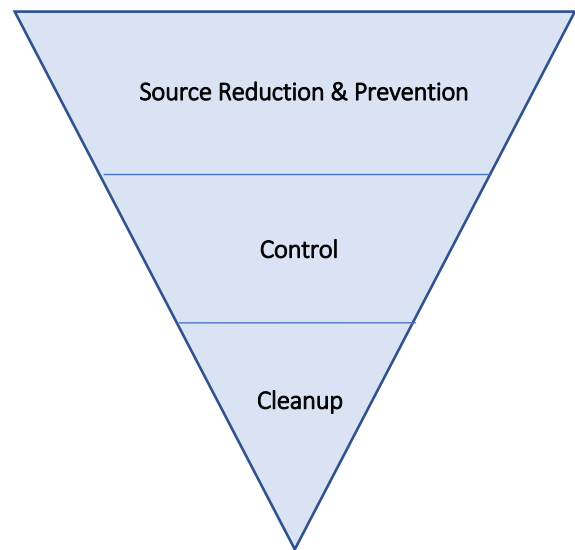
Control and Cleanup

Controlling and cleaning up litter in the environment is important, but less efficient and effective in the longer term compared to source reduction and prevention. Control is used here to mean efforts taken to intercept litter before it ends up in waterways, on beaches, or in the ocean. Examples of litter control methods include street sweeping, stormwater capture devices, storm drain cleaning and maintenance, and increasing options and opportunities for proper waste disposal. Cleanup refers to efforts taken to remove litter from waterways, beaches, and the ocean. Examples of cleanup methods include manual litter removal on beaches, installation of trash skimmers in ports, and organizing divers and fishermen to remove lost fishing gear. The public cost burden of control and cleanup makes a compelling argument for accelerating the search for effective strategies to reduce and prevent trash streams that enter our waterways and contribute to ocean litter.

Efforts to improve litter control are occurring throughout California. One such effort is the California Fishing Line Recycling Program, led by the California State Parks Division of Boating and Waterways (DBW) and the California Coastal Commission (CCC), Keep the Delta Clean, and the BoatU.S. Foundation. To date, this program has installed 243 fishing line recycling stations in fishing areas throughout the state, and collected and recycled over 1,480 pounds of fishing line which may have otherwise become ocean litter (information provided by DBW and CCC staff, 2018).

Another ongoing statewide litter control effort is the implementation of the State Water Resources Control Board's (State Water Board's) Trash Amendments. In 2015, the State Water Board adopted a statewide water quality objective aimed at reducing the amount of trash that finds its way into rivers, lakes, and the ocean by prohibiting the discharge of trash into state surface waters. The water quality objective is commonly referred to as the "Trash Amendments." These Trash Amendments provide statewide consistency in efforts to reduce trash in state waters, and use a land use-based compliance approach that targets high trash generating areas such as high density residential, industrial, commercial, mixed urban and public transportation land uses. This program allows flexibility for local governments to come up with compliance approaches that work best for them to effectively eliminate trash discharge from their stormwater systems. Local governments may choose to increase trash capture in stormwater runoff, or use a combination of source reduction approaches that are equivalent to full trash capture. This Strategy provides a suite of source reduction approaches that may be cost-effective and useful to local governments as they develop their compliance approaches for the Trash Amendments. OPC and NOAA intend to align the Strategy implementation process with the

Fig. 3. Hierarchy of Efforts to Address Ocean Litter



Trash Amendments reporting timeline, to the extent possible, to avoid creating additional reporting burdens for local governments.

California also has a robust and successful network for organized cleanup efforts. From local nonprofits to municipalities, beach and waterway cleanups are held on a regular basis throughout the state. California Coastal Cleanup Day is a notable program held once a year, where approximately 60,000 volunteers pick up hundreds of thousands of pounds of trash and recyclables from beaches, lakes, and waterways. In 2016, 59,154 volunteers participated in California Coastal Cleanup Day and collected 710,781 pounds of litter (California Coastal Commission, 2016). California Coastal Cleanup Day is a part of International Coastal Cleanup Day, the world's biggest effort to clean up ocean litter. Annually, nearly 12 million people volunteer to pick up litter on this day in their communities (Ocean Conservancy, 2017).

It is important to note that waste management and ocean litter are inextricably linked. This Strategy is intended to be a complementary document to other waste prevention and management strategies (e.g., CalRecycle Packaging Reform Process), with a focus on the issue of ocean litter.

Strategy Implementation

As described above, the scope and focus of this document were largely determined by the stakeholders involved in the two workshops held in 2017. Attendees of the second workshop devised the following Strategy implementation scheme:

Six-year timeframe: The operational cycle of this document is six years (2018-2024). Six years provides ample time for Action Item implementation, while also allowing for evaluation of progress and reevaluation of Strategy Goals and Objectives, if needed, throughout the process.

In-person check-ins every two years: Every two years, OPC and NOAA MDP will organize in-person meetings amongst stakeholders to discuss progress made on Strategy implementation, and to reevaluate the Strategy's Goals and Objectives, if necessary.

Conference calls/webinars and newsletters every six months: Every six months, OPC and NOAA MDP will organize and facilitate a webinar or conference call to allow stakeholders to discuss and share lessons learned from the Strategy implementation process. OPC and NOAA MDP will also create a newsletter to share updates on Action Item progress with stakeholders and the public; this newsletter will be populated by information provided by the organizations involved in Action Item implementation. OPC will also provide updates on its progress with implementing OPC Priorities via these webinars and newsletters annually. The form that these six-month check-ins take may change over the course of the document's six-year timeframe, depending on what stakeholders feel is most useful to facilitate communication and collaboration.

Action Item timelines and metrics: Stakeholders will form working groups around each Action Item, and will be responsible for devising implementation plans with rough timelines and metrics for each Action Item by the first six-month check-in webinar (which will be held in late 2018). OPC and NOAA MDP will provide some guidance and structure for how to set metrics and timelines for Action Items.

DRAFT

Recognizing the many benefits the ocean provides to Californians and the need to protect California's coastal and ocean resources, the state legislature passed the California Ocean Protection Act (COPA) in 2004. COPA acknowledges the interconnectedness of the land and sea, and tasks OPC with ensuring that California maintains a healthy, resilient and productive ocean and coastal ecosystem for the benefit of current and future generations. OPC works in four ways to protect ocean and coastal ecosystems, as mandated by COPA. OPC recommends and implements policy, leads and promotes coordination among state and local agencies, supports innovative projects, and informs government.



1. Implement a producer take-back (EPR) program for convenience food packaging.
2. Prohibit single-use products that pose significant ocean litter impacts where a feasible less damaging alternative is available. Products specifically called out included polystyrene food packaging and plastic bags.
3. Assess fees on commonly littered items.

20

To further advance actions that will prevent and reduce ocean litter in California and guide funding priorities over the next six years, OPC's Priorities to address ocean litter are laid out in this section. These Priorities are meant to support and enhance many of the Goals, Objectives, and Action Items developed by California stakeholders which are outlined in the "Stakeholder Goals, Objectives, and Action Items" section. OPC's Priorities can be divided into three broad categories: land-based ocean litter, microplastics and microfibers, and fishing and aquaculture gear.

- **Land-Based Ocean Litter:** The majority of litter found on West Coast beaches originates on land (Sheavly, 2007). Land-based ocean litter (defined here as larger than 5 mm) fouls ocean ecosystems, entangles marine wildlife, and pollutes California's coastline. Furthermore, land-based ocean litter creates an economic burden for California communities, who spend more than \$428 million annually on control and cleanup. (Stickel *et al.*, 2013).
- **Microplastics and Microfibers:** Microplastics and microfibers (materials smaller than 5 mm) are of increasing concern in the marine environment as they can be ingested by marine organisms, including those targeted for human consumption. These microplastics can physically block the digestive tracts of marine species, and may accumulate up the food chain (NOAA MDP, 2014a). Additionally, chemicals associated with the microplastic may be absorbed by marine life through ingestion (NOAA MDP, 2014a).
- **Fishing and Aquaculture Gear:** Ocean-based sources of litter, including fishing and aquaculture gear, contribute to the problem of ocean litter along the West Coast (Sheavly, 2007). Lost or abandoned fishing and aquaculture gear can result in ghost fishing and habitat impacts, causing ongoing harm to marine ecosystems.

As a state agency, OPC works to advance and protect the interests of the public when addressing ocean litter. This means developing and recommending policies that reduce the negative costs associated with ocean litter. Most of these costs are currently born by the public through funding cleanup and capture. OPC prioritizes source reduction to prevent ocean litter because it is cost-effective and reduces cost burdens on the public. Many policies can be used to address common ocean litter items, ranging from voluntary to mandatory. OPC is open to using all the policy options available, as long as they are shown to effectively and substantially reduce ocean litter. The state has a number of initiatives and programs that will complement OPC's California Ocean Litter Strategy. OPC has coordinated with our agency partners throughout the development of this Strategy and OPC's Priorities. A brief list summarizing these agencies' programs and initiatives is below:

- State Water Resources Control Board: Trash Amendments Implementation
- CalRecycle: Packaging Reform Process
- California Department of Toxic Substances Control: Safer Consumer Products Program
- California Coastal Commission: Energy, Ocean Resources, and Federal Consistency Program, and Public Education Program
- Fish and Game Commission: Leasing of State Water Bottoms for Purposes of Aquaculture

- California Department of Fish and Wildlife: Aquaculture Program

Implementation of OPC Priorities will occur over the next six years. Stakeholders will receive updates on OPC's progress to implement these Priorities at least annually as part of the California Ocean Litter Strategy Implementation process. Please see the "Strategy Implementation" section for more details on the implementation process. Some of the priority actions outlined below are particularly timely, and OPC staff has assigned timelines to them. Other priority actions are written in a broad way to allow for adaptation over the next six years, and do not have specific timelines called out at this time.

OPC GOAL 1 – LAND-BASED OCEAN LITTER: Protect marine ecosystems and the communities that rely on them by promoting policies to prevent litter from reaching the ocean.

Priority Objective: Advance source reduction efforts through policy, research, and funding to prevent the production and consumption of common ocean litter items by supporting the following actions:

Policy Implementation: Develop and recommend a variety of policy tools to prevent the production and consumption of common ocean litter items at their source, including single-use food and beverage packaging and cigarette filters. Examples of actions to support policy implementation include, but are not limited to:

1. Promote changes by 2020 in State purchasing and service contracts, to reduce the State's reliance on single-use foodware that typically becomes ocean litter.
2. Recommend state and local policies that encourage consumers to bring their own reusable food and beverage containers by charging for disposable packaging use for "to go" food service by 2024.
3. Promote comprehensive waste management approaches to prevent the production of common ocean litter items through CalRecycle's packaging reform efforts, and explore methods to share responsibility between producers and the public to fund the cleanup of beaches and inland waterways that are littered with these products.
4. Support policies that reduce expanded polystyrene litter, such as the inclusion of expanded polystyrene as a priority product in CalRecycle's packaging reform efforts and the prohibition of expanded polystyrene¹ in foodware.
5. Convene and foster innovative partnerships, use funding mechanisms, and recommend policies to redesign common ocean litter items such as connecting bottle caps to bottles.

¹ OPC previously prioritized a polystyrene food packaging ban in 2008. Expanded polystyrene in food packaging should be addressed for a number of reasons: Expanded polystyrene breaks apart into tiny pieces quickly once it reaches the environment, it is easily carried by wind, and mixes into beach sand and sediment. Although expanded polystyrene is technically recyclable, expanded polystyrene in use as food service ware is often too contaminated for the recycling stream.

6. Convene a working group to evaluate a ban on cigarette filters in California by 2020. The working group will investigate research and reports on cigarette filters, and the extent to which they impact human health. If the working group finds that cigarette filters provide no health protections to smokers, then OPC may make recommendations to the legislature to ban cigarette filters.

Research and Funding: Use research and funding to address knowledge gaps and better target policy efforts; examples of actions under this category may include, but are not limited to:

1. Fund assessments of policy effectiveness to determine whether the policies are acting as intended and what, if any, changes need to be made to increase effectiveness. If local policies or ordinances are demonstrated to be effective, consider recommending for statewide implementation.
2. Fund a report synthesizing lessons learned from waste management policies and tools implementation in other countries, including policy recommendations for California, with a focus on source reduction by 2020.
3. Fund research and partner with the Department of Toxic Substances Control to address chemical additives that are commonly associated with products found in ocean litter to determine their environmental impacts. Chemical additives may include, but will not be limited to fluorinated compounds, plasticizers, and antimicrobials.
4. Fund a report compiling and synthesizing the use of plastics in agricultural practices, and the extent to which this use of plastics may contribute to watershed pollution and ocean litter by 2023.
5. Fund innovative projects and programs that reduce the production and consumption of common ocean litter items, such as piloting the use of a reusable “to go” container exchange at food service providers.

OPC GOAL 2 – MICROPLASTICS AND MICROFIBERS: Increase understanding of the scale and impact of microplastics and microfibers on the marine environment and develop solutions to address them.

Priority Objective: Advance research on the extent and impact of microplastics and microfibers in source waters and the ocean, assist in the development of technological solutions to reduce their prevalence in aquatic environments through the following actions:

1. Fund the development and validation of standardized monitoring methods in California, leveraging national and international resources and knowledge, where feasible, to assess the concentration and flux of microplastics by 2021. Methods are needed for several

different environments where microplastics are found, including: wastewater effluent, ambient waters, stormwater, marine sediments, and tissues of fish, bivalves, and other organisms.

2. Convene scientists and experts to develop a comprehensive research plan by 2024 to characterize microplastics' sources, pathways, ambient concentrations, risk assessments, and impacts. Research efforts may include the following:
 - a. Quantify the concentration at which microplastics cause ecological impacts to marine life and ocean health at the population and community levels, as well as impacts to individual organisms' biology;
 - b. Improve the understanding of the sources and pathways associated with microplastic pollution, including polymer identification;
 - c. Determine whether additives associated with microfibers may cause impacts to the marine environment, research will be based on best available data and the development of studies will include relevant stakeholders;
 - d. Determine whether reformulated textiles can significantly reduce the loading of microplastics into the environment; research will be based on best available data and the development of studies will include relevant stakeholders.
 - e. If wastewater treatment plant loadings of microplastics are found to have a significant impact on the environment, research the feasibility and effectiveness of technical solutions for microfibers in wastewater treatment plants, washing machines, and other points in the wastewater management system, including source control.

OPC GOAL 3 – FISHING AND AQUACULTURE GEAR: Reduce debris from fishing and aquaculture-related activities in the ocean².

Priority Objective: Promote improved fishing and aquaculture gear management and sustainable innovation to reduce the potential for lost gear; remove lost gear and legacy infrastructure from the ocean by pursuing the following actions:

1. Provide best-available science and information to the California Department of Fish and Wildlife (CDFW) and the California Fish and Game Commission (FGC) as they work to develop improved fishing and aquaculture gear management, and maintain two-way information exchange between the CDFW, FGC, and OPC for data sharing and interagency staff coordination.

² Although there are many ocean-based sources of debris in the ocean, the scope of the California Ocean Litter Strategy focuses on fishing and aquaculture gear, and OPC Priorities reflect this scope.

2. Promote fixed-gear best practices, including how to minimize losing traps, in partnership with CDFW.
3. Promote the development and implementation of regulations requiring best management practice (BMP) plans for shellfish aquaculture in California by 2020, in partnership with CDFW, FGC, and the California Coastal Commission. The BMP plans should reduce the potential for loss of aquaculture gear and require the cleanup and recovery of lost gear.
4. Develop and promote fishery-funded gear retrieval programs through industry education and collaborations with non-governmental organizations, port and harbor districts and associations, and other partners.
5. Fund sustainable innovation in fishing and aquaculture gear to reduce the potential for lost gear, including new technologies, and ensure that any new and effective fishing and aquaculture gear innovation is an allowable technology in legislation and regulations.
6. Recommend the development and implementation of regulatory tools to allow for retrieval of lost gear or traps that belong to other fishermen.
7. Fund removal of fishing gear and abandoned aquaculture materials, disused creosote pilings, and illegal artificial reefs, where liable owners and responsible parties cannot be identified.



Photo Credit: Santa Barbara Adventure Company

STAKEHOLDER GOALS, OBJECTIVES, AND ACTION ITEMS

As described above, the OPC Priorities complement and enhance Stakeholder Goals, Objectives, and Action Items described here. These Stakeholder Goals, Objectives and Action Items were developed and refined through two stakeholder workshops. The first workshop provided an opportunity to brainstorm Action Items, and the second workshop provided an opportunity to refine the Goals, Objectives, and Action Items from the first draft of the Strategy. This differs from the OPC Priorities, which were developed by OPC staff and revised by multiple rounds of stakeholder feedback. More details on the process of how the tables below were developed is available in the “2018 Strategy Update Process” section.

As mentioned in the “Strategy Implementation” section, these actions will be implemented over the next six years, with check-in conference calls or webinars every six months and in-person meetings every two years. Lead Organizations are expected to report on their progress at these events, as appropriate for the particular Action Item. Taken together, the OPC Priorities and the Goals, Objectives, and Action Items laid out below provide structure and guidance for OPC and California stakeholders to efficiently address this pressing issue over the next six years. In the tables below, Action Items to prevent and reduce ocean litter are grouped under broader Goals and Objectives. Definitions of the information in each column are as follows:



Photo Credit: NOAA Marine Debris Program

- **Action Items:** Outlines the task that will be implemented in order to prevent or reduce ocean litter.
- **Lead & Partner Organizations:** Identifies the organization(s) or individual(s) that volunteered to implement the Action Item.
 - **Lead Organizations** are **bolded** and listed alphabetically, before Partner Organizations, next to each Action Item. Lead Organizations are committed to implementing an Action Item, given organizational and funding constraints. Lead Organizations will serve as the point of contact for NOAA and OPC for progress reports and check-ins throughout the Strategy’s six-year timeframe, and will take a leadership role in communicating and coordinating with other collaborators/Partner Organizations on the Action Item.

- **Partner Organizations** are unbolded and listed alphabetically, after Lead Organizations, next to each Action Item. Partner Organizations will serve a supporting role in implementing an Action Item, in collaboration with Lead and other Partner Organizations.
- It is important to note that the list of organizations included here is not exclusive, and additional organizations may contribute to Actions over the lifetime of the Strategy.

LAND-BASED OCEAN LITTER

GOAL 1. Reduce the use of common ocean litter items through mandates and incentives targeting public institutions and businesses.

Objective 1.1. Prohibit or discourage common ocean litter items in public institutions, retail, and food service establishments through government policies or mandates.	
Action Items	Lead & Partner Organizations
1.1.1. Pass and implement policies that prohibit or discourage common ocean litter items at the local level ³ and consider these policies for effectiveness assessment as described under Objective 4.4.	CPSC, The Albatross Coalition, Zero Waste San Diego, BASMAA, Clean Water Action/Clean Water Fund, PRCC, Surfrider Foundation, UPSTREAM
1.1.2. Pass and implement legislation that prohibits or discourages common ocean litter items at the state level and consider these policies for effectiveness assessment as described under Objective 4.4.	CPSC, The Albatross Coalition, Zero Waste San Diego, Californians Against Waste, Clean Water Action/Clean Water Fund, PRCC, Surfrider Foundation, UPSTREAM
1.1.3. Expand the single-use plastic carryout bag ban to apply to retail stores, restaurants, and food delivery, and amend the State's criteria for reusable bags to exclude bags made from plastic film ⁴ .	Californians Against Waste, PRCC, Surfrider Foundation
1.1.4. Promote reusable and refillable food and beverage packaging in the state bottle bill, and state and local packaging policies.	CPSC, The Albatross Coalition, Zero Waste San Diego, UPSTREAM
1.1.5. Change procurement of common ocean litter items on UC and CSU campuses, and share lessons	Clean Water Action/Clean Water Fund, CPSC

³ Examples of local policies include excess litter fee programs such as that implemented in Oakland, California (City of Oakland, 2018), and local polystyrene food ware bans such as that implemented in San Francisco, California (San Francisco Department of the Environment, 2016).

⁴ Currently, the State allows reusable grocery bags, as defined in SB 270 Chapter 5.3 Article 2, to be made from plastic film, as long as the bags meet a number of requirements, including being "capable of carrying 22 pounds over a distance of 175 feet for a minimum of 125 uses and be[ing] at least 2.25 mils thick, measured according to the American Society of Testing and Materials (ASTM) Standard D6988-13." This Action Item follows the example set by the City and County of Honolulu, Hawai'i, which, in 2017, amended Oahu's plastic bag ban so that by January 1, 2020, plastic film bags will no longer be considered reusable bags (Mattison, 2017).

learned with other learning institutions (e.g., community colleges, K-12).	
1.1.6. Change procurement to minimize the use of common ocean litter items in local and state government buildings and events, and share lessons learned with other public institutions (e.g., federal facilities, jails, hospitals).	OPC, BASMAA, Californians Against Waste, Clean Water Action/Clean Water Fund, CPSC, UPSTREAM
1.1.7. Require permits for new construction of dine-in restaurants to include dishwashing facilities on-site to accommodate reusable food ware.	Californians Against Waste, Clean Water Action/Clean Water Fund, UPSTREAM
1.1.8. Develop a toolkit with materials and strategies to share with local and out-of-state advocates to a) aid in the process of banning common ocean litter items, and b) to aid in the process of switching local governments and communities to reusable items.	Plastic Pollution Coalition, UPSTREAM
Objective 1.2. Incentivize institutions, businesses, and events to transition away from common ocean litter items.	
Action Items	Lead & Partner Organizations
1.2.1. Perform audits before and after institutions implement efforts to minimize the use of common ocean litter items.	Clean Water Action/Clean Water Fund
1.2.2. Incentivize businesses and corporations to transition to reusables (e.g., film industry craft services, corporate dining, water refill stations) through sharing case studies and demonstrating cost-savings.	Amcor Limited, Clean Water Action/Clean Water Fund, Surfrider Foundation, UPSTREAM
1.2.3. Promote certification for events (e.g., music festivals, concerts, sports competitions, film production) that achieve zero waste principles.	The Albatross Coalition, Zero Waste San Diego, Clean Water Action/Clean Water Fund, Surfrider Foundation
1.2.4. Engage with companies that are already using alternative products and materials to help advocate for transition away from common ocean litter items.	PRCC, Surfrider Foundation

GOAL 2. Reduce the prevalence of common ocean litter items through changes in product production, design, and management.

Objective 2.1. Support and promote extended producer responsibility (EPR) and other waste management strategies to reduce the generation of common ocean litter items, and create a

mechanism for producers to fund common ocean litter item capture, cleanup, and recycling infrastructure.	
Action Items	Lead & Partner Organizations
2.1.1. The Ocean Protection Council and other stakeholders will promote EPR as a policy to consider as part of CalRecycle's Packaging Reform Effort, and support giving CalRecycle legislative authority to create mandatory packaging reform policies.	OPC , Californians Against Waste, CPSC, PRCC, Save Our Shores, UPSTREAM
2.1.2. Create a report synthesizing lessons learned from waste management policy and tool implementation in other countries, including recommendations for California with a focus on source reduction.	CPSC, UPSTREAM
2.1.3. Include performance measures in EPR programs for both prevention and recycling of common ocean litter items, with prevention being a higher priority.	CPSC , Californians Against Waste, PRCC, Save Our Shores, UPSTREAM
2.1.4. Ensure that all film and wrap plastics eligible for recycling (plasticfilmrecycling.org) are accepted at all drop-off locations (e.g., grocery stores), and enforce the recycling requirements that are part of the single-use plastic carryout bag ban ⁵ .	
Objective 2.2. Support product redesign with the aim of preventing ocean litter through design changes and avoiding harmful substitutions⁶.	
Action Items	Lead & Partner Organizations
2.2.1. Engage corporations in common ocean litter item redesign by implementing design challenges, and creating a venue for sharing innovative designs with brands and corporations.	The Albatross Coalition, Think Beyond Plastic, Zero Waste San Diego , ACC, Amcor Limited, Californians Against Waste, PRCC
2.2.2. Redesign and produce bottles with caps attached ("connect the cap"), and ensure that all components of these products are recyclable at all facilities in California.	The Albatross Coalition, Zero Waste San Diego , ACC, Californians Against Waste, PRCC, Surfrider Foundation, Think Beyond Plastic, UPSTREAM

⁵ The single-use plastic carryout bag ban, SB 270 (Sections 42250-42257), requires stores that make plastic carryout bags available to their customers to establish at-store recycling programs that allow customers to return clean plastic carryout bags to stores to be recycled. This Action Item calls for the enforcement of the recycling requirements outlined in SB 270, as well as an expansion of the recycling programs established at stores to accept all film and wrap plastics eligible for recycling, as defined by plasticfilmrecycling.org (including bags used for produce, bulk goods, and other products, which, while not covered under SB 270, are often single-use plastic and end up in the environment).

⁶ The term "harmful substitutions" is used here to mean: 1) products that may take the place of common ocean litter items and continue to contribute to the problem of ocean litter, rather than reduce ocean litter, and 2) products that may take the place of common ocean litter items, and contain components, additives, or contaminants that are detrimental to human health and/or the environment.

2.2.3. Redesign plastic products to be circular and entirely recyclable in California, through voluntary or legislative action ⁷ .	CPSC, The Albatross Coalition, Zero Waste San Diego
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GOAL 3. Improve waste management and interception of litter on land before it enters the ocean.

Objective 3.1. Support the State Water Resources Control Board's Trash Amendments.	
Action Items	Lead & Partner Organizations
3.1.1. Create a mechanism for local governments to fund stormwater trash programs through public or private sources.	ACC, BASMAA, Clean Water Action/Clean Water Fund, OPC, PRCC, Save Our Shores, UPSTREAM
3.1.2. Implement a statewide Adopt-A-Storm Drain program.	City of Oakland, PRCC, Save Our Shores
3.1.3. Educate the public about the Trash Amendments.	BASMAA, CPSC, Clean Water Action/Clean Water Fund
Objective 3.2. Improve waste management in public places.	
Action Items	Lead & Partner Organizations
3.2.1. Establish and improve management of trash, recycling, and compost receptacles in high use areas.	Amtcor Limited, ACC, California Coastal Commission, OPC, PRCC, Save Our Shores
3.2.2. Increase industry investment in infrastructure improvements to address waste management at schools and other public areas.	ACC
3.2.3. Support packaging policies that develop and expand infrastructure for recycling in California.	CPSC
3.2.4. Engage with municipalities and social programs to assess how to reduce ocean litter from encampments, as one strategy to improve the health, wellbeing, and safety of homeless communities.	BASMAA

⁷ In July 2017, China informed the World Trade Organization (WTO) that by the end of 2017, it would ban the import of 24 types of waste, including "plastics waste from living sources" (Reuters, 2017). China's new policy has put pressure on California's recycling infrastructure (which currently relies on the export of about one-third of the recyclable materials generated in the state to other countries), as in 2016, 62% of the 15 million tons of recyclable materials exported by California went to China (CalRecycle, 2018). China's policy change has emphasized the need to promote waste prevention in California, as well as expand California's own recycling infrastructure, to reduce the amount of recyclable waste that is exported each year (CalRecycle, 2018).

GOAL 4. Conduct and communicate research on existing and emerging issues related to land-based ocean litter.

Objective 4.1. Conduct a comprehensive characterization of microplastics and macro-debris.	
Action Items	Lead & Partner Organizations
4.1.1. Convene an expert workgroup to develop a matrix of standard sample collection, processing, and characterization methods for measuring temporal changes in microplastics and macro-debris in different environments.	Algalita, SCCWRP, SFEI, 5 Gyres Institute, ACC, CASA/BACWA/SCAP, Clean Water Action/Clean Water Fund, Dr. Andrew Gray's Laboratory, University of California, Riverside, Dr. Erika Holland at CSULB, ESRM Program at CSUCI (including Dr. Clare Steele), NOAA MDP, PRCC, Surfrider Foundation
4.1.2. Develop and test laboratory methods to identify the most common macro- and micro-plastic debris polymer types through molecular techniques (e.g., FTIR, Raman, forensics).	Dr. Andrew Gray's Laboratory, University of California, Riverside, ESRM Program at CSUCI (including Dr. Clare Steele), ACC, CASA/BACWA/SCAP, Dr. Erika Holland at CSULB
4.1.3. Develop a watershed-scale program to model and monitor microplastics and macro-debris flux, transport, degradation, and fate according to a variety of endpoints (e.g., street litter, stormwater, wastewater, and direct discharges).	SFEI, 5 Gyres Institute, ACC, California Coastkeeper Alliance, CASA/BACWA/SCAP, Dr. Andrew Gray's Laboratory, University of California, Riverside, Dr. Natalie Mladenov at SDSU
4.1.4. Create a comprehensive litter dataset to identify the most common item types according to volume, weight, flux, material, product, source, brand, and other units of importance.	Dr. Andrew Gray's Laboratory, University of California, Riverside, Surfrider Foundation, California Coastal Commission, Clean Water Action/Clean Water Fund
4.1.5. Work with Ocean Conservancy to capture brand data during Coastal Cleanup Day.	California Coastal Commission
Objective 4.2. Quantify microplastics pathways within watersheds and develop technological solutions.	
Action Items	Lead & Partner Organizations
4.2.1. Identify and quantify microfibers and microplastics from wastewater, stormwater, airborne, and agricultural sources.	SCCWRP, SFEI, 5 Gyres Institute, CASA/BACWA/SCAP, Dr. Andrew Gray's Laboratory, University of California, Riverside, Dr. Natalie Mladenov at SDSU, ESRM Program at CSUCI
4.2.2. Research innovative solutions to address microfibers in textiles and apparel.	CASA/BACWA/SCAP, CPSC
4.2.3. Research technological solutions to address microfibers at wastewater treatment plants or in washing machines.	CASA/BACWA/SCAP

Objective 4.3. Research ecological and toxicological impacts of commonly found ocean litter on marine resources and human health.	
Action Items	Lead & Partner Organizations
4.3.1. Advance research on the chemical components of common ocean litter items (by resin type) and the potential for pollutants to migrate into the environment and aquatic organisms via ocean litter.	OPC, ACC, California Lost Fishing Gear Recovery Project at UC Davis, Dr. Erika Holland at CSULB, DTSC, ESRM Program at CSUCI (including Dr. Clare Steele), Graduate School of Public Health at SDSU, UPSTREAM
4.3.2. Assess population and community-level impacts to economically important and/or especially vulnerable species from exposure to plastics and adsorbed pollutants.	
4.3.3. Research impacts to human health via direct consumption of microplastics and seafood exposed to plastic debris.	ACC, California Lost Fishing Gear Recovery Project at UC Davis, UPSTREAM
Objective 4.4. Assess the effectiveness of existing bans, policies, and programs.	
Action Items	Lead & Partner Organizations
4.4.1. Conduct cost-benefit analyses for implementation of different common ocean litter item reduction policies/strategies and provide them to cities and businesses (i.e., local ordinances to ban expanded polystyrene, deposit schemes, packaging redesign).	BASMAA, Dr. Andrew Gray's Laboratory, University of California, Riverside
4.4.2. Analyze the impact of the single-use plastic carryout bag ban on reducing disposable bag use, preventing ocean litter, and reducing government costs.	ACC, California Coastal Commission, Dr. Andrew Gray's Laboratory, University of California, Riverside, Surfrider Foundation
4.4.3. Conduct research into consumer behavior to assess attitudes toward reusable and disposable items, convenience, willingness to pay, and incentives to avoid commonly littered items (e.g., cigarette filters).	Clean Water Action/Clean Water Fund, CPSC, Dr. Sean Anderson at CSUCI, PRCC, Save Our Shores
Objective 4.5. Improve coordination among California organizations conducting ocean litter research.	
Action Items	Lead & Partner Organizations
4.5.1. Improve communication among ocean litter research entities in California through participation in the Ocean Litter Strategy implementation process.	NOAA MDP, OPC, The Albatross Coalition, Zero Waste San Diego

4.5.2. Increase dissemination of research results to the public and management agencies (e.g., California Department of Fish and Wildlife).	OPC, NOAA Marine Debris Program (MDP)
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GOAL 5. Generate behavior change by educating and engaging communities and individuals to reduce ocean litter.

Objective 5.1. Increase formal and informal science-based education to raise awareness of ocean litter.	
Action Items	Lead & Partner Organizations
5.1.1. Compile and share a database of existing resources and curriculum for formal education on ocean litter.	NOAA MDP
5.1.2. Integrate standards-based ocean litter curriculum into school programs.	Algalita, 5 Gyres Institute, California Coastal Commission, IGISc at SFSU, Monterey Bay Aquarium, NOAA MDP, PRCC, Save Our Shores
5.1.3. Develop and distribute toolkits to empower high school and college students to educate people on their campuses and in their communities.	Algalita, The Albatross Coalition, Zero Waste San Diego, Monterey Bay Aquarium, NOAA MDP, PRCC
Objective 5.2. Educate consumers about the sources of ocean litter, to drive behavior change in purchasing.	
Action Items	Lead & Partner Organizations
5.2.1. Implement coastal and inland public education campaigns about common ocean litter items, to drive changes in purchasing.	5 Gyres Institute, California Coastal Commission, Californians Against Waste, ESRM Program at CSUCI, PRCC, Save Our Shores, Surfrider Foundation
5.2.2. Develop messaging for consumers and producers on microfibers given our current state of knowledge on this emerging issue.	Californians Against Waste, CASA/BACWA/SCAP, CPSC, ESRM Program at CSUCI
5.2.3. Implement a public education campaign about cigarette filters.	BASMAA, California Coastal Commission, Californians Against Waste, CPSC, Save Our Shores, UPSTREAM

OCEAN-BASED MARINE DEBRIS

GOAL 6. Reduce the sources of ocean-based debris and maximize the efficiency of ocean-based debris cleanup.

Objective 6.1. Leverage industry knowledge to prevent lost fishing gear.	
Action Items	Lead & Partner Organizations
6.1.1. Leverage commercial and recreational fishermen's knowledge to develop strategies for preventing and dealing with gear loss, and share these strategies among the commercial and recreational fishing communities.	NOAA MDP, California Lost Fishing Gear Recovery Project at UC Davis, Channel Islands National Marine Sanctuary
6.1.2. Share lessons learned from the fishing industry with management agencies and other stakeholders to focus policy and funding on prevention and recovery of lost gear.	California Lost Fishing Gear Recovery Project at UC Davis, Channel Islands National Marine Sanctuary, The Nature Conservancy
6.1.3. Work with the fishing community to design gear that is less likely to be lost, and less harmful to the environment once lost.	
Objective 6.2. Implement Best Management Practice (BMP) Plans for reducing lost gear within the aquaculture industry.	
Action Items	Lead & Partner Organizations
6.2.1. Compile key outcomes desired for effective BMP Plans for the aquaculture industry through a collaborative process with, and between, growers.	CDFW, FGC
6.2.2. Update Fish and Game Commission policies to include BMP Plans in permitting considerations such as the issuance of aquaculture leases, and educate growers and stakeholders about BMP Plans to help in the implementation process.	CDFW, FGC
6.2.3. Include aquaculture BMP Plan implementation requirements in coastal development permits, where appropriate.	California Coastal Commission
Objective 6.3. Improve tracking of lost fishing and aquaculture gear in order to better understand lost gear patterns and impacts, and to facilitate removal.	
Action Items	Lead & Partner Organizations

6.3.1. Improve lost fishing gear data collection and database systems to facilitate the prevention, tracking, and recovery of lost gear.	California Lost Fishing Gear Recovery Project at UC Davis, Channel Islands National Marine Sanctuary, Dr. Andrew Gray's Laboratory, University of California, Riverside, The Nature Conservancy
6.3.2. Implement a pilot project to assess the effectiveness of different tagging and marking methods for aquaculture gear.	
6.3.3. Include aquaculture gear marking and debris collection reporting requirements in coastal development permits, where appropriate.	California Coastal Commission
Objective 6.4. Increase the removal of ocean-based debris.	
Action Items	Lead & Partner Organizations
6.4.1. Research and provide recommendations to overcome policy barriers to lost gear removal and ocean-based marine debris cleanup.	California Lost Fishing Gear Recovery Project at UC Davis, Channel Islands National Marine Sanctuary, The Nature Conservancy
6.4.2. Support and expand existing programs for the prevention and removal of abandoned or derelict vessels (e.g., expansion of recreational vessel removal, funding for removal of commercial vessels).	
6.4.3. Implement and/or expand voluntary buyback, return, and/or recycling programs for old and unused recreational and commercial fishing gear.	California Lost Fishing Gear Recovery Project at UC Davis, California State Parks Division of Boating & Waterways and California Coastal Commission, The Nature Conservancy
6.4.4. Implement a fishing gear recovery program, as mandated in SB 1287, for the Dungeness crab fishery. Build or expand gear recovery programs for other fisheries while considering lessons learned in the implementation of SB 1287.	CDFW
6.4.5. Identify and remove, when deemed appropriate, legacy debris from California's coastal ocean (e.g., legacy aquaculture debris, anchorage debris).	FGC, NOAA MDP
6.4.6. Engage and partner with boaters, fishermen, divers, growers, local communities, and other ocean stakeholders to implement regional cleanup programs (e.g., in bays, ports, or harbors).	Channel Islands National Marine Sanctuary , California State Parks Division of Boating & Waterways and California Coastal Commission, ESRM Program at CSUCI
6.4.7. Place and maintain large receptacles at ports and harbors for fishermen to dispose of trash that has been collected while fishing.	

CONCLUSION

Since 2008, Californians have made great progress in addressing ocean litter through a number of different activities and policies including the single-use plastic carryout bag ban, the State Water Board's adoption of the Trash Amendments, Coastal Cleanup Day, and the ongoing efforts of grassroots organizations to clean up their local waterways and educate the public. Looking forward, the 2018 Strategy continues the State's focus on source reduction and brings renewed attention to how broad waste management policies can be used to address ocean litter, while providing a suite of options to take action on ocean litter at different scales and scopes. This document provides structure and guidance for OPC, NOAA, and California stakeholders to efficiently collaborate on efforts to address this pressing issue over the next six years, helping protect California's vibrant coast and ocean resources for the intrinsic, ecological and economic values they provide to the state.



Photo Credit: Santa Barbara Adventure Company

Section II: Background Information



Santa Rosa Island. Photo Credit Michaela Miller, CSUCI

OCEAN LITTER LITERATURE SYNTHESIS

The Global Problem and Sources of Ocean Litter

Ocean litter, or marine debris, is a persistent, well-documented problem of global scale. Anthropogenic (human-caused) litter has been observed on seafloors and in submarine canyons, in sediments, surface waters, and the water column, and on beaches and shorelines worldwide (Galgani *et al.*, 2015)⁸. While there are many ways to classify ocean litter, it is common to characterize it as either land-based or ocean-based, depending on how it enters the marine environment (Galgani *et al.*, 2015). Most marine debris is thought to come from land-based sources, though ocean-based debris can be significant in some areas (e.g., Sheavly, 2007; Jang *et al.*, 2014). Land-based litter can enter the ocean through poor or inefficient waste management systems, or intentional or unintentional littering by individuals and industries (UNEP and GRID-Arendal, 2016; Galgani *et al.*, 2015). Furthermore, land-based litter may be discharged directly onto coastlines through coastal tourism or recreation, or it may make its way to the marine environment through wastewater treatment systems, storm drains, rivers, or by wind (UNEP and GRID-Arendal, 2016; Galgani *et al.*, 2015; Rech *et al.*, 2014). Ocean-based litter is generated by the intentional or unintentional discharge of debris directly into the ocean. Marine activities that generate ocean-based litter include commercial shipping, recreational and commercial fishing, aquaculture, research and military endeavors, and offshore drilling (UNEP and GRID-Arendal, 2016; Galgani *et al.*, 2015).

Ocean Litter and Plastics

Whether land-based or ocean-based, most of the litter found in the world's ocean is plastic (Galgani *et al.*, 2015; Derraik, 2002). Globally, between 4.8 and 12.7 million metric tons of plastic waste enter the ocean from land every year (Jambeck *et al.*, 2015). This plastic waste escapes waste management systems to enter the environment, so the amount of plastic waste found in the ocean and the amount of plastic waste generated are linked. The exact percentage of plastic waste that escapes into the environment is unknown, and merits further scientific study. However, both plastics in the ocean and plastic waste generated have increased significantly since the 1950s, and examining trends in plastic waste disposal provides relevant context to the ocean litter discussion (Galgani *et al.*, 2015; Geyer *et al.*, 2017). Between 1950 and 2015, 6,300 million metric tons of primary and secondary plastic waste was produced worldwide (Geyer *et al.*, 2017). Approximately 12% of this plastic waste was incinerated and 9% was recycled, while 79% was discarded and is currently sitting in landfills or the environment (Geyer *et al.*, 2017). Currently, 42% of the primary non-fiber plastic produced comes in the form of packaging, most of which is used and disposed of within the same year it is produced (Geyer *et al.*, 2017). See Figure 1 below for historical and projected levels of plastic waste production and disposal.

⁸ For additional sources documenting anthropogenic litter in marine and coastal habitats, please see Pham *et al.* (2014), Lee *et al.* (2006), Claessens *et al.* (2011), Mistri *et al.* (2017), Isobe *et al.* (2017), Suaria *et al.* (2016), Law *et al.* (2010), Lattin *et al.* (2004), Ocean Conservancy (2017), and Browne *et al.* (2011).

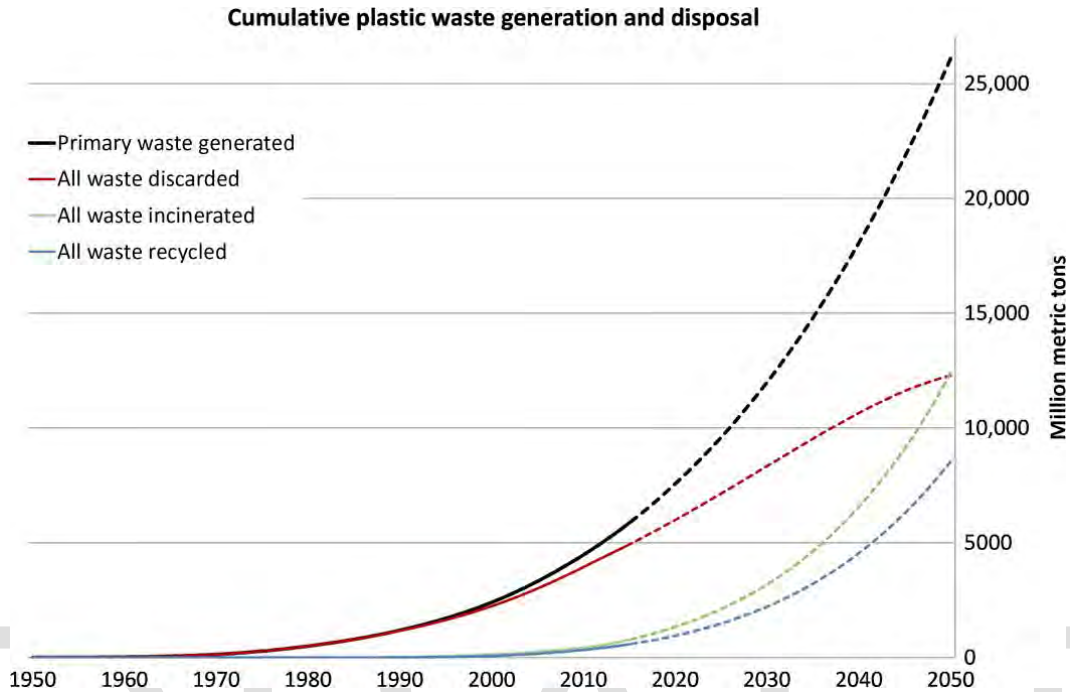


Fig. 1. Historical and projected global cumulative plastic waste generation and disposal. Disposal refers to how plastic waste is managed – either through incineration, recycling, or discard into landfills or the environment. Solid lines show historical data from 1950 to 2015, dotted lines show projections of historical trends to 2050. It is estimated that by 2050, 26,000 million metric tons of primary plastic waste will have been generated, 9,000 million metric tons of plastic waste will have been recycled, 12,000 million metric tons will have been incinerated, and another 12,000 million metric tons will have been discarded in landfills or the environment. The total amount of plastic waste disposed is higher than the amount of primary waste generated because the amount of plastic waste disposed includes both primary and secondary plastic waste. Figure from Geyer *et al.* (2017).

Impacts of Ocean Litter

Ecological Impacts

Ocean litter has detrimental ecological, economic, and social impacts. Marine species, including seals, sea birds, sea turtles, whales, and dolphins can become entangled in debris, resulting in hindered movement, decreased feeding ability, injury, and death (NOAA MDP, 2014b; Kühn *et al.*, 2015). Marine debris smothers and shades coral reefs and salt marshes, disrupting growth and surface cover (Richards & Beger, 2011; Uhrin & Schellinger, 2011). Fish, crustaceans, shellfish, and zooplankton ingest microplastics, and some of these organisms consume less food and have decreased energy for growth as a result (Boerger *et al.*, 2010; Murray & Cowie, 2011; Browne *et al.*, 2008; Cole *et al.*, 2013; Watts *et al.*, 2015; Cole *et al.*, 2013). Furthermore, microplastics adsorb organic contaminants and trace metals from their surrounding environments (Rochman *et al.*, 2013a; Holmes *et al.*, 2012). In some cases, microplastics may

transfer contaminants to marine organisms, inducing harmful health effects (Browne *et al.*, 2013; Rochman *et al.*, 2013b). Plastics have recently been found in the digestive tracts of fish and shellfish and the soft tissues of shellfish sold at markets for human consumption (Rochman *et al.*, 2015; Li *et al.*, 2015; Van Cauwenberghe & Janssen, 2014). A serving of six oysters grown off the coast of France could contain as many as 50 plastic particles, indicating that plastic litter that we produce and allow to leak into the environment may end up back on our plates (Van Cauwenberghe & Janssen, 2014).

Economic Impacts

The economic impacts of ocean litter include costs associated with beach and harbor cleanup, loss of coastal tourism and recreation, impacts to the fishing and aquaculture industries, and other impacts to human welfare and ecosystem services (Newman *et al.*, 2015). The United Nations Environment Programme (UNEP) estimates that the impacts of plastic pollution on the world's ocean amount to about \$13 billion a year, accounting for time spent on cleanup and revenue lost by the fishery and tourism sectors (UNEP, 2014). Ghost fishing⁹, one consequence of lost fishing gear, can also be extremely costly – both ecologically and for the fishing industry (Bilkovic *et al.*, 2016). Lost gear can decrease the efficiency of active gear and lead to lower catch rates (Bilkovic *et al.*, 2016). In one case from the blue crab fishery, every derelict crab pot removed from Chesapeake Bay was estimated to increase blue crab harvest by an average of 868 pounds (Bilkovic *et al.*, 2016).

A number of studies have examined the economic impacts of ocean litter in California and have found that litter creates a significant financial burden for taxpayers¹⁰. Prior to the adoption of the Trash Amendments¹¹ in 2015, California communities were spending more than \$428 million annually to cleanup and control ocean litter through waterway and beach cleanup, street sweeping, installation of stormwater capture devices, storm drain cleaning and maintenance, manual litter cleanup, and public education (Stickel *et al.*, 2013). Ocean litter control and cleanup continues to be costly for State and local governments. Additionally, the ongoing presence of ocean litter on California beaches creates its own costs for state residents. A study done in Orange County found that residents go out of their way to avoid trash-littered beaches, spending extra time and money in order to visit a cleaner beach or engage in other recreational activities. The study estimated that removing 100% of the litter on Orange County beaches could save California residents \$148 million during the three months of summer (Leggett *et al.*, 2014).

Finally, in addition to financial costs, cleaning up litter also costs volunteers their time. From July 2012 to June 2016, California Adopt-A-Highway participants removed over 77,000 cubic yards of litter that may have otherwise ended up in the ocean. This volunteer service is valued at \$18 million annually (Caltrans, 2017).

⁹ Ghost fishing is the continued catch of marine species by lost or discarded gear.

¹⁰ Little data is available regarding the economic impacts of ocean litter on California's tourism, fishing, or aquaculture industries.

¹¹ The Trash Amendments refer to a statewide water quality objective that requires local governments to stop trash larger than 5 mm from reaching State waters through their stormwater system. The Trash Amendments were adopted by the State Water Board in 2015 and OPC is working with the State Water Board to assist with implementation.

Social and Health Impacts

The social impacts of ocean litter extend beyond economic losses. Ocean litter reduces ecosystem services, including seafood production, through ghost fishing (Bilkovic *et al.*, 2016). Ocean litter also reduces the psychological benefits gained from coastal recreation in a pristine or clean environment (Wyles *et al.*, 2016). Although there is interest in research on the potential human health effects from the presence of microplastics in seafood, these potential health effects are largely unknown. However, research from other fields, such as pharmaceutical delivery, suggests that micro- and nano-plastics have the potential to enter, circulate, and bioaccumulate within the body after being ingested (Galloway, 2015). The extent and impact of human exposure to contaminants and additives through ingestion of microplastics in seafood is also largely unknown and merits further scientific study.



Photo Credit: Santa Barbara Adventure Company

Ocean Litter and Waste Management in California

Ocean litter is prevalent in California watersheds and ocean waters. For example, 78% of Southern California river miles¹² and about one third of seafloors and seafloor sediments in the Southern California Bight contain trash (Moore *et al.*, 2016). Plastic is the most prevalent type of litter found across all habitats in the Southern California Bight, with wrappers, bags, plastic pieces, and expanded polystyrene being the most commonly found plastic items (Moore *et al.*, 2016). Seventy-three water bodies throughout the State of California are listed as having impaired water quality due to the presence of large amounts of trash (State Water Board, 2015). The California coast and ocean are also impacted by lost fishing gear. Between May 2006 and early 2018, the California Lost Fishing Gear Recovery Project retrieved more than 100 tons of gear from California's coastal ocean, and collected more than 1,400 pounds of recreational gear from public fishing piers from Santa Cruz to Imperial Beach (SeaDoc Society, 2018). From 2001 to 2006, 31.1% of the reported cases of injured California brown pelicans at five California wildlife rehabilitation centers were fishing gear-related, while 11.1% of injured gull cases and 2.9% of injured California sea lion cases were fishing gear-related (Kaplan Dau *et al.*, 2009). According to the 2007 National Marine Debris Monitoring Program Report, 54.3% of the ocean litter found on California's beaches is land-based, while about 10.2% is ocean-based (Sheavly, 2007). The

¹² A river mile is a measure of distance in miles from the mouth of a creek or river.

remaining 35.0% is characterized as general-source debris, or items that could be either land-based or ocean-based¹³ (Sheavly, 2007).

As mentioned earlier, ocean litter is waste that has escaped our waste management systems, and the amount of waste produced is linked to the amount of ocean litter found in marine ecosystems. In 2016, California generated approximately 76.5 million tons of waste, 35.2 million tons of which were disposed of in landfills, and another 7.5 million tons of which went to disposal-related activities such as beneficial reuse at solid waste landfills and waste to energy conversion (CalRecycle, 2017b). This means that California had a disposal rate of 6.0 pounds of trash per resident per day in 2016 (CalRecycle, 2017b). Roughly 24.5 million tons of the total trash produced in 2016 were diverted through source reduction and recycling, and another 9.2 million tons were diverted through composting and mulching (CalRecycle, 2017b). Overall, about 56% of California's waste went to disposal or disposal-related activities and about 44% was diverted through source reduction, recycling, and composting in 2016 (CalRecycle, 2017b). Though diversion has come a long way in 20 years, over the last three years, California's source reduction, composting, and recycling rate has declined, from 50% in 2014, to 47% in 2015, to 44% in 2016 (CalRecycle, 2017b). Through AB 341, California has declared a goal that by 2020, 75% of the solid waste generated in the state should be source reduced, recycled, or composted (as compared to 1990-2010 waste generation levels¹⁴). This translates to a reduction in per capita disposal from the current 6.0 pounds per person per day to 2.7 pounds per person per day in 2020 (CalRecycle, 2017b). See Figure 2 below for a visualization of statewide disposal and recycling from 2010 to 2016.

¹³ Sheavly (2007) bases its definition of ocean-based, land-based, and general-source litter items on previous studies (Ribic, 1998; Escardó-Boomsma *et al.*, 1995), and lists plastic bags, strapping bands, plastic beverage bottles, and plastic cleaner bottles as examples of general-source debris items.

¹⁴ AB 341 requires that 1990-2010 waste generation levels (10.7 pounds per person per day) be used as baseline data. The amount of total waste generated in California in a year is estimated by multiplying the State's population in that year by the 1990-2010 per person baseline. Source reduction is also calculated using these baseline data.

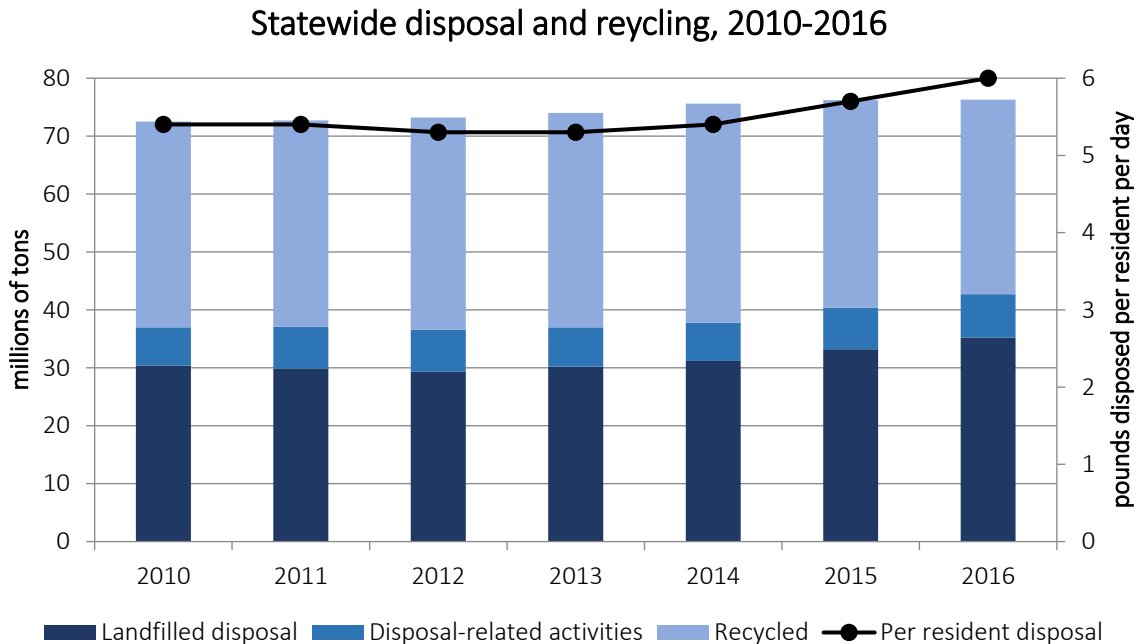


Fig. 2. Amount of waste disposed and recycled in California, from 2010 to 2016. Included in this figure are estimates of the amount of waste disposed in landfills, the amount of waste managed through disposal-related activities, and the amount of waste recycled (which includes source reduction, recycling, and composting) every year in millions of tons (left axis). Also shown is the per resident disposal rate (pounds per resident per day) for each year (right axis). Since 2013, California's source reduction, composting, and recycling rate has declined, landfill disposal has increased, and the pounds disposed per resident per day have increased. Figure adapted from CalRecycle's webpage "California's Statewide Recycling Rate" (CalRecycle, 2017a).

California currently estimates the amount of waste that is source reduced and recycled by subtracting the quantities of waste disposed in landfills and through other disposal-related activities, and the quantities of waste that is managed through composting and mulching, from the estimated total amount of waste generated in the state (CalRecycle, 2017b). This method of calculation assumes that all waste that is not disposed is source-reduced or recycled (CalRecycle, 2017b). There is currently no way to know how much of California's waste leaks into the environment and becomes ocean litter every year. However, Jambeck *et al.* (2015) estimated that in 2010, the United States as a whole had 0.25-1 million metric tons of mismanaged plastic waste available to enter the ocean, based on waste generated by populations within 50 km of the coast.

Conclusion

In conclusion, ocean litter is a pervasive problem both globally and in California. Ocean litter also has a wide range of consequences for human health, the environment, and the economy. The actions outlined for both the OPC and stakeholders to reduce and prevent ocean litter in Section I will ensure that California communities, environments, and economies remain productive and vibrant for current and future generations.

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DRAFT

Appendix A: Updating the 2008 Strategy – *An Implementation Strategy for the California Ocean Protection Council Resolution to Reduce and Prevent Ocean Litter*

Recognizing the serious threats of ocean litter to communities, the economy, and the environment, in 2007 the OPC adopted a resolution entitled “Reducing and Preventing Marine Debris.” In 2008, the OPC initiated a steering committee to publish an Implementation Strategy, which outlined three Priority Actions and 13 other Actions for addressing ocean litter in the state. This Strategy was designed to provide a pathway to implement the recommendations in the OPC Resolution. The three Priority Actions were as follows:

1. Implement a producer take-back (EPR) program for convenience food packaging.
2. Prohibit single-use products that pose significant ocean litter impacts where a feasible less damaging alternative is available. Products specifically called out included polystyrene food packing and plastic bags.
3. Assess fees on commonly littered items.

Since the original Strategy was developed, many of the actions described in the document have either been accomplished or are in progress. The box below titled “Status of Actions in the 2008 OPC Strategy to Reduce and Prevent Ocean Litter” provides a summary of the progress made on the 2008 Strategy. In some cases, the State’s regulatory or agency landscape has changed. For example, some items that were listed out separately in the Strategy are now being addressed under a single program, though there may be elements of those items that still need to be addressed. For instance, separate actions focused on minimizing toxics in packaging and developing sustainable alternatives are now addressed by the California Department of Toxic Substances Control’s (DTSC’s) Safer Consumer Products Program. This Program examines product-chemical combinations that may have negative impacts on human health and the environment, and requires manufacturers of priority products to perform an alternatives analysis to determine whether such products can be made without the chemical of concern (DTSC, 2013). In other cases, our understanding of the ocean litter problem has changed considerably since 2008. For example, over the last decade a large body of research has examined microplastics’ impacts on marine life and their interaction with persistent organic pollutants (Ryan, 2015). Thus, the 2008 Strategy does not completely address current issues of emerging concern, such as microplastics and microfibers, and may no longer be the best way to tackle ocean litter.

The 2018 Strategy reexamines the issue of ocean litter in California, and outlines Action Items for preventing and reducing ocean litter over the next six years in light of the needs that have been identified, the knowledge that has been gained, and the advances that have been made over the last decade.

Status of Actions in the 2008 OPC Strategy to Reduce and Prevent Ocean Litter

Below is a brief summary of the progress that has been made on the Action Items included in the 2008 Strategy. Some of these Action Items were written in an open-ended or ongoing way. This makes it somewhat difficult to determine whether an action is “complete.” See the Comments column for more detail on the status of each Action.

Strategy Action	Update	Comments
Priority Action 1: Implement a producer take-back (EPR) program for convenience food packaging.	In Progress	CalRecycle is developing a comprehensive, statewide framework for managing all packaging that provides flexibility to apply different policy tools. Extended producer responsibility is one of those policy tools. Note that new legislation is required to give CalRecycle the authority to implement a framework.
Priority Action 2: Prohibit Single-Use Products that pose significant ocean litter impacts where a feasible less damaging alternative is available.	See below under each action	See below under each action
<ul style="list-style-type: none"> Polystyrene food packaging prohibition 	In Progress	Local polystyrene bans have passed, but a statewide ban has not.
<ul style="list-style-type: none"> Plastic Bag Fee 	Complete	The voters ratified the single-use plastic carryout bag ban in November 2016.
Priority Action 3: Assess fees on commonly littered items.	In Progress	Local jurisdictions have passed litter fees, but this has not been implemented on a statewide level.
Minimize toxics in packaging: Determine which plastic additives threaten human health and the marine environment, educate the public, and prepare a plan for a possible prohibition.	In Progress, but continuing opportunities for further action or projects	Initial OPC-funded project is complete. DTSC now has a Safer Consumer Products program that examines product-chemical combinations that may impact human health or the environment.
Develop alternative products and promote sustainable alternatives.	In Progress	This action is currently part of the Safer Consumer Products program. The regulations require that manufacturers perform an alternatives analysis to determine whether they could make their product without the chemical of concern.
Increase enforcement of pre-production plastic laws.	Complete	The Water Board has trained their enforcement staff and industrial permit staff on how to correctly implement the law banning release of pre-production plastic pellets.

Strategy Action	Update	Comments
Increase enforcement of anti-litter laws.	In Progress	This is an ongoing activity. Some local jurisdictions have increased litter fines in problem areas (e.g., Main Beach in Santa Cruz).
Public education: Coordinate an education and outreach campaign.	Complete, but continuing opportunities for additional programs and a need for evaluation of impact to date	OPC has partnered with NOAA on the Thank You Ocean campaign, which includes a lot of public outreach on marine debris.
Public education: Direct state funds for litter education to the Environmental Education Initiative.	Incomplete	This remains incomplete, the Environmental Education Initiative provides model curriculum to teachers on environmental issues.
Engaging the public: Develop an ocean litter data card to be used by Adopt-A-Beach volunteers throughout the year, and an online database to house data.	Complete	The Coastal Commission encourages Adopt-A-Beach volunteers to use the Coastal Cleanup Day data card and database.
Engaging the public: Develop an Adopt-A-Beach Advisory Committee and work with local beach managers to provide necessary support for Adopt-A-Beach efforts.	Complete	The Adopt-A-Beach program is supported and organized on a county-by-county basis. (You can find more information on the Coastal Commission website).
Ensure municipalities prevent litter from entering the storm drain system.	In Progress	In 2015, the State Water Board adopted the statewide Trash Amendments which prohibit discharge of trash from storm drain systems; OPC is now assisting the State Water Board with implementing the policy, through developing trash monitoring methods and through the Proposition 1 funding program.
Increase lost fishing gear cleanup by creating a deposit program on fishing gear; conduct outreach to the fishing community and publicize SeaDoc Society's hotline.	Complete, but continuing opportunities for further action or projects	Legislative action has created a program that requires owners to pay for lost gear for one fishery (the Dungeness crab fishery). OPC has funded the SeaDoc Society to perform cleanups of fishing gear off the coast, and their hotline is available to report lost gear.
Work with the West Coast Governor's Agreement participants and invite the participation of Alaska, Hawaii, British Columbia, Baja California, and Baja California Sur.	Complete	This action evolved into an Action Team under the West Coast Governor's Agreement, and now into the West Coast Marine Debris Alliance, which includes British Columbia.



CALIFORNIA OCEAN PROTECTION COUNCIL

John Laird, Secretary for Natural Resources, Council Chair
Matt Rodriguez, Secretary for Environmental Protection
Betty Yee, State Controller, State Lands Commission Chair
Robert Hertzberg, State Senator
Mark Stone, State Assemblymember
Michael Brown, Public Member

Item 6

ACTION ITEM

TO: California Ocean Protection Council
FROM: Holly Wyer, Program Manager
DATE: April 24, 2018
RE: Adoption of the California Ocean Litter Prevention Strategy

RECOMMENDED ACTION: Staff recommends that the Ocean Protection Council adopt the following resolution pursuant to Sections 35500 *et seq.* of the Public Resources Code:

“The California Ocean Protection Council hereby adopts the California Ocean Litter Prevention Strategy: Addressing Marine Debris from Source to Sea (Exhibit A) and directs staff to implement the Ocean Protection Council Priorities to help state and local governments address ocean litter pollution in state waterways.”

STRATEGIC PLAN OBJECTIVE(S): Science-Based Decision-Making, Coastal and Ocean Impacts from Land-Based Sources

EXHIBITS

Exhibit A: California Ocean Litter Prevention Strategy: Addressing Marine Debris from Source to Sea

SUMMARY:

The *California Ocean Litter Prevention Strategy: Addressing Marine Debris from Source to Sea* (Strategy) updates the State’s ocean litter priorities and includes actions that will enable government agencies, industry, academia, nonprofits, and tribes to collaborate on meaningful contributions to reducing ocean litter in California. The Strategy is organized into two sections:

- 1) OPC Priorities, and Stakeholder-Identified Goals, Objectives, and Action Items
- 2) Literature Synthesis on Ocean Litter

The OPC Priorities section clearly articulates the work OPC will take on over the next six years to address ocean litter and focuses addressing land-based ocean litter, microplastics and microfibers, and fishing and aquaculture gear, as described in more detail below.

BACKGROUND:

Ocean litter is a pervasive problem at local, regional, and global scales with a wide range of

consequences to human health, the environment, and the economy. Immediate, collaborative action to reduce and prevent ocean litter will ensure that California communities, environments, and economies remain productive and vibrant. OPC and the National Oceanic and Atmospheric Administration's (NOAA) Marine Debris Program partnered to update OPC's 2008 *An Implementation Strategy for the California Ocean Protection Council Resolution to Reduce and Prevent Ocean Litter*. Both OPC and NOAA Marine Debris Program provided funding to California Sea Grant to facilitate the stakeholder process and draft the Strategy, and staff from both agencies participated throughout the update process. The 2018 Strategy will provide structure and guidance for OPC and California stakeholders to efficiently address this pressing issue over the next six years.

The 2008 Strategy

The 2008 Strategy served as a powerful and effective document to promote action on addressing ocean litter. Since 2008, many of the actions described in the document have either been accomplished or are in progress. For example, the single-use plastic carryout bag ban was ratified by California voters in 2016 and the State Water Resources Control Board's Trash Amendments were adopted in 2015. While we have made great strides in addressing ocean litter in California, our understanding of the issue has changed considerably in the last decade. For example, the investigation of microplastics' presence in aquatic ecosystems and impacts on marine life has increased dramatically over the last ten years. This 2018 update expands the previous Strategy to include projects of a variety of scales and scopes so that entities including government agencies, industry, academia, nonprofits, and tribes can collaborate on meaningful contributions to reducing ocean litter in California.

Strategy Update Process

In 2016, OPC and the NOAA Marine Debris Program initiated a partnership with California Sea Grant to update the OPC 2008 Strategy to Reduce and Prevent Ocean Litter. Nationally, the NOAA Marine Debris Program is developing marine debris action plans to engage stakeholder communities in states and regions across the country. State participation in the marine debris action plans varies widely around the country, and California is taking a leadership role by developing OPC Priorities and adopting the 2018 Strategy as the state's marine debris action plan.

In addition to OPC and NOAA Marine Debris Program staff, the Strategy planning team also included the California Coastal Commission and Surfrider Foundation. Representatives from organizations active in conservation, research, waste reduction, and education, as well as representatives from the plastics industry, fishing, aquaculture, tribes, local governments, and State and Federal agencies were invited to participate in two workshops in 2017, one in May and one in November. The content of the Strategy was generated from a wide range of stakeholder input, gathered during these workshops and two rounds of public comment between May 2017 and February 2018.

Scope and Contents of the Strategy

The Strategy includes OPC Priorities and stakeholder-identified Goals, Objectives, and Action Items to address ocean litter. The OPC Priorities were developed to clearly articulate the work OPC will take on over the next six years to address ocean litter. The priorities are framed in the context of OPC's mandate

and focused around developing and implementing policy, coordinating among state agencies, providing funding for catalytic and innovative projects, and providing the best available science for government decision-making. The OPC Priorities were developed by OPC staff and refined by multiple rounds of stakeholder feedback both at the second workshop and through public comment. These Priorities are meant to support and enhance many of the Goals, Objectives, and Action Items developed by California stakeholders. OPC Priorities are structured into three goals:

1. **OPC Goal 1 – Land-based Ocean Litter:** Protect marine ecosystems and the communities that rely on them by promoting policies to prevent litter from reaching the ocean.
2. **OPC Goal 2 – Microplastics and Microfibers:** Increase understanding of the scale and impact of microplastics and microfibers on the marine environment and develop solutions to address them.
3. **OPC Goal 3 – Fishing and Aquaculture Gear:** Reduce debris from fishing and aquaculture-related activities in the ocean.

In contrast to the OPC Priorities, the Stakeholder Goals, Objectives and Action Items were developed and revised by a wide range of stakeholders including grassroots organizations, fishermen, scientists, wastewater treatment managers, and the plastics industry. Stakeholders were engaged through two workshops and through public comment periods on the draft document. The first workshop provided an opportunity to brainstorm action items, and the second workshop provided an opportunity to refine the Goals, Objectives, and Action Items in the first draft of the Strategy.

The stakeholder section of the Strategy is structured around six Goals, five of which are dedicated to land-based litter, and one of which is dedicated to ocean-based debris. Nested under each of these Goals are Objectives, which outline approaches for achieving the Goals and Action Items, which are concrete and measurable tasks that stakeholders can implement to contribute to an Objective and prevent or reduce ocean litter. These Goals, Objectives, and Actions were developed through the workshop process described above. Broadly broken into land- and ocean-based litter categories, the six stakeholder Goals of this Strategy are as follows:

Land-based Ocean Litter

1. **Goal 1:** Reduce the use of common ocean litter items through mandates and incentives targeting public institutions and businesses.
2. **Goal 2:** Reduce the prevalence of common ocean litter items through changes in product production, design, and management.
3. **Goal 3:** Improve waste management and interception of litter on land before it enters the ocean.
4. **Goal 4:** Conduct and communicate research on existing and emerging issues related to land-based ocean litter.
5. **Goal 5:** Generate behavior change by educating and engaging communities and individuals to reduce ocean litter.

Ocean-based Marine Debris

6. **Goal 6:** Reduce the sources of ocean-based ocean litter and maximize the efficiency of ocean-based ocean litter cleanup.

The Strategy as a whole prioritizes source reduction, as agencies and experts agree that source reduction is the most effective tactic to address ocean litter. The Strategy focuses primarily on land-based litter, because the majority of litter found on Coastal Cleanup Day is land-based.

Most of the Strategy's stakeholder Action Items are accompanied by a list of lead and/or partner organizations that have volunteered to implement the Action Items. Given the many dynamic and influential ocean litter stakeholders in California, the Strategy provides an opportunity for organizations to take a leadership role on Action Items that align with their respective goals and mandates. Additional organizations may contribute to actions over the lifetime of the Strategy. OPC and NOAA Marine Debris Program are committed to providing overall leadership and coordination of tracking Strategy implementation progress, facilitating communication between partner organizations, and sharing updates among interested stakeholders.

Implementation Process

The Strategy is intended to be a roadmap for action over the next six years. OPC staff and NOAA Marine Debris Program staff will organize and facilitate in-person meetings every two years to provide progress updates and reevaluate the Strategy's Goals and Objectives, as necessary. OPC staff and NOAA Marine Debris Program staff will also organize and facilitate a webinar or conference call approximately every six months to allow stakeholders and OPC staff to provide status updates on their actions and discuss lessons learned. Stakeholders will form working groups around each Action Item, and will be responsible for devising implementation plans with rough timelines and metrics for each Action Item by the first six-month check-in webinar (which is anticipated for late 2018).

CONSISTENCY WITH CALIFORNIA OCEAN PROTECTION ACT:

The proposed action is consistent with the Ocean Protection Act (Division 26.5 of the Public Resources Code). Section 35615, specifically directs the Council to coordinate the activities of state agencies that are related to the protection and conservation of coastal waters and ocean ecosystems.

CONSISTENCY WITH THE OPC'S STRATEGIC PLAN:

These projects implement Focal Area D: Coastal and ocean impacts from land-based sources, and Focal Area A: Science-based decision making. Specifically, supporting collaborative efforts and effective partnerships that measurable reduce existing and new marine debris and identifying high priority management information needs.

CALIFORNIA FISH AND GAME COMMISSION
DECISION LIST FOR MARINE PETITIONS FOR REGULATION CHANGE RECEIVED THROUGH APRIL 19, 2018
 Revised 06-07-2018

FGC - California Fish and Game Commission **DFW** - California Department of Fish and Wildlife **WRC** - Wildlife Resources Committee **MRC** - Marine Resources Committee

Grant: FGC is *willing to consider* the petition through a process **Deny:** FGC is *not willing to consider* the petition **Refer:** FGC *needs more information* before deciding whether to grant or deny the petition

Tracking No.	Date Received	Accept or Reject	Name of Petitioner	Subject of Request	Code or Title 14 Section Number	Short Description	FGC Decision	Staff Recommendation
2018-004	4/9/2018	A	Ken Bates and Linda Hildebrand	Market squid	T14	Authorize a small-scale commercial squid fishery north of Pt. Arena, on an experimental basis for a period of five years (including a harvest quota separate from the limited entry quota and research component).	Receipt: 4/18-19/2018 Action scheduled: 6/20-21/2018	Deny; this proposal would potentially require significant change to the market squid restricted access program. FGC is committed to exploring potential actions to support fishing communities; specific proposals or experiments will need to be considered within the context of the outcomes from that effort, which is currently underway.



Tracking Number: (2018-004)

To request a change to regulations under the authority of the California Fish and Game Commission (Commission), you are required to submit this completed form to: California Fish and Game Commission, 1416 Ninth Street, Suite 1320, Sacramento, CA 95814 or via email to FGC@fgc.ca.gov. Note: This form is not intended for listing petitions for threatened or endangered species (see Section 670.1 of Title 14).

Incomplete forms will not be accepted. A petition is incomplete if it is not submitted on this form or fails to contain necessary information in each of the required categories listed on this form (Section I). A petition will be rejected if it does not pertain to issues under the Commission's authority. A petition may be denied if any petition requesting a functionally equivalent regulation change was considered within the previous 12 months and no information or data is being submitted beyond what was previously submitted. If you need help with this form, please contact Commission staff at (916) 653-4899 or FGC@fgc.ca.gov.

SECTION I: Required Information.

Please be succinct. Responses for Section I should not exceed five pages

1. Person or organization requesting the change (Required)

Name of primary contact person: Ken Bates

Address:

Telephone number:

Email address:

2. Rulemaking Authority (Required) - Reference to the statutory or constitutional authority of the Commission to take the action requested: Authority cited: sections 7078, 7701, 7708, 8026, 8425, 8429.5 and Fish and Game code.

3. Overview (Required) - Summarize the proposed changes to regulations: See attached proposal

4. Rationale (Required) - Describe the problem and the reason for the proposed change: This entry level trial fisheries' proposal is designed to directly benefit northern small boat fishermen and the Coastal Fishing Communities that rely on fishing for economic survival. It would do so without creating a financial barrier to young fishermen by the establishment of non-transferable, non-salable state owned fishing permits. This proposal is not a reflection of the existing squid FMP which is based on a high volume fishery executed by large corporate owned vessels, but instead is designed to target low volume, high value specialty markets for carefully handled California market squid caught by artisanal level fishing. This proposal includes a research component, entry and research fees and provisions for in-season and "end of term" review and an evaluation of the success or failure of this trial fishery. And finally, this is proposed as a five year trial fishery, bringing with it a separate quota, exclusive of the existing market squid harvest quota of 118,000 tons and making no changes to the Market Squid Management Plan as it now exists. The geographic area of operation is from Point Arena (39 degrees north) to the California Oregon Border.

SECTION II: Optional Information

5. Date of Petition: 04-08-2018



6. Category of Proposed Change

- ☐ Sport Fishing
☒ Commercial Fishing
☐ Hunting
☐ Other, please specify: [Click here to enter text.](#)

7. The proposal is to: *(To determine section number(s), see current year regulation booklet or <https://govt.westlaw.com/calregs>)*

- ☐ Amend Title 14 Section(s):
☐ Add New Title 14 Section(s):
☐ Repeal Title 14 Section(s):

8. If the proposal is related to a previously submitted petition that was rejected, specify the tracking number of the previously submitted petition

Or ☐ Not applicable.

9. Effective date: If applicable, identify the desired effective date of the regulation.
If the proposed change requires immediate implementation, explain the nature of the emergency:

10. Supporting documentation: Identify and attach to the petition any information supporting the proposal including data, reports and other documents: See attached report

11. Economic or Fiscal Impacts: Identify any known impacts of the proposed regulation change on revenues to the California Department of Fish and Wildlife, individuals, businesses, jobs, other state agencies, local agencies, schools, or housing:

12. Forms: If applicable, list any forms to be created, amended or repealed:

SECTION 3: FGC Staff Only

Date received: April 8, 2018 (Form FGC 1); proposal received January 2018

FGC staff action:

- ☒ Accept - complete
☐ Reject - incomplete
☐ Reject - outside scope of FGC authority

Tracking Number

Date petitioner was notified of receipt of petition and pending action: May 2018_____

Meeting date for FGC consideration: June 20-21, 2018_____

FGC action:

- ☐ Denied by FGC



- ☐ Denied - same as petition _____
Tracking Number
- ☐ Granted for consideration of regulation change

Proposal for a Small-Scale Trial

Squid Fishery North of Point Arena, California

Offered as an amendment/addition to the California Fishery Management Plan

Submitted to

The California Fish and Game Commission

And

The California Department of Fish and Wildlife

January 2018

K. Bates, L. Hildebrand

A Proposal for a Trial Artisanal Squid Fishery, North of Point Arena

Offered as an amendment to the California Squid Fisheries Management Plan

Section 1. Introduction

A. Summary

This entry level trial fisheries' proposal is designed to directly benefit northern small boat fishermen and the Coastal Fishing Communities that rely on fishing for economic survival. It would do so without creating a financial barrier to young fishermen by the establishment of non-transferable, non-salable state owned fishing permits. This proposal is not a reflection of the existing squid FMP which is based on a high volume fishery executed by large corporate owned vessels, but instead is designed to target low volume, high value specialty markets for carefully handled California market squid caught by artisanal level fishing. This proposal includes a research component, entry and research fees and provisions for in-season and "end of term" review and an evaluation of the success or failure of this trial fishery. And finally, this is proposed as a five year trial fishery, bringing with it a separate quota, exclusive of the existing market squid harvest quota of 118,000 tons and making no changes to the Market Squid Management Plan as it now exists. The geographic area of operation is from Point Arena (39 degrees north) to the California Oregon Border.

B. Goals

The California Fish and Game Commission is concerned about the health and viability of our coastal fishing communities. The Commissioners and Commission Staff have begun a statewide inquiry into the "challenges facing fishing communities" and "what actions can the Commission realistically take to address these concerns". This proposal is a proactive response to assist the California Fish and Game Commissioners in their goal to "contribute to more resilient fishing communities in California".

C. Challenges/ Background

The lack of fishing opportunity has over time led to a disastrous decline in port fishing infrastructure and shore side jobs associated with commercial fishing with Northern California ports leading the way downward. Forty years ago the ports of Fort Bragg (Noyo), Eureka and Crescent City where once vibrant , healthy communities supporting fuel docks, cold storage, gear and marine manufacturing and other associated businesses. Eureka was the second largest fishing port on the west coast. Thirty years ago, The Pacific Fisheries Management Council, at a hearing in Eureka, announced the closing of the Klamath Management Zone (KMZ) to all commercial salmon fishing. The council staff said that after a three year rebuilding program for salmon stocks on the Klamath River, fishermen would return to fishing along the North Coast at traditional levels. Today in 2017, the KMZ remains closed and salmon fishing decimated.

“Fall back” fisheries such as longline Black Cod, “hook and line” Rockfish, and late summer Albacore, all became unavailable to Northern fishermen for various reasons --- Limited Entry, excessive “buy-in” expense for saleable permits, ocean area closures, federal fisheries rebuilding plans, various “open access” restrictions and oceanic conditions.

Older fishermen in their 50’s and 60’s have been able to persevere through this economic and cultural disaster in part because these fishermen did not have excessive debt burden created by the unintended consequences of California’s Limited Entry saleable fishing permit system. Young fishermen face nearly insurmountable financial hurdles for entry into fishing. A twenty-two year old does not have the savings, earning potential nor creditability at the bank to fund the purchase of a seaworthy boat, gear and a string of Limited Entry permits.

This trial fishery proposal would allow for entry at a very small artisanal scale via state owned, non-transferable permits as an experiment to avoid the financially based discrimination now present in California fisheries. Furthermore, promoting any new fishing activities, even at such a small scale, will have immediate positive economic effects on North Coast communities.

D. Historical Landings North of Point Arena

1. Historical Background -- While market squid have been found north of Point Arena possibly for millennia, directed fishing for this squid has been very limited by inadequate markets. Additionally, until the Squid Limited Entry FMP became law, small amounts of market squid taken in trawl and shrimp trawl gear was occasionally landed in northern ports, but low prices and onboard handling difficulties limited these incidental landings and so, much of this squid was discarded. The Squid FMP made it illegal to possess any squid on board a vessel not operating with a Limited Entry Permit, and as a result all of this squid is now discarded.

2. Local Directed Fishing --In the mid 1970’s, local fisherman Tom Evano (now deceased), fishing the F/V Miss Lisa out of Crescent City, successfully caught market squid using lights, brails and a lampara net, in the area from Redding Rock to St. George Reef. Captain Evano delivered this product to Castle Rock Seafoods, Inc. of which he was a partial owner. Again, low market demand ultimately stopped continued squid fishing on the north coast. (Ken Butler, Crescent City 2017, pers. comm. November) (Alan Mello 2017, pers. comm., November)

In the summer of 1983, one local Eureka boat armed with a generator, lights and brails, made five trips between Humboldt Bay and Big Lagoon (north of Trinidad) looking for squid. Squid schools were observed during the daytime twice in two different locations south of Trinidad and squid was observed on four nights. While squid showed in the lights on two nighttime occasions at Big Lagoon, offshore wind made ocean conditions difficult. Small amounts of squid were taken on two occasions, but there was no interest from local Eureka fish buyers and the fishing effort terminated (Ken Bates, Eureka 2017, pers. comm. November)

In the late 1980's Captain Matt May, under charter of the National Marine Fisheries Service, conducted squid survey work in Northern California and the states of Oregon and Washington. Captain May interviewed Laurie Lazio, president of Tom Lazio Fish Company. Mr. Lazio referred Captain May to the local fishermen who fished for squid as mentioned above. Captain May's time in Northern California was brief and his survey results unknown.

For a number of years, squid landings were also attributed to Fort Bragg (Noyo). The squid landed in Noyo during 2005, 2006, and 2007 were Humboldt Squid taken by jigging, but may have been mistakenly entered as "squid" on fish tickets. This Humboldt Squid was frozen and sold for crab bait locally.

During the months of June, July and August 2014, Northern California fishermen reported observing numerous schools of market squid from Eel River Canyon (south of Humboldt Bay) to Redding Rock (south of Klamath River). On September 10, 2014, the first of six Limited Entry seiners arrived in Eureka to target local squid. By day ten, four boats fishing for Southern California Seafoods were joined by two large Canadian seiners working for Del Mar Seafoods. The six-boat fleet was comprised of three Alaskan seiners and crews and three Monterey based seiners with Californian skippers and crews. This is noteworthy because within a handful of fishing days, two of the Monterey seiners abandoned this area to return to Monterey citing uncomfortable ocean conditions and concerns about the harbor entrance bar as reasons for their departure. These were sixty plus ton seiners with seasoned crews. The other Monterey vessel and the Alaskans stuck it out in Eureka for a total of nineteen fishing days.

The second northern fishing event took place in 2015 off of Fort Bragg Harbor (Noyo) in the month of September. Again, local fishermen observed schooled squid in near shore waters for over two months. Two local fishermen attempted to interest southern fishermen with brail/light boat permits into traveling north to fish in front of Fort Bragg, but to no avail. The California Wetfish Producers Association had effectively lobbied the California Fish and Game Commission to remove the two-ton open access landing provision from the Squid FMP, which resulted in a termination of opportunity for Fort Bragg commercial fishermen to take squid locally. Meanwhile squid were being caught daily by sport fishermen who were surface scooping daytime squid with salmon landing nets with 3" stretch measure mesh. Eventually a single Limited Entry purse seine vessel made two deliveries into Noyo Harbor in September and departed, leaving the local squid resource virtually intact.

In late February and March of 2017, market squid were present in significant numbers in twelve to fifteen fathoms south of Mad River in Humboldt County. Local Dungeness crab fishermen took advantage of these daytime surface schools of market squid, catching squid (probably illegally) for fresh crab bait. Local fishermen chose to not publicize the squid resource for fear of negative interaction between the Southern Squid FMP purse seiners and the local fixed Dungeness crab gear already set in the area of the market squid schools.

E. Changing Trends in Squid Marketability

Markets for all California fish products have changed radically in the past fifty years. Market squid demand has changed with this trend. “Bulk” squid deliveries in 1966 to San Pedro fish companies earned fishermen \$18.00 per ton (K. Butler, M.McCorkle, California 2017, pers. comm.) This same squid, delivered in bulk now commands \$1200.00 per ton. Small deliveries of squid, mackerel, anchovy and sardine are subject to ex-vessel prices which are double the rate of industrial bulk deliveries. While the increase in the public demand for these fish is remarkable, these specialty markets are limited in volume and subsequently require a more labor intensive approach. Quick distribution via established fresh fish wholesale and retail routes is a key to accessing these markets; Northern California fish buyers excel in these markets.

Section 2. Proposal

Trial Squid Fishery North of Point Arena

This trial fishery proposal is submitted for your inspection as an **addendum** to the existing California Market Squid Fishery Management Plan, but does **not** modify, influence or affect the existing Limited Entry Squid FMP as it presently stands.

A. Geographic Area

This trial fishery proposal would take place from Point Arena (39 degrees north) to the California/Oregon border which is nearly a quarter of the state's coastline. For fishermen, this stretch of coast typically presents challenging weather with strong summer winds, thick fog and constant exposure to heavy northwest swell. Weather is the limiting factor for commercial fishing off of Northern California. Because of this fact, almost all historical squid fishing has been conducted far to the south in Monterey and Southern California. That being said, squid are present yearly and in varying amounts from Point Arena north, clear to South East Alaska. Enough so that the Alaska Board of Fisheries is evaluating Proposal 93, for the establishment of a commercial squid fishery in Southeast Alaska. The Alaska proposal makes the case for "untouched economic opportunity" for Coastal Southeast Alaska.

B. Harvest Rates -- Discussion

Permitted Limited Entry Fishery – the present Squid FMP harvest quota for the Limited Entry fleet stands at 118,000 tons. At times, before the implementation of the FMP, the squid fleet has historically harvested market squid above the present quota. This quota was established by the department and the existing squid fleet to reflect a precautionary approach to the harvest of the squid resource from San Francisco south to the Mexican border. Concurrent with this harvest quota is a fishery biomass survey conducted jointly with industry and the department. The survey work, has to date, only addressed the squid biomass south of San Francisco and is utilized to justify the present harvest of market squid by the Limited Entry fleet.

It is difficult to conceptualize the rate of harvest of squid from San Francisco south, but by way of the following example some clarity may be added. According to Google, the California Coastline is 840 miles long extending from Oregon to the Mexican Border. If we give the Limited Entry fleet credit for a few minor landings between San Francisco and Point Arena in the last few years, their traditional fishing efforts take place over 650 miles of coast. By way of example, dividing the FMP quota of 118,000 tons by 650 miles of coast equals a harvest rate of 181 tons per mile of coast south of Point Arena. (In actuality the harvest rate is in all probability much higher because of the limited areas they actually fish!)

Using the rate of **181** tons per mile, the rate of harvest for the coastline north of Point Arena to the Oregon border looks like this:

190 miles of coast x **181** tons = **34,390** tons of potential harvest based on the current squid FMP survey work for central and southern California per mile

The market squid resource extends from northern Baja California up the west coast to Southeast Alaska. Except for a small squid sport fishery in Puget Sound, Washington, there is almost no significant harvest effort for Market Squid in this extensive geographic area.

The petitioners for this trial fishery are not interested in harvest rate parity with the southern Squid FMP, but instead offer the following options for a trial fishery north of Point Arena exclusive of the existing squid FMP harvest quota for the central and southern Limited Entry fishery.

C. Proposed Harvest Rates

Option 1

2100 tons with 700 tons each assigned to Fort Bragg, Eureka, and Crescent City. Fishing conducted in Point Arena and Albion would count on the Fort Bragg quota. Shelter Cove and Trinidad* landings would count towards Eureka's quota. Harvest rate per mile of coast = 11 tons (this number represents 6% of the 181 tons/mile FMP rate).

Option 2

1200 tons -- Distribution by port at the rate of 400 tons per area. Harvest rate per mile of coast = 6.3 tons (this represents 3.4% of 181 tons/mile FMP rate)

Option 3

900 tons – Distribution per port optional. Harvest rate per mile of coast = 4.7 ton. (This number represents 2.5% of the 181 tons/mile FMP rate)

All three options are scaled to allow enough harvest opportunity to make it economically viable to invest in packing materials, market research and development and plant set-up for small scale processing in northern ports.

*While Trinidad is less than a 1 ½ miles away from traditional squid spawning areas, processing would take place in Eureka, CA.

D. Processing Capacity Discussion

The argument has been made that northern ports have no processing capacity for handling processing and distribution of squid and so should be denied any fishery opportunity. Three fish buyer/processors polled in Fort Bragg reported freezing capacity for high value/low volume squid at 20-30 tons per 24 hours. Eureka and Crescent City have a 10-15 ton per day rate each. Fort Bragg buyers expressed high interest in specialty markets for fresh iced squid and one Fort Bragg buyer successfully held market squid “live” for nearly two weeks in his shore side facility. Northern buyer/processors are not interested in duplication of the southern Limited Entry fishery model and its inherent problems of waste and spoilage during periods of uncontrolled high volume fishing.

E. Trip Limits – 5 Tons

The intent of the petitioners is to foster the development of an artisanal level squid fishery based on the use of local small boats, minimal gear investment and of course all of this is totally dependent on weather conditions and availability of a harvestable resource within acceptable fishing distances from northern ports.

We are proposing a trip limit of five tons per 24 hour period similar to the Federal Coastal Pelagic Species FMP trip limit. In reality, processors purchasing squid from individual fishermen will ultimately regulate landings in their respective ports.

While limiting the Northern California trial fishery participants to 5 tons may seem like a hardship, these small landings will most likely be priced higher than current ex-vessel values paid for bulk deliveries from the Limited Entry fleet. Secondly, the small daily landing limit, (if caught) will not overload the capacity of existing shore side facilities in Fort Bragg, Eureka, Trinidad or Crescent City, while offering a significant degree of employment locally. It is interesting to note that Commission and Department staff considered a daily landing limit of less than 500 pounds for experimental fishing in Northern California in past discussions. A veteran purse seine squid fisherman responded by explaining that a vessel and crew might spent 12-18 nights at sea looking for catchable quantities of squid in locations that would allow for safe fishing. To invest so much time and effort to find fish only to be allowed 500 pounds would be so restrictive as to be unfeasible.

Again, in an attempt to put landing limits into perspective, the online news source, *Fishery Nation*, reported on squid landings in the southern port of Ventura. On November 7, 2017, the manager of commercial fisheries for the Port of Ventura, Mr. Frank Locklear, reported that 300-400 tons of squid was delivered to Ventura Harbor that day. He also mentioned that the harbor prefers to receive 500-600 tons per day. Northern California fish buyers would be ecstatic if they could buy 400 tons of squid in a year!

Another intended consequence of limiting landings to 5 tons is the removal of any thoughts/incentives to increase vessel capacity for squid fishing. This restrictive landing limit presents zero opportunity for a northern fisherman to build an 80 ton capacity seiner around their original 15 ton boat, nor will anyone illegally and fraudulently import a high capacity Canadian seiner as a method for

breaching the vessel harvest capacity requirements set forth in the existing squid FMP for Southern fishermen. (See Tri-Marine letter to Fish and Game Commission)

F. Methods of Take

1. Lights

California Market Squid are typically caught with various net arrangements while being held in concentrated schools via the use of electrical illumination during nighttime fishing operations. While squid can be attracted and held with very little light, the current squid FMP allows for up to 30,000 watts of directed nighttime lighting per vessel. Squid vessel lights can typically be seen for many miles and the amount and intensity of existing squid vessel lighting has led to shore side complaints as well as concerns for seabird interaction and disorientation. Because of these facts, proponents of this trial fishery proposal offer the following reduced wattage for north coast fishing:

Option 1

Airborne lighting for squid, limited to a total of 2000 watts with an additional submerged light component of 500 watts for a total wattage of 2500 or 12% of the allowable wattage for the Southern Squid FMP

Option 2

Airborne lighting for squid limited to a total of 5000 watts with an additional submerged light component of 500 watts for a total wattage of 5500 watts or 18% of allowable wattage for Southern Squid FMP

Additionally, the proponents of this proposal would ask the Commission for the establishment of a one half nautical mile “exclusionary zone” for nighttime light boat fishing around the following **seabird rookeries**:

Castle Rock, Sisters Rocks, Redding Rock, Green Rock, Flat Iron Rock, Pilot Rock, False Cape Rock, Sugarloaf Rock, Rockport Rock

2. Fishing Gear

Option 1

Hand brail, power assisted brail, and jig

Option 2

Hand brail, power assisted brail, jig and lampara net as follows: as per Fish and Game code section 8780 – “lampara* bait net constructed of twine not exceeding standard #9 thread twine, nets cannot have rings along the headline, nor any method of pursing the bottom of the net.” Additionally, wing corkline length not to exceed 55 stretch fathoms per wing and fishing depth not to exceed 10 fathoms. Two artisanal permitted vessels may work co-operatively together while employing lights and lampara gear. Artisanal permittees working cooperatively using lights and lampara gear may each individually harvest squid from the same net during joint fishing efforts.

Option 3

Hand brail, power assisted brail, jig and all legal round haul nets including lampara, half ring, purse seine, drum seine except that corkline length not to exceed 125 fathoms and fishing depth not to exceed 10 fathoms. Two artisanal permitted vessels may work co-operatively together while employing lights and round haul nets. Artisanal permittees working cooperatively using lights and roundhaul gear may each individually harvest squid from the same net during joint fishing efforts.

Discussion – Environmental Impacts of Squid Fishing Gear

The goal with all of the above options is to give fishermen a variety of tools to catch squid north of Point Arena while limiting fishing power to a reasonable level given a **5 ton** landing limit per vessel. That being said, there are some very important environmental concerns that the proponents of this proposal feel are in need of explanation.

This proposal greatly limits the amount of attractant light to 12% or less of the 30,000 watts permitted in the Limited Entry Squid FMP. Proponents believe that this provision will significantly reduce seabird disorientation, shore side complaints and reduce interaction with marine mammals (sea lions) which are quickly trained to congregate from great distances around light boats.

Hand and Power Brail

The most benign method of catching market squid when aggregated alongside a fishing vessel is by hand and power brail. Fishermen can literally exclude any and all non-target species as the brail is moved through surfacing squid. Not only is there no incidental catch of any non-target species, hand and power brail preclude the unintended interaction common with other types of fishing gear which can potentially harvest above the desired amount or the capacity of the fishing vessel.

Lampara Nets

Lampara nets are the oldest small scale roundhaul nets used in California. Fish and Game Code Section 8780 describes small scale lampara net gear as designed and constructed for catching small amounts of various bait fish in California. These nets are the least powerful and the least efficient of all roundhaul nets employed statewide and have historically been fished by small vessels. Lampara nets as described in Fish and Game Code Section 8780 typically have very lightweight leadline always without rings or purse lines. Because of their light construction and shallow fishing depths, Lampara nets do not scrape tons of deposited squid eggs from seabed spawning areas.

Using a Lampara net, fishermen dry up the net in by hand, concentrating smaller amounts of fish into the net's fine mesh center bag (or sack). Excess catch can be released alive by sinking a portion of the sack corkline alongside of the vessel, allowing part or all of the catch to swim free without handling.

Additionally, the proponents have added a fishing depth restriction of less than 10 fathoms for all artisanal roundhaul gear to prevent any contact with the sea bottom during fishing operations north of Point Arena.

No Mechanical Fish Pumps

This proposal prohibits the use of mechanically driven fish transfer pumps typically used to remove catch from roundhaul nets into vessels or “boat to boat” transfer of catch. For maximum fish pump efficiency the catch needs to be very concentrated in the net alongside the vessel. Concentrating the catch alongside leads to plummeting oxygen levels within the net and stress or mortality to the amount of catch inside the net held in excess of the vessel’s capacity or limit. Because this trial fishery is scaled down to an artisanal level, the proponents feel that not employing mechanical pumps will help retain the low volume , low impact results envisioned for this experiment. Having to employ slower traditional methods of fish transfer will not impose any hardship on participants.

G. Season

April 1 to March 31 or harvest of quota if possible

H. Landing Requirement

All squid caught in the northern zone (Point Arena to Oregon Border) must be landed in the zone.

Other Requirements

1. Artisanal permittee (fisherman) must be on board the vessel during all fishing operations seaward of the boundary line for inland waters.
2. Two or more permittees may not operate or take squid from the same vessel
3. No permit stacking

4. Southern Squid FMP Limited Entry participants and northern “artisanal” permittees may not work co-operatively together to locate, aggregate or take market squid north of Point Arena.
5. Transfer of squid from net to vessel by hand brail or power assist brail only.
6. No use of mechanical pumps for take or transfer of squid from net to vessel.
7. No vessel to vessel transfer of squid.

I. Opportunity, Eligibility and Permit Conditions Discussion

California’s Coastal Fishing Communities have been deeply affected by the unintended consequences of our various limited entry policies. While established fishermen have reaped the benefits of protection from unconstrained competition for access to California’s marine resources, our fisheries’ policies have inadvertently created massive financial barriers to entry for young fishermen now required to try to purchase fishing opportunity (permits) on an open market while also trying to pay for boats, gear and family expenses. “Light Boat” brail permits, the lowest form of entry into the existing Squid FMP, are today for sale for \$369,000. Sale price on a Squid Limited Entry purse seine permit tops 1.25 million dollars. The petitioners believe that it was never the intent of the state, (nor the public we fish for), to award a cash bonus derived from the sale of the “state granted opportunity” to harvest the public’s marine resources.

We offer for your consideration a slightly different perspective on fishing opportunity at an artisanal level, with no motivation for capacity expansion per vessel unit, but instead confined by state limits on landings, gear and harvest quota.

J. Permits

Perceived Value: Abundance versus Scarcity

Humans consciously and unconsciously assign value to everything around us. Value is a function of scarcity or plenty. The last existing bottle of vintage wine, one dose of a miracle drug or even the last peanut butter and jelly sandwich have a far higher perceived value than if millions of the same items exist. The same assigned value is applied by humans to the availability of fishing opportunity in the form of permits.

K. Permit Requirements

The petitioners would make the case for the creation of low value squid fishing opportunity as follows:

1. All permits are state owned
2. Permits are non-transferable, non-saleable, non-inheritable
3. A permit can only be held by a live human being, one permit per person

4. Permits cannot be held by a sole proprietorship, partnership, corporation or non-profit entity
5. Holders of Limited Entry Market Squid FMP permits are not eligible to hold a permit for artisanal squid fishing north of Point Arena
6. Permits can be renewed annually
7. Unrenewed permits revert back to the state for re-issue

L. Number of permits

Option 1

Open Access. No limit on the number of permits the state can issue.

This option would create the lowest perceived value of squid fishing opportunity by creating a theoretically unlimited supply of permits. At present, anchovy take permits are offered in this way. Here are 4 good reasons for open access.

1. Squid fishing, even in Southern California is difficult. It is a nighttime fishery dependent on good weather. Squid don't float every night. Many fishermen may try this and then quit, so turnover may be frequent until such time as a handful of Northern fishermen figure it out. For this to be a viable fishery for buyers and processors, enough permits need to be available to new entrants in order to offset turnover in this trial fishery. The challenges of the fishery will sort out those individuals with the temperament and skills to succeed.
2. Open access permitting will stop any attempt to speculate as to the possible future value of a permit in one's possession
3. Open access permitting will allow easy entry if positive environmental and economic conditions develop during the year with opportunity constrained by quota and marketing conditions rather than by permit unavailability.
4. The Department will directly benefit financially from the collection of permit fees.

Limited Access Discussion

These options present the greatest challenges.

1. How does one qualify for entry?
 - a. By residence? (Probably unconstitutional)
 - b. By fishing history, i.e. number of years holding a commercial fishing license? (Discriminates against younger fishermen)
 - c. By investment in appropriate fishing gear? (difficult to verify)
 - d. By lottery or selection committee?
2. What is the right number of permits?

This is a trial fishery proposal. At this time actual year to year fishing effort is a complete unknown. It is possible that only a few fishermen may apply for the initial award of permits. In conversations with younger fishermen, they repeatedly expressed the desire to be able to purchase a squid permit when some squid actually showed up in an area within easy range

and during decent weather. This alone makes it difficult to award Limited Entry permits at the beginning of the calendar season with no hope for later permit issuance if fishing develops; remembering that also having a market is a necessity before fishing.

Limited Access Options

Option 2

Artisanal Limited Entry, State Administered, Community-based distribution

1. Residency Requirements
 - a. Based on physical domestic address
 - b. Based on vessel moorage records
2. Limited Permits
 - a. 21 (7 per port)
 - b. 33 (11 per port)
 - c. 45 (15 per port with 5 held for issuance after August 1st.)
 - d. 60 (20 per port with 9 held for issuance after August 1st)
3. Award of Permits
 - a. First come, first serve
 - b. Lottery for applicants

Option 3

1. Artisanal Limited Entry – Community Administered and community based distribution with same requirement as listed in Option 2. Permits per port area awarded and managed by a community-based organization (i.e. Community Fisheries Trust, Local fishermen's Association).
2. Discussion of Option 2 and 3 --- Limited Entry.....These two options, in the opinion of the petitioners, present the greatest difficulties for both Fish and Wildlife staff and North Coast local communities contemplating the concept of "trial squid fishing" over a five year proposed period. For the department staff and the fishing communities required to make significant legal and organizational investments in this proposed trial fishery seems uneconomical at this specific date considering a five year trial term.

M. Fees

Assuming an open access trial fishery or at least a high number of limited entry permits, we offer the following fee options for permit fees based on an April 1 to March 31 season with no option to pro-rate fees for "late" entrants, but with no late fee surcharge either:

1. \$150.00
2. \$250.00
3. \$350.00

N. Duration of Trial Fishery

We would request a five year period for the duration of this proposed trial fishery with the option of renewal depending on evaluated results.

O. Trial Fishery Review

This proposed trial fishery should be subject to periodic review, both in season as required and before the termination of the trial period. Evaluation should include but not be limited to:

1. Permit Sales
2. Actual permit landings and logged effort
3. Landings by port (if any)
4. Modifications to trial regulations
5. Interactions with Squid FMP Limited Entry fleet operations
6. Economic impact benefit to fishermen and North Coast ports.
7. Research information and fishery data
8. Environmental impacts (if any)

P. Trial Fishery Evaluation Panel

The California Fish and Game Commission in conjunction with Fish and Wildlife Department staff shall appoint an evaluation committee to provide “in season” and “end of trial” period reports. The makeup of this committee is as follows:

Two department fishery biologists

Two active holders of artisanal squid permits

Two Northern California fish buyer/processors representatives

One environmental NGO representative

Q. Research Component

Establishment of a trial squid fishery north of Point Arena will potentially give the Department of Fish and Wildlife an additional research component via fishermen’s reports, logs, and dockside samples. “The Marine Life Management Act (MLMA) calls on the Department to collect Essential Fishery Information (EFI) for all marine fisheries managed by the state in co-operation with fishery participants [FGC7060 (A) (B)]”. Allowing this trial fishery for small scale community based artisanal squid fishing north of Point Arena would allow the department to collect and assess essential fisheries information such as age structure, spawning season, spawning areas and other relevant information on squid in this

geographic area. Furthermore, a consequence of allowing very small scale trial squid fishing north of Point Arena is that it will allow the squid FMP Limited Entry fleet “real time” fishing reports on northern California resource availability

R. Research Support Fee

For the privileges of landing squid within the framework of this trial fishery proposal and to contribute to collaborative research efforts between fishermen and the Department, the petitioners recommend that the department should collect a “per ton” research assessment on squid landed within this trial proposal. This fee would be used for research on market squid stocks north of Point Arena. The following are options per pound of squid for fees that would be subtracted from ex-vessel landing prices:

1. 1 cent per pound (\$20.00 per ton)
2. 1.5 cents per pound (\$30.00 per ton)
3. 2 cents per pound (\$40.00 per ton)
4. Other

Section 3. Making a Case

California Wetfish Producers Association— Topics for Discussion

The California Wetfish Producers Association has been a driving force in the areas of Coastal Pelagics species' collaborative research, advocating for its member fishermen and representing CWPA interests and concerns in government forums. The CWPA Board of Directors and executive officer Diane Pleshner-Steele have for the past four years articulated their concerns about additional squid fishing north of Point Arena. The following discussion topics reflect the CWPA's commitment and critical thinking concerning California's Coastal Squid Fishery.

“What happens to the existing Limited Entry Squid fleet which is mobile and has successfully harvested squid in Eureka in 2014?”

The petitioners believe that the proposed trial artisanal fishery north of Point Arena will directly affect the existing Limited Entry fleet as follows:

1. The Limited Entry Fleet will now have access to real time fishing information on observed and landed squid stocks, their approximate location, weather conditions, squid size count, number of artisanal permittees fishing, reports on fixed gear in squid areas and market information concerning low volume squid deliveries.
2. The squid FMP allows the Limited Entry Squid fleet the run of the **entire** California Coast and this fleet operating under the unchanged FMP can continue to fish anywhere in California, landing Market Squid toward fulfillment of their 118,000 ton harvest quota, be it San Diego or Crescent City.
3. There is one restriction that is created by this proposal – Artisanal permittees would not be allowed to work with Limited Entry fishermen to “locate, aggregate or take squid”. Addition of this restriction should prevent any negative impacts to the “Limited Entry Light Boat” permittees that might have been caused by potential competition from Limited Entry purse seiners possibly employing artisanal permittees to assist in “locating, aggregating or taking squid” north of Point Arena.

“Squid does not exist in commercial quantities north of Point Arena, except in “El Nino” conditions.”

This statement contains two details which require separate treatment.

1. Except for “local knowledge” (anecdotal reports), there has been only one superficial **“survey”** of the squid resource north of Point Arena (Captain Matt May, 1980’s). Neither the CFWA fleet nor California Fish and Wildlife have any reliable and current data on squid stocks that extend clear to Southeast Alaska.
2. The term **“commercial quantities”** is not defined in the CFWA letter. Commercial quantities for a multi-million dollar purse seine vessel whose owner is working to pay off bank vessel mortgages, gear expenses, insurance premiums and the loan payment on a 1.2 million dollar squid permit are considerably different than what a “commercial quantity” of squid looks like to a northern fisherman with thirty foot boat fishing at an artisanal level. Commercial quantities for this fisherman are less than five tons per twenty four hour period, something economically unfeasible to the above mentioned purse seine fisherman.
3. In addition, the State of Alaska Board of Fisheries is evaluating Proposal 93 – the establishment of a commercial market squid fishery in Southeast Alaska. Method of proposed take – purse seine gear. (See Alaska Board of Fisheries Proposal 93) The proponents of trial artisanal squid fishing believe that this Alaskan request for purse seine fishing of squid in Southeast Alaska constitutes reasonable proof that squid are available in “commercial” quantities north of Point Arena.

“Upset of the economic stability of the existing Limited Entry Fleet” by the addition of artisanal level squid fishing permits for limited use north of Point Arena.

As of November 2017, the ex-vessel price for market squid taken by the central and southern California Limited Entry fleet is in excess of **\$1000.00** per ton. If the Limited Entry fleet catches **only** one half of their **118,000** ton capacity quota (**59,000 tons**), the ex-vessel value equates to over fifty nine million dollars. Assuming a **best** case scenario for northern artisanal fishermen landing **all** 900 tons (most likely the choice option for CF&W) in a year, with an ex-vessel artisanal value of \$1500.00 per ton, netting a harvest value of **13.5 million dollars.**, this equates to 22% of the Limited Entry fleet’s **59 million dollar** harvest of only half of **the 118,000 ton quota!** Are we to believe that these theoretical northern landings are enough to “upset the economic stability of the existing Limited Entry Wetfish industry”? This then, brings in to serious question the economic viability of the Limited Entry Wetfish industry’s ability to survive the continual changes in abundance and demand of squid on the global market whether that market is China, Greater Asia or the Mediterranean. Furthermore, the petitioners believe that they can achieve an ex-vessel price greater than that for “bulk “ deliveries by the Limited Entry Wetfish industry, who should benefit from the higher price paid to artisanal fishermen for *de minimis* deliveries of squid.

Concern by the California Wetfish Producers Association that a “precedent will be set by issuing new permits to individuals who had not qualified for permits nor invested substantially to participate in the fishery.”

If the **California Wetfish Producers Association** had made this argument 24 hours after the adoption of the Squid FMP in 2004, it would have had merit. Unfortunately for the Limited Entry permittees, the State of California, its residents and anyone interested in participating in the Limited Entry fishery, all Limited Entry permit issuances, sales and transfers are now based only on an entities’ ability to pay. There is no criteria for participation in the existing Limited Entry fishery, nothing based on fishing expertise or, pre-investment to “substantially participate in the fishery”. Anyone with the money can “buy in” to the fishery and be turned loose with a vessel and purse seine gear with no attempt by the Squid FMP to recruit responsible fishermen into this fishery. In the October issue of *Pacific Fishing Magazine* there are seven Limited Entry squid permits available for immediate sale – none requiring anything but money. One ad actually states “Get in on California’s new Gold Rush!” This is certainly not the attitude the petitioners of artisanal trial squid fishing north of Point Arena are trying to foster. We expect and demand low level fishing by responsible, licensed, individual fishermen on board during actual fishing operations and working out of their respective home ports. While we sympathize with Limited Entry fishermen, trying to deal with corporate ownership of multiple squid permits, absentee vessel and permit owners and rampant permit financial speculation, these problems are beyond the scope of this proposal. This proposal is purposefully designed to avoid the above problems. This proposal does not advocate for additional squid FMP Limited Entry permits.

“Approval of this petition (for artisanal fishing) will trigger a re-opening of the existing squid FMP.... And some portion of the “quota” will be reallocated.”

This proposal for artisanal squid fishing north of Point Arena is submitted as an **amendment/addition** to the existing squid FMP, bringing with it, a separate trial harvest quota for low volume fishing exclusive of the 118,000 ton harvest guideline quota for the existing Squid FMP. The petitioners understand the repeatedly expressed concerns of the CWPA, that the possible re-opening of the squid FMP would expose their fishery to some sort of legal challenge. We understand and respect this, but would also remind readers that the Wetfish Association has twice requested Squid FMP changes; first to remove the “two ton incidental take provision” and second, “to modify the Light Boat/Brail permit ratio”. The petitioners for artisanal fishing are not requesting any re-opening or changes to the existing Squid Limited Entry FMP, but instead offer this proposal as a “stand alone” amendment/addition to the existing Squid FMP.

The California Wetfish Producers Association has stated, “Clearly, squid by itself cannot “save” fishing communities in Northern California.”

The petitioners of this proposal cannot agree more. Viability of fishing communities is contingent on a high enough number of active vessels working in a variety of fisheries to support all shore side business and infrastructure. Artisanal squid fishing, north of Point Arena would be one more contribution to the fishing complex necessary to promote viability, but certainly not the only contributor.

The California Wetfish Producers Association makes the accurate point that “there is no cold storage space large enough to handle squid” [in northern California].

There is no cold storage large enough to handle squid in Bodega Bay, Half Moon Bay, Morro Bay and Santa Barbara. All are landing ports for the Limited Entry squid fleet and all squid landed in these ports is transported via truck to appropriate processing sites dependent on demand. Artisanal level fishing can be handled in northern ports at an intended low volume of landings.

California Wetfish Producers Association further states that “squid caught/landed in Crescent City, Eureka and Noyo Harbors would need to be trucked to processors outside the local area”.

The petitioners again agree with the above statement in that squid deliveries based on the industrial scale fishing allowed by the existing Squid FMP would indeed have to be trucked, just as every squid delivery almost anywhere state wide caught by the Limited Entry fleet requires trucking. In the late fall of 2017, Monterey based processors were trucking market squid from San Pedro to Watsonville! When did San Pedro and Watsonville become part of the same “local” area? Artisanal small scale squid fishing if allowed would be conducted at a level consistent with northern port capacities.

Their report states, “Squid already support many fishing communities in Central and Southern California that have an historic reliance on the resource”.

Again, this is an accurate statement. The petitioners do not advocate for any change in the existing squid FMP, re-allocation of squid deliveries to central and southern ports, nor do the petitioners advocate for northern ports to substitute a reliance on existing fisheries by switching to squid fishing. It is important to remember that the Limited Entry fleet has landed squid north of Point Arena only a total of 21 days out of a possible 4745 days since 2004. Central and southern ports are the traditional area of harvest and landing of Limited Entry caught squid. The petitioners support these ports historic reliance on the squid resource.

“There is not adequate ice to support squid landings in Northern California.”

Nor is there adequate ice in Bodega Bay, San Francisco, Half Moon Bay, Morro Bay, Santa Barbara, Ventura or San Pedro! While some ice making capacity exists in these ports, often as not, ice machines are non-operational. Ice for squid is trucked to various unloading sites. Even the port of Ventura lacks sufficient ice. A private company has 2-10 ton ice machines under construction in Ventura for squid. It is noteworthy that the Wetfish Association letters continue to stress the accurate fact that Northern California ports lack industrial scale ice production and freezing capacity to handle hundreds of tons of squid produced by the Limited Entry fleet while simultaneously skipping over the fact that a majority of central and southern ports also lack adequate facilities. It is a fact of life that ice is trucked in to all central and southern ports and squid is trucked out. The argument that lack of ice production and required trucking is reason enough to deny a trial squid fishery on an artisanal level when in fact the entire Limited Entry fishery operates under the exact same constraints seems less than equitable.

“The Squid Limited Entry annual fishery permit (purse seine) is the most expensive in the state of California (\$2,756.75 in 2015/16) and fishermen must pay this annual fee whether or not they fish”

First, all fishermen in California pay permit fees whether they fish or not and even if their fisheries have collapsed (i.e. salmon, herring, sea urchins) or are closed (salmon north of Point Arena).

To put squid permit fees in perspective by example:

$$65 \text{ seine permits} \times \$2756.75 = \$179,140.00$$

Assuming half of the 118,000 ton quota is caught and sold at **\$1000/ton**, its value = **\$59 million dollars**. The cost of permits (privilege to fish) to the fleet = three tenths of a percent (**00.3%**) of the value of half of the 118,000 ton quota.

Again, if 65 vessels caught half of the 118,000 ton quota, the average vessel gross is **\$907,692.00**. Three tenths of a percent (**00.3%**) of the average vessel gross works out to be **\$2723.00**, pretty close to the renewal cost of the license. The first three tons of squid caught by a purse seine permittee pays for the renewal of their privilege to fish squid at an industrial level.

“The purpose of the Restricted Access Program was to provide economic stability. Adding more permits would destabilize the existing Limited Entry fleet.”

Adding additional Limited Entry purse seine permits could possibly destabilize the individual economic viability per vessel unit in the Limited Entry squid fishery in the exact fashion that the unconstrained increase in Limited Entry vessel capacity by the sponsoring of small seiners into 60-80 ton capacity boats and the introduction of high capacity Canadian seiners into this fishery has damaged the competitiveness of Limited Entry squid fishermen who have stayed within their licensed tonnage range (See *Monterey News Herald*, April 29, 2013)

The petitioners are not advocating the issuance of additional Limited Entry permits fishing against the Squid FMP Harvest Quota of 118,000 tons. Instead we are offering artisanal scale fishing to target low volume squid landings taken against a harvest quota exclusive of the Squid FMP quota.

Our proposal mimics the Federal model for Groundfish fisheries. This is primarily a fishery dominated by industrial size trawl vessels harvesting the lion's share of fish stocks and an artisanal hook and line component conducted on smaller boats working for low volume, high value landings. One might also compare this proposal to the Federal Coastal Pelagics Fishery Management Plan which again allows the Limited Entry permittees harvest of the lion's share of available CPS stocks while allowing an "open access" component to harvest small amounts of CPS stocks (current allowable CPS take is less than five tons per 24 hour period).

"Issuing "Open Access" fishery permits would jeopardize the [market] value of the existing Limited Entry permits."

The petitioners for artisanal fishing would never consider the potential change in monetary value of saleable Limited Entry permits as a legitimate reason to oppose this proposal nor would we ever suggest that this subject be presented in an open public forum for discussion. That being said, the respondents should be aware that the issue of the sale of the "opportunity to harvest" the state's fishery resources (i.e. Limited Entry permits) after already having profited by the harvest of those same resources, is not viewed in a positive light by the general public we fish for, some California Fish and Wildlife department staff nor young entry level fishermen (see "*Monterey County Weekly*" July 7, 2016). At present, the market value for saleable Limited Entry permits seems to be determined by two factors, the state of the harvestable resource (current and future), and the perceived market conditions (demand) combined with some degree of speculation.

Many fisheries exist in which the resource may be subject to harvest by multiple gear types and a high degree of variation of fishing power. A case in point: Bristol Bay Salmon Drift Net permits have fluctuated widely from a high of **\$250,000** down to **\$120,000** and now are currently available for **\$185,000**. During this same period, Bristol Bay Set Net permits changed at far different rates and amounts. The "Set Net fishery" has had little or no effect on the Bristol Bay Driftnet fishery whose permit values have been greatly affected by global markets, volume of catch, processing costs and buyer/seller speculation. Likewise, "hook and line" rockfish and Black Cod permits prices do not closely mirror trawl permit values.

The sale price of Limited Entry Squid permits (regardless of one's opinion as to the ethics of such sales) will continue to be determined by the "volume of catch" (now and future), processing capacity, global demand for squid and other seafood, and the degree of perceived conflict or harmony within the fishery and its participants. This is something which the fishery and industry share responsibility for. The petitioners of this proposal do not advocate for state involvement in the support of Limited Entry permit values, but instead offer this proposal as a trial fishery based on state owned and controlled permits with zero saleable value.

It is important to point out that the northern California ports identified in the Yoakum *et al* proposal have historically relied on Groundfish, Dungeness crab, Salmon, and Pacific Ocean Pink Shrimp. A sea urchin fishery has also developed in Fort Bragg.

To update the readers:

1. A large percentage of the Federal Trawl Groundfish Quota has been sold/transferred out of the area
2. Dungeness crab has been and continues to be rendered unmarketable during peak season (December and January) due to high levels of domoic acid in the viscera and flesh.
3. Salmon fishing in the Klamath Management Zone (KMZ) has been closed for 30 years and the Point Arena to Shelter Cove area continues to be subject to lengthy closures to protect impacted Klamath stocks.
4. Pink Shrimp deliveries have been restricted to Crescent City with much of the 2017 catch diverted to Southern Oregon ports by permitted vessels.
5. Point Arena to Shelter Cove sea urchin fishery has nearly collapsed due to loss of kelp/marine algae decimated by a warming ocean.

While the petitioners agree that squid will not save northern ports, we also agree with the CWPA discussion comment that port sustainability is based on “a diversity of fisheries, which translates to a diversity of gear types operation on a diversity of habitats and relying on a diversity of markets”

The proposal submitted for your inspection is based on the above premise and offers artisanal squid fishing opportunity north of Point Arena as one more small possible component of the fishery complex necessary for a healthy vibrant fishing port.

Excerpts from the California Wetfish Producers Association’s discussion document citing the following:

“Potential long-term solutions to achieve sustainable harbor community goals”

A. Identify infrastructure needs and secure funding.

Infrastructure

1. After an 18 year effort by Humboldt Fishermen’s Marketing Association (HFMA) in tandem with the City of Eureka, HFMA was co-applicant for seven million dollars in grants from Economic Development Administration, California Coastal Conservancy, Boating and Waterways, Eureka Redevelopment Grant Fund, Headwaters Fund and Obama Administration Stimulus Funds to build Eureka Fishermen’s Terminal. The Limited Entry Squid fleet and processors were direct beneficiaries (in 2014) of our efforts to build this infrastructure in 2010.

2. The City of Eureka submitted an economic development goal to the Humboldt County Economic Priorities List to re-establish modern cold storage on the Eureka Waterfront. In March of 2015, **B.A.E. Urban Economics** produced the *City of Eureka Economic Strategic Plan* for the City’s General Plan Update. Action item 11b. — “establishment of modern cold storage within the city limits” was approved by the Eureka City Council. In September 2015, **Lisa Wise Consulting** and **Greenway Partners**, funded by a grant from E.D.A., submitted the *Regional Cold Storage Facility Study*, evaluating local market demand for freezing and storage and a secondary study to locate potential sites for cold storage within the city limits. Efforts are now underway to advance this project.

3. In 2017, Eureka City staff added an additional fish hoist to Fishermen’s Terminal and installed Alber Seafoods as a new tenant under a five year lease. Staff efforts are underway to expand dry storage for Dungeness crab gear on city property. (See report: *City of Eureka Harbor Division 2017*)

4. In Mendocino County, fishermen are preparing for the Noyo Harbor Economic Revitalization Study and Development Design criteria for local harbor job creation and infrastructure improvement.

5. Fort Bragg Groundfish Association is presently working to differentiate, brand, market and promote Noyo’s local ground fish. FBGA is also investigating the formation of a Community Quota Bank.

6. Humboldt State University, the City of Eureka, Shelter Cove and H.F.M.A. are one year into the development of a Fishing Community Sustainability Plan for Eureka and Shelter Cove.

B. The CWP document further cites “sufficient landings from a diversity of fisheries, which translates to a diversity of gear types, operating on a diversity of habitats, and relying on a diversity of markets.”

Fishing Opportunity

1. Local fishermen in northern California ports have been expanding their markets for live Black Cod, Rock fish and prawns.

2. Eureka fishermen received approval from the Pacific Fisheries Management Council to be allowed to take less than one ton (*de minimis* amounts) of sardines in order to target local, high value specialty human consumption markets.

3. Efforts are underway through legislative action, to allow for the take of Northern Anchovies in Humboldt Bay for human consumption.

4. Northern “small boat” fishermen are in conversation with the Department of Fish and Wildlife concerning access to nearshore rockfish stocks and related permit questions.

5. Local northern fishermen are working with buyers of Hagfish (slime eels) to increase overseas markets while allowing for more small vessels to participate in this fishery.

Artisanal market squid fishing, when available, will be one more small scrap for northern fisherman and communities who can no longer rely on closed salmon fishing or only Dungeness crab fishing to make it.

Section 4. Support

Northern California ports have supported and promoted local market squid fishing since 2004. Zeke Grader of Pacific Coast Federation of Fishermen's Association (PCFFA) recommended that 10% of the original Squid Fishery Management Plan Harvest Quota be set aside for fishing, north of Point Arena. Both elected state assembly members, Patty Berg and Wesley Chesbro wrote letters of support for consideration of some Northern squid fishing component.

Today, thirteen years later, the following organizations, businesses, and individuals support this proposal for small scale squid fishing North of Point Arena.

Alber Seafoods

Steve Moore, F/V Rose Mar

RB Pincombe, F/V Viking

Sunrise Seafoods, Dan Yokum

Caito Fisheries, John Caito

Noyo Fish Company, Scott Hockett

Ocean Fresh Fish Company, Bob Juntz

Salmon Trollers Marketing Association of Noyo

Noyo Harbor District

Cloudburst Fishing Company, Ken Bates and Linda Hildebrand

Humboldt Fishermen's Marketing Association

The City of Eureka

Wild Planet Seafoods

Mr. Fish Seafood Market of Eureka, Mark McCullough

Randy and Laura Pincombe, F/V Viking

Englund Marine

Z and Z Marine Services

Eureka Mainstreet Program

Heather Sears F/V Princess

Noyo Ice

Wild Fish Restaurant of Little River, CA

Harvest Market, Fort Bragg

Silver's at the Wharf, Fort Bragg

Mayan Fushion Restaurant, Fort Bragg

Trillium Restaurant, Mendocino

MacCallum House Restaurant, Mendocino

Mendocino Market

Albion Fishermen

Nick Colazas, F/V Ashland D

Harrison Ibach, F/V Oceano

Brendan Semmes F/V Marlene Rose

Trinidad Fishermen

Point Arena Fishermen

Brett Fahning, F/V Mary Lu

Troy Wakefield F/V Lori

Tony Sepulveda, F/V Shellback

Bill Forkner, F/V Shirley

Kyle Stornetta, F/V Jacqueline

Bill Arana, F/V Condor

Peter Bogdahn, F/V Moli



F/V Rose Mar

Steve Moore

Nate Moore is standing in front of his Dad's boat, the F/V Rose Mar with fellow crewman, Brett Roldan in Crescent City, California. Both are deck hands aboard the Rose Mar which currently fishes for Dungeness crab and albacore. Steve Moore (boat owner) and his son have fished together for many years and are extremely excited about the possibility of taking part in any new fishery that is both sustainable and allows for more choices and opportunities to fish close to home. They are aware of this proposed "area and gear specific" squid plan and welcome the chance to add this as another choice for small scale fisheries to participate in.



Nick Colazas

F/V Ashlyn-D

Hello,

My name is Nick Colazas. I am 33 years old and live in Eureka, California with my wife Michelle, and son Jonathan (15 months). I am the owner/operator of the 36 foot F/V Ashlyn-D, which I purchased three years ago. I have been working on fishing boats for nearly half of my life, starting at 17 years old. I urge the commission to accept and adopt the Northern California market squid trial fishery. This amendment would add an option for small boat owners and crew on the far northern coast to diversify their fishing opportunity; in a time and area where local, small boat fisheries are slowly but surely disappearing for one reason or another.

Regards,

Nick Colazas

Dear Reader,

If you have gotten this far, please accept our gratitude for your time and consideration. This is Ken Bates and Linda Hildebrand on the F/V Ironie out of Eureka. Ken has been on commercial fishing boats since he was fifteen years old-53 years to be exact. Linda has somewhat less “sea time”, but has lots of life experience as an organic farmer. We have been fishing together full time for the last 8 years. And while we enjoy fishing in a smaller boat, we have ventured as far north as Southeast Alaska, and up and down the coast of California. Ken’s fishing experience includes five species of salmon, herring, anchovies, sardines, sharks, rock cod, lobsters, albacore, yellowfin and skipjack tunas, scientific collecting and volunteer work for California Fish and Wildlife.

The two of us, along with lots of other fishermen have become alarmed at the tremendous financial hurdles now in front of young California fishermen and their families. We have spent over 3 years working with Dan Yokum, Bob Juntz, Scott Hockett and John Caito to try to offer some partial remedy to beginning fishermen. This is our third attempt. This proposal is more than just us catching a little squid. It’s about adding diversity to what has been diminishing fishing opportunities in our Northern California community.

Thanks,

Ken Bates and Linda Hildebrand





Heather Sears

F/V Princess

Noyo

My name is Heather Sears and I am the owner and operator of the 42 foot fishing vessel Princess. I'm a 37 year old second generation California commercial fisherman. I've been fishing the West coast for the last 19 years participating in the Dungeness crab, open access ground fish, troll king salmon, live rockfish, slime eel, herring and Albacore fisheries. For the last 18 years trolling for salmon has been my main fishery income. My 3 crew members and I make 100% of our income from catching and marketing seafood both retail and wholesale. Since my business sells direct to consumers via Farmers markets and off the boat sales we get feedback from our community every day. We would have a strong local demand for locally caught market squid processed for human consumption. We are in desperate need for more local access to fish.



Brendan Semmes, owner/operator

F/V Marlene Rose

Oregon – Salmon, Dungeness crab, albacore

California – Salmon, Dungeness crab, black cod, rock cod, lingcod

Brendan and his crew fish on the Marlene Rose. They have several fisheries which keep them busy throughout the year. He fishes for salmon and albacore and these fisheries take him as far south as Morro Bay or as far north as Oregon. However, Brendan likes to fish closer to home so that he can bring fresh fish in to the Woodley Island Marina in Eureka and sell to his customers right off the boat. He said that locally caught squid would be a popular product that he could bring in and sell fresh off the boat.



Randy Pincombe Jr.

F/V Viking

Age 30

Randy would love to be involved in this small scale squid fishery as a third generation fisherman. He would appreciate the opportunity to be able to take part in a fishery that is closer to home and that could benefit his community. This is another fishery that would help him to be able to provide for his family and crew.



Brett Fahning

Age 44

F/V Mary Lu

He is married with a wife and kid.

Brett would love to be involved in a fishery that is close to home so that he can be closer to his family and be able to go home at night. For many years Brett has chased tuna miles away from home and his family and is often gone for weeks or months at a time. He and his family would love to be able to participate in this sustainable fishery.



Troy Wakefield

Age 27

F/V Lori

Troy and his fishing family are from Crescent City. The F/V Lori is a family operated boat. They are looking to be involved and would love the opportunity to be able to be part of this new fishery. A local Squid fishery would enable him to be close to home with his small boat and to provide for his family operation.



Hannah and Taylor Hockett

Noyo Fish Company

Fort Bragg, California

Hannah and Taylor spend a lot of time helping their dad Scott Hockett with their small family owned fish buying company. These girls are potentially the next generation of fishermen and fish buyers who depend on a wide diversity of locally sourced fish. This small family business supplies to fish to many local businesses, restaurants, and farmer's markets. Scott thinks that fresh local squid would be a very high demand product. In fact, they have successfully experimented with holding live squid at their processing facility on the river.



My name is Harrison Ibach and this is my family, my wonderful wife Cerise, my daughter Bria Pearl, and my son Harrison Jr. I am a commercial fisherman from Humboldt County, CA. I am writing in support of this proposal for a squid fishery to open in northern California. As a younger fisherman, I rely on several different fisheries to support my family and a squid fishery would be a very beneficial prospect. This would not only be meaningful to me, but other hardworking men and women trying to support their families

Harrison Ibach

F/V Oceano



Scott Hockett of Noyo Fish Co. and his daughter, Taylor Hockett. Hockett ferried the fish from Noyo Beach to the filleting team at the harbor.

Mary Rose Kaczorowski - Beacon Photo



Port of Noyo

Locally caught fish is an irresistible draw for customers to these small fish companies in the Port of Noyo. Fish is available for sale from Ocean Fresh LLC, Caito Fisheries, and Noyo Fish Company. These direct sales help keep fishermen and fish buyers connected with our public support base, which only strengthens healthy fishing communities. Having a diversity of small scale, sustainable fish products that our industry can offer to the public, creates vibrant ports that support fishermen and their businesses.



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2014 JUL 15 PM 2:12

Suite 800
505 Montgomery Street
San Francisco, CA 94111-6533

James P. Walsh
415.276.6556 tel
415.276.6599 fax

jameswalsh@dwt.com

July 9, 2014

Mr. Michael Sutton
Chairman, California Fish and Game Commission
P.O. Box 944209
Sacramento, CA 95814

RE: Management of Squid Resources in California:
The Problem of Excessive Fishing Capacity

Dear Mr. Sutton:

We are writing on behalf of the Tri Marine Group ("Tri Marine"), a privately owned group of fishing, processing, trading, and marketing companies with offices in 14 countries, processing plants located strategically around the world, and a fleet of purse seine, pole-and-line, and support vessels operating in the Pacific Ocean. The Group's headquarters are in Bellevue, Washington. Tri Marine is strongly committed to ensuring the sustainability of all the marine resources important to their business operations and is a founding member of the International Seafood Sustainability Foundation. Tri Marine Fish Company, based in San Pedro, California operates a wetfish plant capable of freezing over 300 tons a day of squid, sardines, and mackerel. Tri Marine is a long-term, committed participant in the State's market squid fishery.

We ask that the Commission and the Department of Fish and Wildlife immediately undertake a review of the issue of excessive capacity in the California market squid fleet given recent developments in the fishery, particularly the fact that the annual 118,000 metric ton quota is being reached much sooner than ever anticipated in the State's Market Squid Fishery Management Plan which was adopted by the Commission in December 2004 and implemented starting in 2005. The market squid fishery is no longer a year-round fishery and, because of pressure to rapidly harvest the resource, just this year the Commission took steps to more finely define the circumstances under which incidental harvests of 2 tons or less are considered "incidental" to other catches after closure of the fishery. However, the more significant concern is that a number of permits holders have brought into the fishery "replacement" vessels, some built in Canada, with exceedingly large fish hold capacity even though they have been measured, under the U.S. Coast Guard's rather flexible measurement rules, as being less than 5 net tons in size.

Anchorage
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Los Angeles

New York
Portland
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Shanghai
Washington, D.C.

www.dwt.com

Because of its commitment to the market squid fishery in California and the nearby waters of the U.S. Exclusive Economic Zone (EEZ), Tri Marine has become increasingly concerned about indications that this important fishery is not being managed as well as had been promised. In particular, the company is deeply concerned about the failure to meet and maintain the fishing capacity goals in the 2005 California Final Market Squid Fishery Management Plan, in particular with regard to the purse seine fleet, which contained the goal of a limited fleet of vessels that were "moderately productive." However, the transfer of Canadian vessels to California registration has increased capacity to the point that these vessels are able to harvest far more squid than the ones they replaced. As a consequence of the licensed fleet's significantly expanded capacity, for the last four years the annual quota of 118,000 tons has been met earlier and earlier in the year, reflecting an "Olympic" management program rather than a limited entry/restricted capacity program. We thought that the 2005 California Squid Management Plan created a rationalized fishery and, on the basis of that understanding, the Pacific Fishery Management Council deferred to the State of California with respect to management of squid in the nearby EEZ. This excessive capacity issue may also extend to vessels registered in Oregon and Washington as well. Tri Marine believes it is time for a detailed reassessment and explanation of what is going on in this important fishery.

Therefore, the purpose of this letter is to request that the Commission and the Department look into the issue of squid fishing vessel capacity with a view to explaining exactly how much capacity has been allowed into this fishery since 2005, how the State of California has calculated the actual fishing capacity of foreign-transferred boats of less than 5 net tons, and whether any of these vessels have been altered or changed after documentation to expand capacity for harvest. Below we set forth some of the considerations that led to this request to you.

The 2005 California Squid Management Plan. The Final Market Squid Fishery Management Plan (the "Plan") was adopted by the Commission in 2004. The stated goal of the Plan was to manage the market squid (*Loligo opalescens*) resource to ensure long-term resource conservation and sustainability, reduce the potential for overfishing, and institute a framework for management that will be responsive to environmental and socioeconomic changes. To that end, measures were included that (1) set fishing control rules, including a hard limit on total catch (118,000 tons per year), closures, spawning protection, and monitoring; (2) created a restricted access program, including provisions for initial entry and permit transfers, that would produce a moderately productive and specialized fleet; and (3) established a seabird closure in the waters of the Gulf of the Farallones National Marine Sanctuary.

Regulations were then promulgated to carry out the Plan as well as the related squid fishery statutory provisions of the State Fish & Game Code. See California Code of Regulations, Title 14, Chpt. 5.5, Art. 4, §§ 53.00-53.03 and Chpt. 6, §§ 149-149.3. In the preamble in § 53.00, the applicable California laws and regulations are referenced and it is then stated that such laws and regulations "and federal regulations for coastal pelagic species, govern management and regulation of market squid stocks and fisheries." Thus, the California market squid fishery is to abide by California laws and regulations and applicable federal laws and regulations.

In the definition part in § 53.01, the regulations define “fleet capacity goal” as the optimal number of vessels where the number of vessels matches the available squid resource. The term “tons” is defined to mean short tons, or 2,000 pounds, as the standard unit of weight for describing catches and limits for market squid. Vessel capacity is defined as “the gross registered tonnage listed on a federal Coastal Pelagic Species permit or calculated from length, breadth and depth measurements provided on United States Coast Guard documentation papers.” If a vessel does not hold a federal Coastal Pelagic Species permit, the gross tonnage of the vessel will be determined by multiplying the length (L), breadth (B), and depth (D) of the vessel by 0.0067, using the information recorded on the vessel’s U.S. Coast Guard documentation papers. § 149.1(n)(1)(B). However, the regulations fail to provide any guidance on how to calculate the gross tonnage of a vessel that is not documented by the U.S. Coast Guard, i.e. one under 5 net tons as measured under Coast Guard admeasurement rules.

The Plan contains “Capacity Goals”: 55 permitted purse seine vessels; 18 permitted brail vessels; and 34 permitted light boats. § 149.1(m). The Plan, at Section 1-34, stated that, according to Department (of Fish and Game) records, the average purse seine vessel is 18.9 meters (62 feet) and 81 gross tons, with an average hold capacity of 84 tons. Thus, the target capacity size for the entire purse seine fleet would be 4,620 short tons.

The Plan also requires that each purse seine and brail permit be marked with the gross tonnage at the time of initial issuance and the tonnage endorsement is to remain in effect for the lifetime of each permit, regardless of the gross tonnage of the vessel to which it may be transferred. § 149.1(n). The gross tonnage of any vessel to which a permit is transferred may not be more than 110 percent of the original tonnage endorsement on the permit.

The Federal Coastal Pelagic Species FMP: The Pacific Fishery Management Council has implemented a framework fishery management plan for various pelagic species of fish, including market squid. *See* Coastal Pelagic Species FMP, as amended through Amendment 13, September 2011. The Council determined that the appropriate current fleet capacity goal for the entire EEZ Coastal Pelagic Species FMP is 5,650.9 metric tons as represented by the cumulative gross tonnage of the fleet. FMP, at 30. The Council also committed to monitoring the capacity of the fleet every two years. Limited entry permits for the fishery are required and may be transferred to another vessel of comparable capacity, which is determined by NOAA Fisheries using the gross tonnage of the permitted vessel, plus 10 percent. However, NOAA also has no explanation of how the tonnage of a vessel for a permit transfer is calculated if there is no U.S. Coast Guard documentation for that vessel. *See* 68 Fed. Reg. 3819-3823 (Jan. 27, 2003). In theory, transfers are not allowed if the tonnage of the transferee vessel is greater than 110 percent of the tonnage on the original permit.

Thus, both the State of California and NOAA lack precise guidance as to the calculation of capacity with respect to a squid vessel that is less than 5 net tons and not documented by the U.S. Coast Guard.

The Coast Guard Documentation/Admeasurement Rules: Vessel documentation laws require that any vessel of 5 net tons or greater seeking to engage in the U.S. fisheries, including in California waters and the waters of the EEZ, must obtain a certificate of documentation from the U.S. Coast Guard. Such a vessel must be owned by U.S. citizens and be built in the United States. 46 U.S.C. §§ 12102(a), 12103, and 12113. However, a vessel that is admeasured to be less than 5 net tons may be used in the fisheries if it otherwise qualifies, which means it does not have to be built or rebuilt in the United States. Under NOAA's regulations, it is sufficient that the vessel be owned by U.S. citizens. Consequently, vessels admeasured to be less than 5 net tons may be used to harvest squid in California waters if they are registered under California laws and obtain a permit to engage in the fishery. Such a vessel may also operate in the market squid fishery in the EEZ, again with the proper permits and registration under state law.

Admeasurement appears to be as much an art as it is a science and requires a marine architect to confirm compliance with published U.S. Coast Guard regulations, 46 C.F.R. Part 69, Subparts B, C, D and E. Recently, the Coast Guard informed the Pacific Fishery Management Council that the transferred Canadian-built vessels appear to meet that agency's admeasurement rules.

Study by Natural Resources Consultants, Inc. of Fleet Capacity: We requested that the firm of Natural Resources Consultants, Inc. investigate this issue and provide us a report. That report is attached as Exhibit 1. The report concludes that the number of California permitted purse seine squid vessels was 74 in 2013, not the Plan target of 55; that the capacity of these vessels is roughly 6,438 (not the Plan target of 4,620); and that the actual capacity may even prove to much higher on closer examination of the replacement Canadian-built vessels which may have been reconfigured, such as by sponsoning. Just recently, National Fisherman (July 2014) reported that a shipyard in Oregon "pulled off a full sponson job" on a 58-foot squid seiner from Long Beach, California. The "sponson job" extended the beam of the vessel by six feet, from 18 to 24 feet, which also increased the size of the fish hold.

Based on our research, we believe at least three preliminary conclusions have support:

(1) neither the State of California or NOAA have effectively policed the vessel capacity targets set forth in the Plan and the Coastal Pelagic Species FMP with respect, at least, to purse seine market squid vessels:

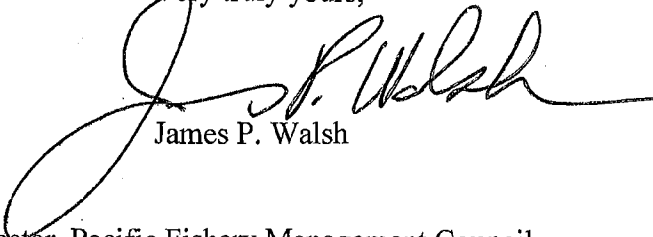
(2) the harvest capacity now operating in the market squid fishery is significantly greater than either regulatory agency considers ideal for the fishery; and

(3) questions arise as to the compliance of recently transferred Canadian-built vessels now working in the market squid fishery with the State's Market Squid Fishery Management Plan capacity limits and goals.

Mr. Michael Sutton
July 9, 2014
Page 5

Therefore, we urge you to investigate this issue and to consider appropriate regulatory action to make the harvest capacity in this fishery more in line with the available quota and the capacity limitation goals set forth in the 2005 Market Squid Fishery Management Plan.

Very truly yours,

A handwritten signature in black ink, appearing to read 'J. P. Walsh', with a large, sweeping loop at the end.

James P. Walsh

cc: Dr. Donald McIssac, Executive Director, Pacific Fishery Management Council

Attachment

PROPOSAL 93

5 AAC 38.1XX. Southeastern Alaska Area Squid Fishery.

Establish a commercial fishery for squid, using purse seine gear, in the Southeastern Alaska Area, as follows:

I recommend the State of Alaska start a directed purse seine fishery for Market Squid (*Doryteuthis opalescens*) in Registration Area A Southeastern Alaska.

What is the issue you would like the board to address and why? There is a growing population of Market Squid (*Doryteuthis opalescens*) in Registration Area A coastal waters. Market Squid is harvested in directed purse seine fisheries along the west coast of the United States, primarily in Oregon and California. Wholesale values for Market Squid can reach as high as \$3,500mt on lean harvest years and in over supply years range between \$1,400mt- \$1,600mt. This economic opportunity is going untouched in Coastal Alaska.

The northern range of Market Squid is likely expanding due to Pacific Ocean warming. It is known the warming ocean and acidification will negatively affect some economically important species (e.g. crab, shellfish), and therefore the State should be proactive and encourage the development of new fisheries.

PROPOSED BY: Justin Peeler

(EF-F17-097)

From: Diane Pleschner-Steele
Sent: Wednesday, August 02, 2017 10:00 AM
To: Eric Sklar; FGC
Cc: Termini, Valerie@FGC; Ashcraft, Susan@FGC; Shuman, Craig@Wildlife; Ugoretz, John@Wildlife; Brady, Briana@Wildlife
Subject: Agenda Item 26 ~ Action on petitions for regulation change I. Petition #2017-004 to authorize commercial access fishing opportunity for market squid in northern California
Attachments: CWPA_FGC Squid comments080217.pdf

Hi President Sklar et al,

Unfortunately I'm unable to attend the Fish and Game Commission meeting in person on Aug. 16; however I've engaged in lengthy discussions with the proponents of the petition, DFW and Commission staff, and have coordinated multiple meetings with the squid fishermen and markets to learn their views re: the petition requesting open access squid fishing opportunity in the area north of Point Arena.

I would greatly appreciate it if you could include the attached letter in the Commission's pre-meeting briefing materials for consideration by all the Commissioners. Mike Conroy will attend the meeting, and can address any questions that might arise on behalf of CWPA, the squid fleet and wetfish industry.

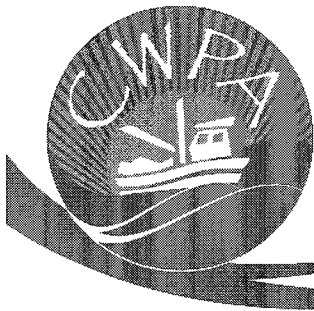
Thank you very much for your consideration of our comments and recommendations.

Best regards,
d.



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July 30, 2017

Mr. Eric Sklar, President
Members of the Fish and Game Commission
1416 Ninth Street
Sacramento, CA 95814

RE: Agenda Item 26 ~ Action on petitions for regulation change

I. Petition #2017-004 to authorize commercial access fishing opportunity for market squid in northern California

Dear President Sklar and Commissioners,

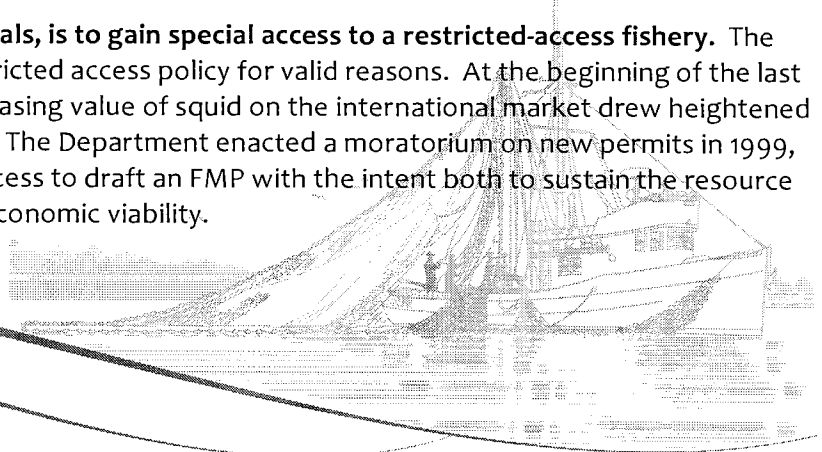
As you're aware, CWPA represents a majority of fishermen and processors who land and process coastal pelagic species in California, including market squid. Unfortunately I am unable to attend the Commission meeting on September 16, so I would greatly appreciate your consideration of the following comments on behalf of the squid / wetfish industry at large, regarding Agenda Item 26, continuing discussion re: commercial access to the squid fishery in northern CA.

This issue has appeared on the Commission agenda periodically for several years in different iterations, but the gist has always been to allow exclusive opportunity for N.CA. fishermen to harvest squid outside the limits of the current restricted access policy. Over these years, CWPA, the wetfish industry and I personally have invested a lot of time, thought and discussion, considering potential alternatives that could be accomplished within the current regulatory framework or with surgical regulatory change that could apply across all fisheries, and without harming the existing wetfish industry, for whom the squid fishery is an essential part – and now virtually the only part – of their livelihood.

Our discussions triggered a flood of questions: What about the restricted access policy itself and the precedent that reversing it would set for all other fisheries? What about the rest of the State: why should northern CA. receive preferential treatment? What socio-economic harm would befall the existing limited entry squid fleet — the fishermen and processors who have invested millions of dollars to develop the fishery because restricted access policy limited overexploitation, and the fishery is now fully utilized, in light of capacity limits set in the Market Squid Fishery Management Plan (FMP).

In reviewing the most recent petition for regulation change, I realized that, despite countless hours of discussion with the proponents, they have not acknowledged nor addressed any of these concerns. Rather, I found misrepresentations in the rationale, for example the statement that the Commission approved an FMP that “unknowingly... gave the squid fishery to 55 fishers without taking into account the future needs and access of N.CA. fishing communities.”

The root of this petition, as with the earlier appeals, is to gain special access to a restricted-access fishery. The Commission approved the squid FMP and its restricted access policy for valid reasons. At the beginning of the last decadal squid “boom” in the late 1990s, the increasing value of squid on the international market drew heightened interest from fishermen, many from out of state. The Department enacted a moratorium on new permits in 1999, and initiated a multi-year, multi-million-dollar process to draft an FMP with the intent both to sustain the resource and stabilize the fishery, including its long-term economic viability.



Representing California's Historic Fishery

Quoting from the Market Squid FMP:

Sec. 2.2 Restricted Access (Sec. 2-21)

Restricted access programs should: 1) contribute to sustainable fisheries management by providing a means to match the level of effort in a fishery to the health of the fishery resource and by giving fishery participants a greater stake in maintaining sustainability; 2) provide a mechanism for funding fishery management, research, monitoring, and law enforcement activities; 3) provide long term social and economic benefits to the State and fishery participants; and 4) broaden opportunities for the commercial fishing industry to share management responsibility with the Department. More specifically, the Commission's purposes for restricting access or entry to a fishery are described as: 1) promote sustainable fisheries; 2) provide for an orderly fishery; 3) promote conservation among fishery participants; and 4) maintain the long term economic viability of fisheries. Restricted access programs may be instituted in order to carry out one or more of these purposes in a given fishery.

Sec. 2.2.1 Limited Entry / Capacity Goals

Establishing limited entry qualifying criteria is a first step in reducing fleet size from the 184 market squid vessels and 41 light boats currently permitted to achieve the selected capacity goal, provided the current number of vessels is in excess of the selected goal.

Sec. 2.2.2 Initial Issuance of Market Squid Fleet Permits

California has had a practice of giving preference to vessels of fishermen with past participation when issuing restricted access permits. Among fishermen or vessels with past participation in the squid fishery, preference for permits may be based on factors such as years of participation in the fishery or level of participation (landings).

The Commission approved a **capacity goal** of 55 seine permits, including three “experimental” permits in northern CA., along with a capacity goal of 34 light boat permits and 18 brail permits (a new category included as a subset of the light boat category to provide one lighting vessel per seiner, and enable a number of smaller vessels to scoop limited quantities of squid for specialty markets).

But prior to the FMP there were **184 squid vessel and 41 light boat permits** in the fishery. Thus adoption of the FMP eliminated more than half of the then existing seine fleet, as vessels were required to qualify based on a prescribed number landings in the window period or history in the fishery. The total number of vessels that qualified to remain in the fishery exceeded the capacity goal, but the intent was to attain the capacity goal by attrition and permit stacking.

In 2016 the squid fleet numbered 45 transferable brail permits (up from the 14 issued in 2005 due to a one-time light boat to brail transfer authorized in regulation that inadvertently did not cap transfers at the capacity goal), 30 transferable light boat permits (down from the initial 41 due to the transfers) and 68 transferable seine vessel permits (down from the 77 issued in 2005). Although the seine fleet is working toward its capacity goal, the fishery as a whole has not reached it yet. Transferable seine and brail permits now cost \$2,764.50 per year, among the most expensive commercial fishing permits in California, and fishermen must pay this fee annually to remain in the fishery, regardless of whether or not they go fishing. But the ‘good’ news is 113 permits are eligible for transfer, should someone wish to enter the squid fishery under the existing regulatory framework.

I recall the Commission’s initial intent when approving the “experimental” permit class in 2004 was to “develop a fishery in an area previously unfished”, but regulations established a time limit for those permits. Why were the three “experimental” squid permits issued at the beginning of the market squid FMP not used? The experimental permits acquired in 2005 were not renewed for a reason:

For example, an article in the Eureka Times Standard, “Another ‘Freakish’ Squid Fishing Boom Unlikely” (dated 10/22/15), posted a telling sidebar:

Yearly squid landings in the Eureka area since 2000:

2014: 4.8 million pounds*

2008: 87 pounds

2006: 300 pounds

2004: 95 pounds

2001: 255 pounds

2000: 1,645 pounds

Source: California Department of Fish and Wildlife

*Please understand that the 4.8 million pounds landed in 2014 were landed by squid limited-entry fishery participants who had invested millions of dollars in vessels and infrastructure, including mobile pumps, to maximize the harvest and value of the squid resource during a decadal squid “boom”. This value was lauded by local businesses in ports like Eureka and Fort Bragg that benefited from the upsurge in economic activity. The current squid limited-entry fleet is mobile and capable of harvesting squid wherever they appear, in northern as well as southern California. However, the current lack of ice and cold storage facilities in northern CA have hampered local processing, and trucking will be required unless or until adequate infrastructure is built.

Everyone can support the goal of achieving sustainable harbor communities. **But sustainability is an issue for all of California’s harbors, not just those in northern CA.**

Many harbors are suffering. California’s wetfish fleet has little else to harvest besides squid now. The sardine fishery is closed; mackerel, although present, are not often concentrated into fishable schools in waters where the fleet operates; anchovy markets are limited and there are severe restrictions on tuna fishing.

Market squid is now the only economic driver in a historic industry that, until recent years, has contributed as much as 80 percent of California’s statewide fishery landings, representing 40 percent of total dockside value. We all feel the pain voiced by the proponents of this petition. We’ve participated in and paid close attention to the sustainable harbor community workshops that the Commission has sponsored, and we’ve encouraged the proponents to pursue the model advanced by the City of Monterey, which could include creating a co-op or foundation and purchasing some squid permits, along with permits for other fisheries.

Excerpting from CWPA’s earlier discussion document submitted to the Commission:

Potential Long-Term Solutions to achieve Sustainable Harbor Community Goals

- *Follow the precedent set by Monterey and Morro Bay – i.e. develop a Fishing Community Sustainability Plan, identify infrastructure needs and how to secure funding and political support for improvements and focus on securing landings from a diversity of fisheries, which translates to a diversity of gear types operating on a diversity of habitats and relying on a diversity of markets.*

We’ve noted that these themes are repeated in the summary from the most recent sustainable community workshop in Smith River.

It is important to point out that Northern CA ports historically have relied on groundfish, Dungeness crab, salmon and Pacific Ocean “pink” shrimp. Fort Bragg also has had a viable sea urchin fishery until recent anomalous ocean conditions precipitated an explosion of purple urchins and loss of kelp. The abundance of squid in northern CA is transient, and certainly **squid by itself cannot “save” fishing communities in northern CA.**

After lengthy, serious discussion, a consensus of the wetfish industry continues to express grave concern over the petition now asking for “open access” permits in the squid fishery:

- **Squid fishermen and processors fear the harm caused by reversing restricted access policy to upset the economic sustainability of the existing limited-entry squid fishery and California’s wetfish industry.**
- **They also point to the precedent set by issuing new permits to individuals who had not qualified for permits nor invested substantially to participate in the fishery.**

Employing similar logic, why not give squid fishermen Dungeness crab, salmon, spiny lobster or spot prawn permits during times of hardship? (A spot prawn permit recently sold for \$1.1 million.) California’s wetfish fleet also needs help!

Market squid supports many fishing communities in California. Issuing new “open access” fishery permits in an existing limited-entry fishery would set the precedent for similar consideration in other fisheries and other areas, **would jeopardize the value of existing limited-entry permits, would increase capacity in an already fully utilized fishery and would not be equitable to fishermen who worked hard and risked millions of dollars themselves to secure a place in the fishery initially.**

- **An important purpose of the restricted access program was to provide economic stability. Adding more permits would destabilize the existing limited entry squid fleet and wetfish industry.**

I have engaged in many informal discussions with DFW fishery managers and Commission staff about this issue. On behalf of CWPA and the wetfish industry at large, I agree with recommendations of Marine Region Manager Craig Shuman, who suggested that before acting on any fishery-specific request for regulation change involving a restricted-access fishery, the Commission should consider its overarching restricted access policy and how that is applied across all fisheries. As noted above, given the dynamic, transient behavior of market squid, the squid fishery by itself is not going to save northern CA fishing communities. However, the squid fishery is now the lifeline for California's historic wetfish industry.

CWPA supports the current management framework of the squid FMP, including the goals of the restricted access policy – in particular: *4) broaden opportunities for the commercial fishing industry to share management responsibility with the Department.*

CWPA is pleased to serve as a partner of the Department of Fish and Wildlife in research and management. CWPA has assisted the Department in tracking squid fishery landings since 2013, after the fishery closed early during the “boom” in 2012, with about 11,000 tons remaining in the max cap, which caused a \$20 million impact to the industry. We successfully coordinated voluntary participation with all major markets who emailed fish tickets daily to the Department, and fishermen voluntarily restricted fishing days after landings approached about 100,000 tons, stopping for a week to enable the Department to confirm the landings count, then proceeding one trip per day, two days per week, until landings approached the max cap. Fishermen stopped fishing voluntarily, before landings reached 118,000 tons. We are continuing this cooperative management agreement even though fishery landings have been sharply reduced during the 2015 El Niño and its aftermath.

We have also conducted a squid research program for many years, in cooperation with the Department and the Southwest Fisheries Science Center. I'm happy to announce that a paper reporting our supervising squid scientist's research findings 2011-2016 was recently published in the journal *Marine Ecology*. I have attached highlights from that paper following our comment letter.

I have also included an infographic illustrating the importance of wetfish / squid to numerous harbor communities, as well as to California's fishing economy.

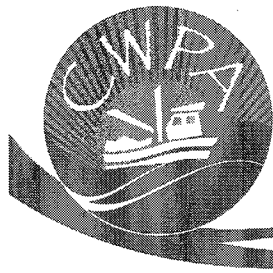
We look forward to further cooperation in both fishery research and management, and will be happy to discuss market squid management policy at the appropriate time in the future.

In the meantime, thank you very much for considering our comments.

Best regards,



Diane Pleschner-Steele
Executive Director



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June 9, 2016

Mr. Eric Sklar, President
And Members of the Fish and Game Commission

RE: Petition for regulatory change to establish a separate fishery for market squid in northern California waters

Dear President Sklar and Commissioners,

Sad to admit, I am physically unable to travel to the Fish and Game Commission meeting in Bakersfield on June 22, and my associate Mike Conroy must attend the Pacific Fishery Management Council meeting in Tacoma Washington on that same day (an unfortunate overlap in scheduling), but I hope you will have the opportunity to review this letter and attachments, and consider our concerns during your deliberations on this petition for regulatory change.

By way of introduction to new Commissioners Russ Burns and Pete Silva (Welcome!), the non-profit CWPA represents a majority of fishermen and processors who land and pack coastal pelagic species (CPS) in California. Market squid is the most valuable species in the "wetfish" complex – the economic driver of this historic industry as well as one of the most important fisheries in California's fishing economy.

CWPA also is pleased to serve as a research partner of the Department of Fish and Wildlife. Our squid research program, funded by the wetfish industry through CWPA and in part by contract from the Southwest Fisheries Science Center, is successfully documenting squid population dynamics and environmental influences on squid abundance and distribution. Our findings indicate that squid abundance, distribution, and timing of spawning are largely driven by environmental forcing. Our surveys documented the superabundance of squid during favorable cold-water La Niña conditions in 2010-12, followed by early spawning in transition years 2013-14 and a northward shift of the population during El Niño in 2014-15. El Niño peaked in December 2015. Ocean conditions now appear to be returning to "normal," as water temperatures are cooling and squid are reappearing in southern California.

Current harvest limits as well as weekend closures and a statewide network of marine protected areas prohibiting fishing in approximately 30 percent of traditional spawning grounds provide spatial and temporal refuge for uninterrupted spawning. This strategy allows the squid population to thrive and expand in positive environmental conditions. Simply put, existing fishery management measures appear to be effective, fostering a sustainable fishery.

On the topic of proposed changes to squid fishery management, CWPA has coordinated several meetings of squid fishermen and processors over the last couple of years, during the La Niña squid "boom," to discuss the request for local access to squid in northern California. That request is now embodied in the petition by Dan Yoakum et al for a separate community-based squid fishery plan north of Point Arena, ostensibly outside the existing FMP and specifically for the ports of Crescent City, Eureka and Fort Bragg. As I read the request, the ask is for 10,000 tons per port for a total of 30,000 tons, and a specified number of additional seine and light boat-brail permits who would operate under specified landing limits.

My initial reaction after reading the petition was to ask: how could these ports possibly offload and freeze more than 100 tons of squid a day? **There is no cold storage space large enough to handle squid, especially in addition to other species**

- The largest freezer (Caito Fisheries in Noyo Harbor) now has capability to freeze only 10 tons maximum every 2 days

My second question: what happens to our existing squid fleet, which is mobile and successfully harvested squid out of Eureka in 2014, with acknowledged and documented positive economic benefits to the community. Due to the lack of freezing capacity, it was necessary to truck squid south to be frozen. (Squid have a very short shelf life in fresh state; prompt freezing is essential to preserve quality.) This company worked for a short time out of Noyo Harbor in 2015 despite challenging logistics, including trucking, and again the activity generated economic benefits to the community.

CWPA has submitted letters to the Fish and Game Commission previously, voicing concerns of current squid fishermen and processors over the prospect of adding more squid permits. The unanimous consensus expressed concern over the **precedent to upset the economic sustainability of the existing limited-entry wetfish industry**. Also noted: **the precedent set by issuing new permits to individuals who had not qualified for permits nor invested substantially to participate in the fishery**.

Informal discussions with Department and Commission staff led to our conclusion that the squid resource and fishery are now fully utilized. Both processors and fishermen invested millions of dollars in vessels and infrastructure, including mobile pumps, to maximize the harvest and value of this resource during the recent squid “boom,” which seems to occur on a decadal time scale. This value was lauded in ports that benefited from the upsurge in activity.

Our recommendation continues to be that the existing fleet has more than sufficient capacity to harvest squid wherever it occurs in California and beyond (i.e. a few boats traveled to harvest squid in Oregon earlier this year). We support the Commission’s interest in broadening this discussion to encompass consideration of how to sustain all California fishing communities. Each fishing community relies on a unique complex of fisheries to sustain economic vitality: for example, Northern California communities including Crescent City, Eureka and Fort Bragg historically have relied on a complex including groundfish and pink shrimp, Dungeness crab and salmon. Fort Bragg also developed a sea urchin fishery. Squid will not “save” these ports, as squid really appear in commercially fishable quantity only during El Niño conditions.

Talking about economic hardship, please consider the current plight of California’s wetfish / squid fleet, which supports many harbor communities in California (please see the enclosed Backgrounder for details). This fleet and these harbors rely on a complex of CPS, including sardine, mackerels, anchovy, and squid as the most valuable species. The wetfish fleet needs flexibility to fish on these species during their cycles of abundance. However, ultra-precautionary federal management policies closed the sardine fishery in 2015 and 2016, mackerel are scarce now and markets for anchovy are limited. For the past few years California’s wetfish industry has relied on squid to keep the boats afloat and market doors open. Then El Niño came along... The wetfish fleet has faced severe economic hardship in the past year, too, and fishermen who have worked hard and invested millions of dollars to develop the squid fishery fear the possibility that the Commission could cut their harvest opportunity in this fishery, “Rob Peter to pay Paul,” so to speak.

It is clear that, despite the petitioners’ claims to the contrary, the approval of this petition would trigger a reopening of the squid fishery management plan, and rather than adding 30,000 tons to the existing 118,000 max cap, the probability exists that some portion of the “quota” would be reallocated – subtracted from the existing limited entry fleet, triggering a severe economic impact to wetfish fishermen, processors and harbor communities that rely on squid. **The purpose of the restricted access program was to provide economic stability. Adding more permits would destabilize the existing limited entry fleet.** As an example of the magnitude of loss, consider 2012, the year the Department of Fish and Wildlife closed the fishery early, leaving about 11,000 tons of the squid max cap unharvested. The economic impact to the wetfish industry and California’s fishing economy was approximately \$20 million dollars.

On behalf of CWPA and the wetfish industry, I would greatly appreciate your consideration of this letter and the following points, which we have presented in earlier letters as well as during the first Marine Resources Committee discussion on how to sustain fishing communities. Page 5 of this document summarizes key industry concerns.

Thank you very much for your consideration.

Best regards,



Diane Pleschner-Steele
Executive Director

Attachments: CWPA Discussion on Community-Based Squid Fishing Proposal for N.CA
 Prepared for Marine Resources Committee
 Backgrounder – California’s Wetfish Industry
 Regional Landings by Weight and Value – PFMC Pacific Coast Fishery Ecosystem Plan, Fig. 3.4.14.

CWPA DISCUSSION ON COMMUNITY-BASED SQUID FISHING PROPOSAL FOR N.CA.

The CWPA Board held a teleconference on December 7, 2015 to discuss the continuing appeal for market squid permits in Northern CA. seeking to provide squid fishing opportunity for “small local boats” north of Pt. Arena. Originally a request for “experimental” permits that the Commission ruled were no longer available, this appeal now appears tied to development of a “Community Fishery Trust.”

Interestingly, the initial concept that Ken Bates et al offered, dated October 24, roughly parallels earlier CWPA comments on potential long term solutions: (submitted to the MRC March 4, 2015, during discussion of experimental squid permits).

One key difference, however, is that the proposal now submitted by petitioner Dan Yoakum et al focuses on only ONE species, market squid, and proposes to allocate 30,000 tons of squid to ports north of Point Arena, with the allocation ostensibly separate from the limited entry “quota” as part of a separate squid fishery plan.

Excerpting from CWPA’s earlier discussion document:

Potential Long-Term Solutions to achieve Sustainable Harbor Community Goals

- Follow precedent set by Monterey and Morro Bay – i.e. develop Fishing Community Sustainability Plan, **identify infrastructure needs and how to secure funding for improvements and sufficient landings from a diversity of fisheries, which translates to a diversity of gear types operating on a diversity of habitats and relying on a diversity of markets.**

From City of Monterey, Fishing Community Sustainability Plan

“Another key finding is that a major component of a thriving Monterey fishing port is a **reliance on a diversity of fisheries, which translates to a diversity of gear types operating on a diversity of habitats and relying on a diversity of markets.** In this way, if one fishery is down due to movement of fish stocks, population cycles, regulatory measures or market conditions, another fishery may compensate, leveling out the impacts and assuring that infrastructure and jobs are preserved and rents are paid. Monterey relies on spot prawn, salmon, groundfish, market squid, Pacific sardines, halibut and Dungeness crab to make up its landings and earnings.”

It is important to point out that the Northern CA ports identified in the Yoakum et al proposal have historically relied on groundfish, Dungeness crab, salmon and Pacific Ocean “pink” shrimp. A sea urchin fishery also developed in Fort Bragg. **Market squid is available in quantity only during El Niño cycles in far northern California.** For example, a recent article in the Eureka Times Standard, “Another ‘Freakish’ Squid Fishing Boom Unlikely” (dated 10/22/15), posted a telling sidebar:

Yearly squid landings in the Eureka area since 2000:

2014: 4.8 million pounds

2008: 87 pounds

2006: 300 pounds

2004: 95 pounds

2001: 255 pounds

2000: 1,645 pounds

Source: California Department of Fish and Wildlife

Why were the three “experimental” squid permits issued at the beginning of the market squid FMP not used? The experimental permits acquired in 2005 were not renewed; no significant fishery developed because squid was not available at that time. **Clearly, squid by itself cannot “save” fishing communities in Northern CA.**

Everyone, including the CWWPA Board and California's historic wetfish industry, can support the goal of achieving sustainable harbor communities. But sustainability is an issue for all of California's harbors, not just those in northern CA.

We are all suffering this year. California's historic wetfish fleet has little else to harvest besides squid now. The sardine fishery is closed; mackerel, although present, are not often concentrated into fishable schools in waters where the fleet operates; and there are severe restrictions on tuna fishing. Thankfully local Monterey vessels were able to fish a little anchovy this summer when squid were scarce (likely resulting from El Niño conditions), but certain ENGOs recently attempted to curtail that fishery based on an out-of-date and erroneous assessment and strong-arm politics.

The established limited-entry squid fleet is mobile, and if squid appear in commercial volume in northern CA waters, the existing fleet will travel there to harvest them. When that fish is landed, as it was in Eureka in 2014 and in Fort Bragg in 2015, those ports and associated communities derive positive economic benefits. This economic boost to the entire waterfront and town has been applauded in local media.

The experience of Southern Cal Seafood, the squid processor who hauled a portable pump, generator and fork lifts to Eureka in 2014 and to Fort Bragg in 2015, was highlighted in our March 4th comments.

Here's an excerpt:

- **There is no cold storage space large enough to handle squid, esp. in addition to other species**
 - Largest freezer (Caito Fisheries in Noyo Harbor) now has capability to freeze only 10 tons maximum every 2 days
 - Sea urchin processor has minimal freezer space (processes fresh urchins)
 - Noyo's current Ice plant is not large enough to supply both salmon and squid during summertime, if/when both fisheries are operating
 - Also shortage of processing crews is a problem even without considering squid
- **Squid caught/landed in Crescent City, Eureka, Noyo harbors, would need to be trucked to processors outside the local area [at least until adequate infrastructure, including cold storage facilities, is developed].**

It is also important to remember:

- **Squid already support many fishing communities in central and S.CA. that have historic reliance on this resource**
- **It is critically important not to "Rob Peter to pay Paul"...**

If this discussion is truly about fishing communities and ports, the model offered by Monterey and Morro Bay offers one long-term solution to achieve sustainability, and that **process begins with a needs assessment as part of a comprehensive sustainability plan**. Individual harbor plans will of necessity be variations on a theme, but the bottom line for all: **money needs to be spent on adequate infrastructure.**

Harbor communities also need to develop economic studies to quantify, as Monterey did, what resources are required to sustain a harbor, keeping in mind the key findings in the Monterey Sustainability Plan: "... a major component of a thriving Monterey fishing port is a reliance on a diversity of fisheries, which translates to a diversity of gear types operating on a diversity of habitats and relying on a diversity of markets.

During our December 7 teleconference, while generally supporting the concept of artisanal local "community based" fishing, with the caveats that

- such effort increase needs to be carefully articulated and regulated, and
- harvest limits need to be set outside the framework of the existing limited entry fisheries and associated "quotas", (or in the case of squid, "max cap"),

Board members again voiced the concerns expressed in our earlier comments pertaining to the initial requests from Dan Yoakum et al for "experimental" squid permits.

I'm again excerpting key points from our March 4, 2015 MRC discussion document for further consideration by the full Fish and Game Commission.

The unanimous consensus [of the Board] expressed concern over the appeal for more permits in the squid fishery and the **precedent to upset the economic sustainability of the existing limited-entry wetfish industry**. Also noted: **the precedent set by issuing new permits to individuals who had not qualified for permits nor invested substantially to participate in the fishery**.

Employing similar logic, why not give CPS wetfish fishermen Dungeness crab or salmon permits during times of hardship? In fact, some Board members suggested that CWPA strongly consider initiating the process to apply for disaster relief for the wetfish fleet in 2016, in light of projections that virtually the entire fleet may be tied up next year if/when squid take a hike due to lingering El Niño impacts, and the probability that the sardine fishery will remain closed.

Several [Board members] pointed out the increasing importance of squid to the wetfish fleet, coupled with the loss of other CPS species to harvest -- for example the loss of ability to harvest sardine due to the expansion of the "open access" fishery in the Pacific Northwest, [and the sardine fishery closure in 2015.]

Summarizing market squid fishery facts:

- Squid resource is dynamic – highly influenced by environmental factors, i.e. El Niño
 - Not generally available in far Northern CA in commercial abundance except during El Niño cycles (not sustainable supply to support fishing infrastructure in N.CA. over time)
- Fishery is fully utilized by existing limited-entry fishery (goal of restricted access = promote economic stability for the fleet)
 - Squid fishermen and markets have invested millions of dollars to participate
 - **CPS fleet is mobile, able to harvest squid in N.CA. when available (example: Eureka 2014, Fort Bragg 2015)**
- Squid are highly perishable – require immediate freezing to retain 'freshness'
- Squid fishery is economic driver of the wetfish industry complex, which has produced 80%+ of total statewide volume and @40% of ex vessel value for many decades – the foundation of CA's fishing economy
- Squid already supports many fishing communities in central and S.CA.
- **The squid limited entry fishery permit is the most expensive in the State of California (\$2,756.75 in 2015-16). Fishermen must pay this annual fee whether or not they fish.**
- Issuing new fishery permits in an existing limited-entry fishery would set precedent for similar consideration in other fisheries, **would jeopardize value of existing limited-entry permits**, would increase capacity in an already fully-capitalized fishery and would not be equitable to fishermen who worked hard and invested millions of dollars to secure a place in the fishery initially.
- **The purpose of the restricted access program was to provide economic stability. Adding more permits would destabilize the existing limited entry fleet.**

In conclusion, CWPA is very interested in being included in further discussions regarding how to achieve sustainable fishing communities, and encourages the Commission to expand discussion to encompass all CA harbors, including those that now rely on CPS and market squid to maintain economic vitality. We plan to attend the July 20 communities discussion in Petaluma, and we would appreciate a 'seat at the table' for wetfish/squid fishermen and processors in the Commission's further discussion on issues that affect the long-term future of California's historic wetfish industry.

Thank you very much for considering these comments and concerns.

Best regards,

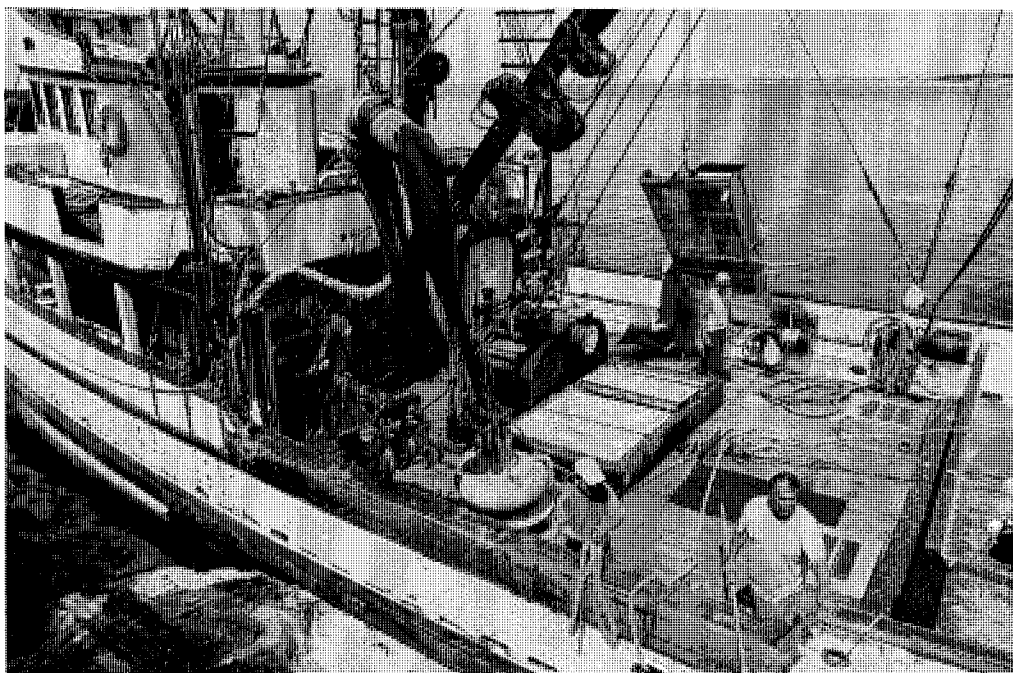


Diane Pleschner-Steele
Executive Director

http://www.montereycountyweekly.com/news/cover/california-s-confidential-fishing-rights-leave-millions-of-dollars-in/article_32047aba-43b4-11e6-8d8d-cfbf0fd7f9c6.html

A Different Kind of Fish Story California's confidential fishing rights leave millions of dollars in mystery.

Nick Rahaim Jul 7, 2016



A fishing boat pulls up to Wharf 2 in Monterey to offload squid.

Nic Coury

Nearly 30,000 watts of stadium lights hang from the rigging of a light boat off the Channel Islands in Southern California. Once flipped on, the lights slowly increase their illumination. After five minutes, the 2am darkness on deck has transformed into a gleam resembling a San Francisco Giants night game at AT&T Park.

Squid fishing in California is done at night with one boat equipped with lights to attract and hold the squid in one spot, partnered with another larger boat with a seine – a 1,000-plus-foot-long fishing net – to bring in the catch.

I peer into the calm ocean and see a milky mass rise to the surface, as hundreds of thousands of squid emerge from the depths – translucent, with large eyes reflecting light like a cat's would.

It's a beautiful sight, but the beauty is not what consumes my mind. It's the thousand dollars I hope to earn that night.

Fishing's good for a few days and I'm excited about the money I expect to receive, even though I'm only a greenhorn.

When we arrive to Ventura Harbor and I'm about to be set free from my duties for the evening, my captain tells me that if I tell anyone how much squid we saw or where we saw them, he would fire me.

A few weeks later, I'm fired for refusing to dump waste oil overboard, and the skipper then stiffes me on the few grand he owes me.

Never trust a fisherman, they say.

Having logged more than 800 days at sea the past seven years in a dozen fisheries from Southern California to Alaska, that saying comes with both a knowing grimace and loving admiration.

The stereotype that "fish stories" blend fact and fiction is not without reason: Fishermen typically speak with great understatement or complete hyperbole – rarely in the middle.

The phenomenon is nothing new. Writer Mark Kurlansky speculated in his 1997 best-selling book, *COD: A Biography of the Fish that Changed the World*, that Basque fishermen discovered the Americas a century before Columbus.

Yet they told no one about the bountiful fisheries so there would be no competition for their lucrative catch.

Over years of writing about and working in the fishing industry, I have often found it difficult to substantiate many things told to me – often as gospel – on fishing boats and in salty bars.

Many of those stories aren't of much consequence – that most fishermen found dead in the water have their fly unzipped, or that whistling in the wheelhouse will blow up a storm. But another story represented enough potential injustice that I had to learn more.

A year ago, while working as a fisherman and freelance journalist in Alaska, I heard California seafood companies that buy and sell product were buying up squid permits – permanent fishing rights, limited in number, bought and sold on a market – from independent fishermen. The implication: They were trying to corner the market, creating squid cartels where they could control prices paid to fishermen, causing ripples down the supply chain to the consumer. (More on the system of fishing rights later.)

I filed a California Public Records Act request with the state Department of Fish and Wildlife to obtain the names of the businesses and individuals who owned the 68 transferable commercial squid permits in California. I also requested details of every permit that transferred in ownership over the past five years.

That information is public in Alaska, Oregon and Washington. But in California, under Fish and Game code section 8022, "Receipts, reports or other records... shall not be public records."

Basically, the names of those who own the right to fish in state-managed fisheries are not public information.

“While it’s good for people like me who sold out, others are going to end up being sharecroppers.”

~ ~ ~
Commercial fishing permits are worth more than \$100 million in California, and fishermen buy and sell them like real estate, stocks or bonds. What makes California an outlier on the West Coast and among federally managed fisheries is that the

names of the people and companies who own rights to harvest the public resource – and speculate in a market largely unknown to those outside commercial fishing – are not publicly available. This all stems from an anachronistic bill authored by a lawmaker named William B. Hornblower in 1933.

Large seafood processing companies are taking advantage, buying out independent fishermen to secure their supply over competing buyers, reducing competition – as well as money potentially earned by fishermen and fishing families.

The secrecy can be as scary as working on a slippery deck in a storm after 24 hours on your feet. But the danger with this secrecy is that independent fishermen are becoming sharecroppers – essentially tenant farmers of the sea, indebted to processing companies – and there’s almost no way to prove it.

For decades, Dave Beaudin, a Washington-based captain, has fished up and down the Pacific Coast from California to Alaska, but he now sees a troubling shift in California that’s different than most other states.

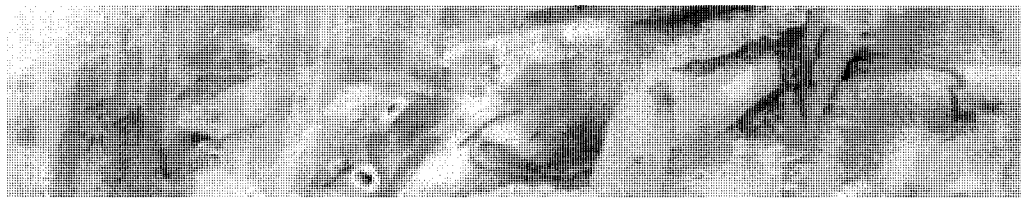
“I don’t think there are many independent fishermen left in squid,” says Beaudin, who sold his squid permit in 2014 for seven figures – 13.33 times what he paid for it in 2007. By selling, he traded an annual six-figure revenue stream for a one-time payment.

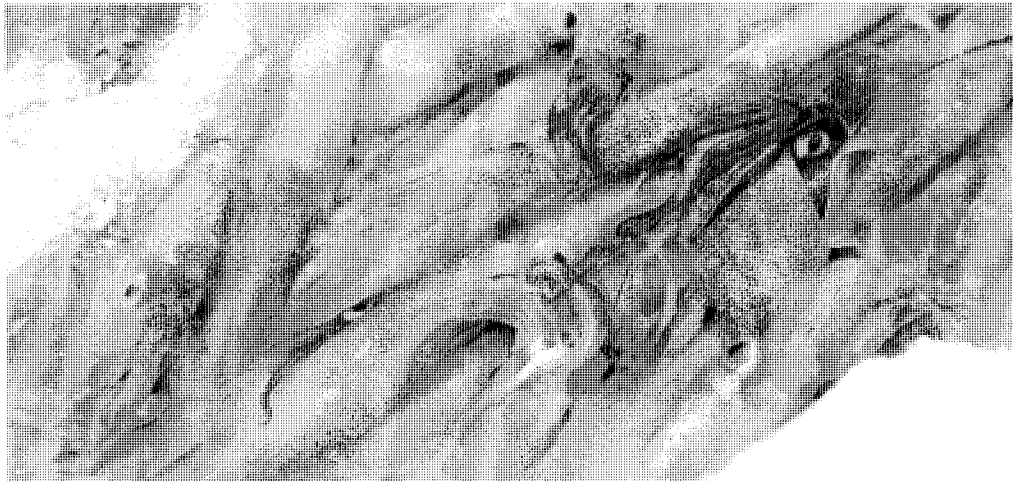
“While it’s good for people like me who sold out, others are going to end up being sharecroppers,” he says. “When a company owns boats, captains make less and the crew makes much less. Plus, once you’re tied to a company, you can’t complain.”

What makes the story so fishy is that it’s quite easy to determine who owns what on land. The names of people and corporations that own businesses, real estate, mining and drilling rights are all public information in California.

This is surprising as it comes from the same state that has often set the benchmark for open government, with the Brown Act of 1953 and the California Public Records Act of 1968.

The search to get to the bottom of a story that I first heard at a rough-and-tumble fishermen’s bar, Kito’s Kave in Petersburg, Alaska, brought me to the docks of Monterey, then to the state Capitol in Sacramento, and finally, a phone call to Mexico.





Nic Coury

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The effects of confidentiality in commercial fishing go beyond the curiosity of a journalist. Influential industry players have been frustrated by not having the information they need to make informed decisions.

Diane Pleschner-Steele, executive director of the California Wetfish Producers Association, which promotes the interests of harvesters and processors of squid, anchovies, sardines and mackerel, among other species, has also requested the names of permit owners. Her request was also denied.

In 2005, 75 boats with at least a 20-year catch history were issued permits by the Department of Wildlife. That gave fishermen private ownership of fishing rights in perpetuity. As an advocate of the industry, Pleschner-Steele wanted to know who those permits went to. She was surprised to find it confidential.

"We've asked the Department of Fish and Wildlife and they won't even change [the law]," she says.

Until the 1990s, all one needed to get into squid fishing was a boat, gear, a market to sell the catch to and a rubber stamp from Fish and Wildlife. This was neither ecologically sustainable for squid, nor was it economically sustainable for fishermen with too many boats going after a scarce resource. So the government limited the number of those who can fish by closing the fishery to new boats in 1998 with a moratorium, and then issued 75 transferable permits in 2005.

Squid permits are tied to a vessel's carrying capacity. Fishermen with boats that had a 100-ton squid capacity in 2005 were issued a 100-ton permit; those with a boat that could hold 40 tons were issued a 40-ton permit.

A fisherman who was issued a 100-ton permit for free in 2005 can now sell it to a seafood processing company or another fisherman for more than \$2 million.

The lack of transparency can also dissuade others from investing in California. Fishermen often consider themselves as much businesspeople who navigate complex and policies that differ from jurisdiction to jurisdiction, all of which have high costs of entry. To buy into commercial fishing, fishermen typically have to come up with more than a million dollars.

Justin Peeler, an Alaskan fisherman who has worked as both a deckhand and a skipper for squid in

California for nearly two decades, says California's law makes it difficult to do business in the state.

"I made the same [Public Records Act] request a few years ago," says Peeler, who sold his California squid permit for seven figures in 2014, but declined to give an exact number. "It makes it more difficult to do business down there, when records are open, everything is more up front. It's hard for you to track down who you're in business with in California."

A fisherman who was issued a 100-ton permit for free in 2005 can now sell it to a seafood processing company or another fisherman for more than \$2 million today.

~ ~ ~

The year 1933 must have been a good year for the Republican Assemblymember William B. Hornblower from San Francisco. He was known as "a vigorous and occasionally emotional anti-prohibitionist," according to one obituary, and that year was the first he could have a drink without fear of getting popped by the feds.

He also championed gambling in the state of California, and it was also 1933 when he successfully carried a bill through the Legislature that legalized thoroughbred horse racing in the state.

If advocating for the right to drink and gamble didn't make him enough of a friend to fishermen, Hornblower also introduced a bill that same year to take "receipts, reports and other records" for commercial fishing out of public view. Those are the same words that today block the public from knowing who owns what in California's waters.

A few decades after Hornblower's law, secrecy was again upheld in regard to the fishing industry. In 1957, AB 616 established Fish and Game code section 8022. The bill completely overhauled the Fish and Game code, covering everything from dams and mines to regulations on frog-jumping contests and the prohibition of trapping wild boars in Monterey County.

Since 1957, Fish and Game code section 8022 has been amended six times – twice in the past 16 years, once in 2000 and another time in 2007.

In 2000, AB 2941 added 8022(b) to allow the Department of Fish and Wildlife to share confidential information on commercial fishing records with the federal government – but not the public.

In 2007, a lengthy bill, AB 1729, was introduced at the request of the Department of Fish and Wildlife to update its code. Instead of updating for transparency, buried in the bill was a provision, 8022(c), that made even more records confidential: It expanded the law to make electronic records exempt from disclosure.

Tracking down an explanation for why there is still confidentiality in commercial fishing has been difficult, even with dozens of calls to politicians, bureaucrats, fisheries managers and commercial fishermen.

John Laird, currently the Secretary of the California Natural Resources Agency, represented the Monterey Bay area in the State Assembly from 2002-08 and voted in favor of AB 1729. He was responsive to inquiries, until asked whether he knew why the 2007 bill kept the names of those who owned fishing rights in California confidential. He then stopped returning emails.

State Sen. Bill Monning, D-Carmel, and Assemblyman Mark Stone, D-Scotts Valley, were both

unaware the provision existed. Their aides said the state Senate's Natural Resource Committee and the Assembly's Water, Parks and Wildlife Committee might have the desired information.

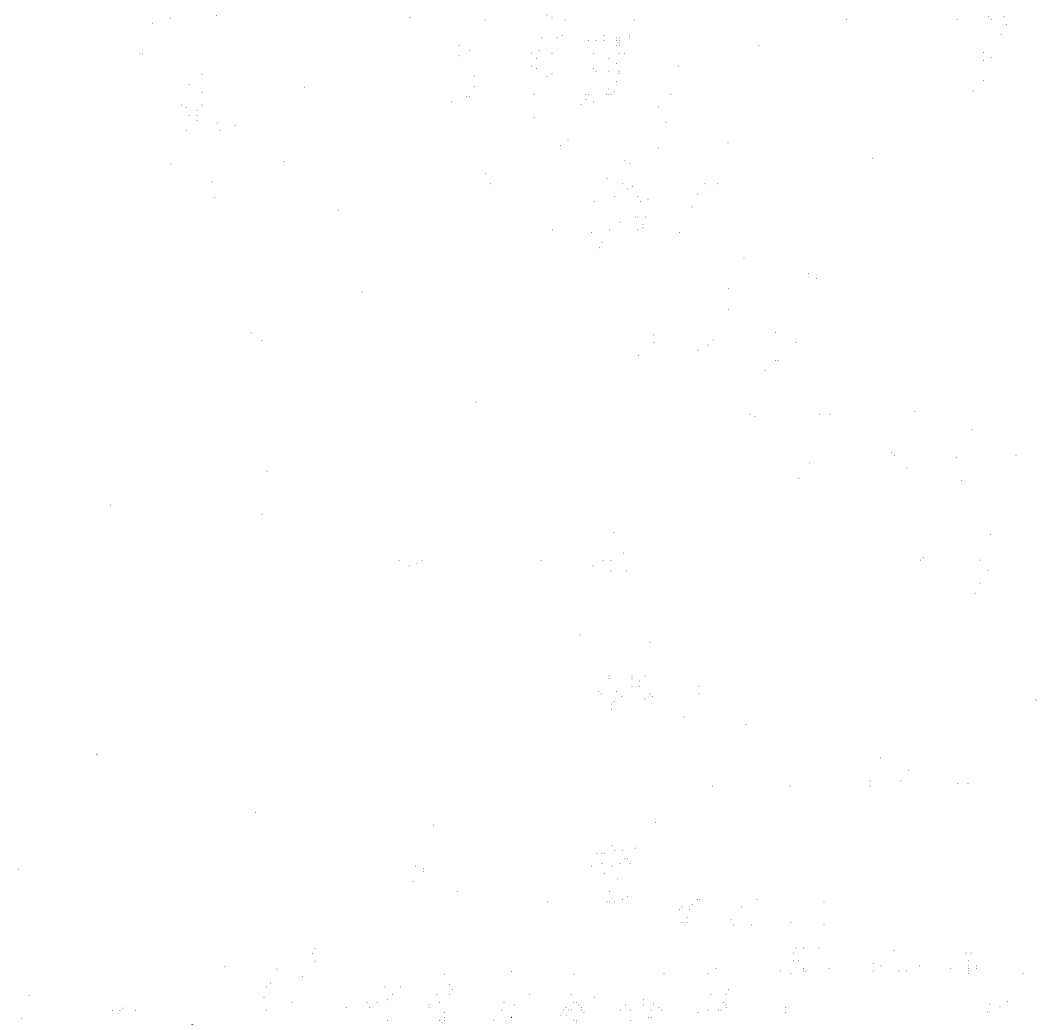
I then called Bill Craven, the chief consultant for the Natural Resources Committee, and asked him why the names are confidential.

"Ever since this popped up, I've been asking myself the same question," Craven says. "It's been on the books for a long time."

When I asked how it "popped up," Craven said it was probably me calling around Sacramento asking questions no one had the answer to.

It's still unknown if the continued confidentiality in commercial fishing is the result of some powers-at-be pressing for continued secrecy, or if one paragraph in tens of thousands of pages in of California policy has just been overlooked and forgotten.

But when Hornblower introduced his bill 83 years ago, long before fishing rights were privatized, it was likely to protect what fishermen considered their intellectual property.



Squid is pumped from a boat's fish hold into totes where it is then iced and shipped to processing facilities.
Nic Coury

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We come back to port after a one of my biggest days fishing ever and we're dangerously overloaded with salmon. The deck is awash and the stern precariously low in the sea – a sizable wave could sink the boat. But the waters, protected by barrier islands in southeast Alaska, are calm, and the giddiness of having made five grand before lunch makes the safety hazards seem negligible. Catches like that aren't a regular occurrence.

We wait an hour idling in the harbor before we can offload our catch as another overloaded boat is already at the dock in Craig, Alaska. Once we're tied to the pilings, it's my job to keep track of the offloaded weight; seafood buyers are known to try to lowball the total tonnage.

To help my cause, I go to ask the dock boss how much the previous boat caught and where they caught it.

I see a fish ticket – the receipt that relays that information – on a makeshift desk of plywood and barrels. With no one around, I walk over to fulfill my curiosity.

The moment I see the information I want, the captain of the previous boat snatches up the ticket and says, "Mind your own business."

In Alaska, reports of who caught what where are confidential, and for good reason. It's important for fishery managers to know what areas fish are being harvested from, but the local knowledge and intuition can be considered a trade secret.

This is likely the original intent of Hornblower's bill in 1933 – to legally protect the trade secrets of an inherently secretive bunch of fishermen. In that time, no one owned fishing rights. There were no names of permit and quota owners to be kept confidential.

**"When seafood buyers
have too much control,
fishermen lose
bargaining power."**

~ ~ ~

Fresh off the links in Cabo San Lucas, Mexico, Joe Cappuccio, president and CEO of Del Mar Seafoods gives a friendly greeting by phone. He's taken some time off from running one of the largest seafood companies in California, located in

Watsonville, to enjoy the Baja sun and work on his golf swing.

Cappuccio is known as one of the most powerful players in the California squid business. While some fishermen might begrudge his market dominance, most say he's affable, honest and fair. There's another trait mentioned when Cappuccio's name is brought up: his shrewd business acumen. He inherited a multi-million dollar seafood company from his father, and under his watch the company has grown by expanding both processing capacity and market share.

We talk shop for a few minutes, swapping sea stories and name-dropping mutual acquaintances before I get to the point of my call. I'm following up on a rumor I heard that Del Mar, along with other seafood processors, are buying permits to take control of the market. While these rumors abound I can't prove anything because the names of permit holders are confidential in California.

"There's a reason why we started buying boats and permits: We got as low as three Monterey Bay-based boats fishing," Cappuccio says. "When I was a kid there used to be 50 boats fishing in Monterey, but then we had an industry flight. There were no young people making the investment so we had to to secure our supply."

Fishermen in California, as is true throughout the Pacific Northwest, often get into the trade because of their families, Cappuccio adds, and recent generations of fishing families have left for other industries.

In 2005, Del Mar's two boats, the Ocean Angel I and III, were issued permits, he says, but over the next decade they purchased another seven, to reach their present total of nine. That brings the company's share of s permits to just under 14 percent of the total California market. In federally managed halibut and black cod fisheries in Alaska, for a point of comparison, no person or company can own more than 2 percent.

"The fleet is not that big. If boats decide not to fish, we go broke," Cappuccio says. "We weren't gobbling up permits to control the market, it was more to make an investment. I'd rather not be in the business of owning boats."

Other companies have followed suit, he says: Seafood processors in a competitive market have bought boats and permits to secure their supply against others. He also says he's unaware that the shift in the squid market from independent fishermen to corporate dominance is confidential, exempt from public oversight.

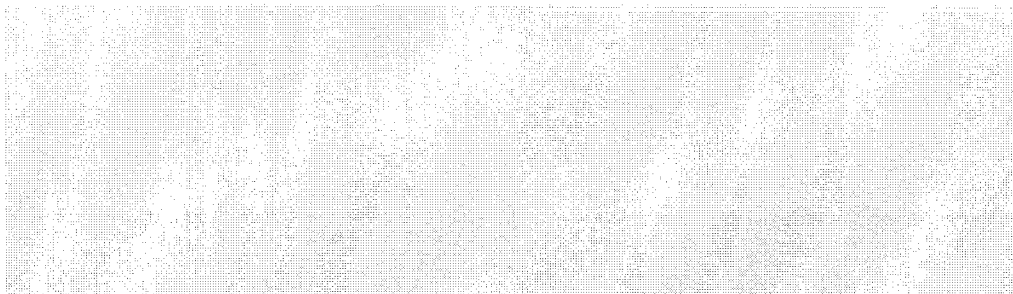
While seafood companies now have a de facto cartel in the squid market, Cappuccio says it's been motivated by necessity, that he had no choice.

Dave Beaudin, the former squid fisherman who sold out a few years back for big bucks, speaks well of Cappuccio and considers him a friend. "He is a very savvy businessman and is no dumbshit," Beaudin says. "He's also not looking to rip anyone off."

But Beaudin has a different take on the changes in the squid business.

"It's a grab for the resource," he says. "When seafood buyers have too much control, fishermen lose bargaining power."





Third-generation Monterey fisherman Sal Mineo talks about the fishing industry on his boat the Mineo Bros – one of just three independent squid boats remaining in the Monterey Bay.

Nic Coury

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While transparency alone won't reverse the trend of consolidation in squid, as well as other state-managed fisheries, it will allow the public to fully assess the state of local fishing economies. Understanding who owns what would be the first step to supporting independent fishermen in California's working waterfronts.

The current move to create community-supported fisheries – where consumers buy locally harvested seafood directly from fishermen – won't get very far if there aren't any independent fishermen left.

In 2015, Governor Jerry Brown signed 807 bills into law. Most of those laws are passed with little fanfare and attention, as they update code and weed out parts that haven't kept up with the times. That's the case with the 2007 amendment to the Fish and Game code first authored by Hornblower back in 1933.

The 1933 bill was just one page long. It would only take a similar one-page bill or amendment to bring more transparency to Californian ports and waters.

Nick Rahaim

Staff Writer

David Bitts
President
Larry Collins
Vice-President
Lorne Edwards
*Secretary &
Treasurer*



Noah Oppenheim
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Glen H. Spain
Northwest Regional Director
Vivian Helliwell
Watershed Conservation Director
In Memoriam:
Nathaniel S. Bingham
Harold C. Christensen
W.F. "Zeke" Grader, Jr.

Please Respond to:

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June 4, 2018

TO: President Eric Sklar
California Fish and Game Commission
1416 Ninth Street, Suite 1320
Sacramento, CA 95814
Submitted electronically to fgc@fgc.ca.gov

RE: North Coast small-scale trial squid fishery proposal

Dear President Sklar and Commission members,

I write to request that you forward the proposal entitled 'Proposal for a Small-Scale Trial Squid Fishery North of Point Arena, California' to the Department of Fish and Wildlife for review. I believe that the Fish and Game Commission's consideration of the proposal's merits must also consider its biological, socioeconomic, and fishery management benefits/impacts.

The Department's role in providing guidance in this regard is clear and this consideration is an important next step. The proposal, if granted, could provide modest but impactful socioeconomic benefits to our members and enable further diversification for small-scale fishermen, allowing them to survive in times of scarcity or uncertainty in other sectors.

Thank you for considering this request.

Sincerely,

Noah Oppenheim
Executive Director

From: George Bradshaw
Sent: Saturday, June 02, 2018 6:20 AM
To: FGC
Subject: Fwd: North Coast Trial Squid Fishery

Thank you for your time commissioners my name is George Bradshaw I am a small boat owner and operator out of Crescent City California. I am writing to ask you to please consider recommending the North Coast Trial Squid Fishery to move on through the process to the Department of Fish and Game to take consideration as a fishery. The reason I ask is because The North Coast desperately needs entry level fisheries and open access opportunity. The proposed North Coast Squid Fishery is just that. So please forward the proposal on to the Department of Fish and Game for consideration. Thank you

From: Laurie S Richmond <Laurie.Richmond@humboldt.edu>
Sent: Friday, May 11, 2018 11:22 AM
To: FGC
Subject: North Coast Trial Squid Fishery

Dear Commissioners,

I am writing to urge you to strongly consider granting the North Coast Trial Squid Fishery Petition and to forward it to the Department of Fish and Wildlife for evaluation. I am an associate professor at Humboldt State University in the department of Environmental Science and Management. I do research related to socioeconomics of fishing communities. We are currently involved in a strategic planning process with the North Coast ports of Eureka and Shelter Cove. One of the vulnerabilities that we have noticed in North Coast ports is the overreliance on a few fisheries -- specifically dungeness crab. In some years dungeness crab accounts for over 60% of landings from the ports. This is a real vulnerability because the crab fishery experiences booms and busts and recently has run into challenges related to domoic acid. Community-based fishermen from the North Coast could be a lot more resilient if they were able to diversify the number of fisheries in which they participate. A trial permit for a North Coast squid fishery might be a way to examine if squid fishing in the North Coast is environmentally sustainable and economically feasible as an added fishery for some fishermen in the region. I do not have all the information available about the implications of granting such a permit but I do ask that you give the request strong consideration. I also urge you to strongly consider the long-term sustainability and viability of California fishing communities and community-based and/or artisanal fishermen when making your decision.

Sincerely,

Laurie Richmond

--

Laurie Richmond
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California Department of Fish and Wildlife Law Enforcement Division Quarterly Report: 1st Quarter 2018

The majority of California's outdoors, hunting, and fishing communities are law-abiding citizens. A small percentage are not. From poaching and pollution investigations, to handling calls about problem wildlife, responding to assist allied law enforcement agencies, other general law enforcement and more, here is a snapshot of Wildlife Officers and their stories from January through March, 2018.

HIGHLIGHT STORY: Trafficking Dudleya



A wildlife officer

contacted two individuals along the coast who were taking large amounts of succulent plants, *Dudleya Farinosa*. This was the second arrest this officer made for succulent poaching in the area in the past three months. The suspects were in possession of approximately 1,400 *Dudleya* plants, around 800 pounds, packed in moving boxes, with an estimated market value of \$30,000-\$40,000. The County District Attorney charged the suspects with felony conspiracy, felony grand theft, theft of plant material, theft with intent to sell and trespass.

Further investigation into succulent poaching and trafficking revealed that over 600 packages of the unlawfully taken plants were shipped consistently over the past year and a half out of one north coast County alone. Investigations revealed a high demand for the succulents in Korea, Japan and China for ornamental purposes, with prices ranging from \$40-\$80 each for the small plants and up to \$1000 each for the exceptionally large ones.

The removal of *Dudleya* can result in environmental degradation of habitat and a destabilization of bluffs and cliffs on the coastline. Illegal harvesting is also particularly alarming because California hosts a number of *Dudleya* species and subspecies that are rare or at risk of extinction.

The first case for succulent poaching and trafficking recently adjudicated. The suspect plead guilty to unlawful take of plant material (50 plants), and was fined \$5,000, received three years probation and 240 hours of community service.

WILDLIFE ENFORCEMENT:

Wildlife officers conducted a boat patrol on the closing weekend of waterfowl season and observed a vessel under power and on plane shooting at a large number of coots that were resting on the water. The



officers contacted the vessel as it pulled into a private slip. The four occupants said they had only shot and killed coots. Upon inspection of their vessel, officers found two dead egrets wrapped in a plastic garbage bag and obscured in the center ski-hold compartment and two dead marsh herons, also wrapped in a plastic bag, hidden under the driver's seat. Officers issued citations for the pursuit and take of birds with a vessel under power, the take of non-game birds and take of falconiforms.



Wildlife officers received reports of a vehicle frequently traveling along a rural remote roadway surrounded by private property. Residents reported seeing the vehicle in the area for several weeks and described seeing the vehicle with gun barrels extending out of the windows. Officers set up covert surveillance along the roadway to monitor activity. Just before dark, the officers watched as the suspect vehicle drove into the area and parked in the roadway. The occupants fired two shots from an air rifle at a flock of turkeys crossing the road and a third shot onto the adjacent private property. A male subject exited the vehicle and entered onto the private property with the air rifle. Officers contacted the vehicle and recovered an air rifle, a 30-06 rifle, and a dead cottontail rabbit. One of the suspects was cited for hunter trespass and take out of season of rabbit and turkey and the other for operation of a motor vehicle without a valid driver license.



Wildlife officers conducted an extensive raptor poaching investigation with the service of a search warrant. The investigation began when officers received information that a resident on a large ranching property was negligently discharging a rifle and possibly shooting hawks. Follow-up investigation and surveillance led to the discovery of enough evidence to obtain a search warrant for the property. Several officers and a CDFW K-9 conducted the warrant service and meticulous search of the property. Officers discovered one mountain lion mount, elk meat without tags, two untagged bobcats left to waste in the field, numerous dead non-game birds and over 100 raptors, many of which appeared freshly killed with bullet wounds. The suspect was arrested and booked for numerous wildlife related violations.

Wildlife officers received a CalTIP involving the take of a white wild turkey out of season. The reporting party was an eyewitness to the killing of the turkey and provided the suspects information. Officers responded and spoke to one of the suspects, who alleged he was only shooting at coyotes. Officers explained they knew a white wild turkey was killed on the property and continued their questions of the suspect. The suspect admitted to shooting the unique and special turkey and surrendered the carcass to the officers. He then explained



that two suspects, he and his friend, shot the turkey. They were cited for take without a hunting license, take before the legal season, shooting within 150 yards of the neighbor's house and unlawful method of take with a .22 caliber rifle.

FISHERIES ENFORCEMENT:

A **wildlife officer** working nighttime coastal fishing enforcement, observed two individuals walking along the shoreline and in the surf appearing to be taking Pismo clams. The officer continued surveillance and waited patiently. The officer made contact with the suspects as they returned to their vehicle. The two subjects were in joint possession of 324 Pismo clams, when the legal limit is 10 clams per licensed harvester. All 324 calms were less than the legal size limit of 4 inches. Both suspects received citations for possession of undersized and over limits of Pismo clams.



Officers report this case is one of many representing a chronic issue. During 2017, 102 citations were issued for Pismo clam violations. A total of 3,515 unlawfully harvested clams were seized from violators

and returned to the wild. Many violations included both undersize and over limit violations, with an average of 34 clams seized per suspect. Subjects did not have a fishing license in more than 60% of the cases.

A **wildlife officer** observed two subjects actively harvesting clams. Upon contact, the officer found the subjects in possession of 277 cockles, when the legal limit is 50 per licensed harvester. Compounding the issue, neither harvester had a valid license. The suspects were cited for possession of an over limit and take without a fishing license.



Wildlife officers conducting boat patrol observed a scuba diver resurface near the local harbor and rock jetties. The officers contacted the subject and discovered the diver was in possession of 14 spiny lobsters, when the legal limit is 7 per licensed harvester. Of the 14 lobsters possessed, 12 were under the legal size limit. The case was filed with the local District Attorney's office.

A **wildlife officer** received information of an individual selling sport caught California Spiny Lobster via the internet. The officer posed on-line as a potential buyer and set up a time to meet with the subject to buy the sport caught lobster. With the aid of concealed uniformed officers as backup, the undercover officer met the seller and purchased 28 sport caught lobster from the subject. At the conclusion of the transaction, the officer identified himself and explained the violations. Charges were filed for sale of sport caught lobster, possession of an over limit of lobster and possession of undersize lobster.



Wildlife Officers teamed up for a nighttime boat patrol to target subjects unlawfully using juvenile salmon as bait to take sturgeon. The officers located multiple subjects fishing at a location commonly used by individuals using juvenile salmon as bait. Two officers got onto shore about one half mile downstream of the anglers then approached on foot. The officers on shore positioned themselves to be able to intercept the suspect if they attempted to discard or destroy evidence, which is common amongst those who use salmon as bait. As the vessel officers drove the boat up river and into view, the anglers scurried in an attempt to cut their fishing lines and dump the illegally possessed salmon. The officers were able to intervene and stop most of the evidence from being destroyed. The officers found several rods baited with juvenile salmon and an additional six juvenile salmon laying on the sand where one of the subjects dumped an ice chest during the commotion. As the contact progressed, the officers identified four of the suspects as repeat offenders previously convicted in 2013, while using juvenile salmon for bait. All four suspects received citations for numerous violations related to salmon and sturgeon violations.

A **wildlife officer** contacted two subjects fishing for trout. One of the subjects explained he left his fishing license in his tackle box located in the trunk of his car. The officer accompanied the subject to retrieve the license, and upon doing so, discovered a large cooler in the trunk of the vehicle. The officer received permission to inspect the cooler, which contained eight short black bass. Upon inspection of an additional cooler, the officer located more violations. In all, the two subjects possessed 42 trout, 11 black bass, and one carp. The subjects received charges for joint possession of 32 trout over the legal limit and joint possession of eight undersized black bass.



A **wildlife officer** contacted three anglers who possessed 14 trout and one undersized black bass on a stringer. The limit for trout at this location is five per day, per person. When asked if they had any more trout, the group all said no. The officer located a cooler amongst the group, and upon inspection found an additional 64 trout for a total of 78 trout and one undersized black bass. All three anglers received citations for jointly possessing 48 trout over the limit and one for possessing the short black bass.

WILDLIFE DISTRESS:

A **wildlife officer** responded to a mountain lion trapped in a fenced area near a housing community. The lion appeared to suffer minor injuries from trying to climb a chain link fence to escape. The officer was able to open a gate and with additional aid from other officers, they hazed the lion outside of the perimeter fencing where it escaped back into the wild.

Wildlife officers responded to a distressed elk entangled in a tarp. The elk was unable to free itself or to function normally, so the officers decided to tranquilize it and remove the tarp from his antlers. After short work and good success, the elk was set free from the tarp and left to resume normal activity.



Wildlife officers responded to a call of a large bird stuck under the front of a train. The bird was wedged between the engine and the front attached push guard along the train's travels. Upon arrival at the Union Pacific railyard, the officers determined the bird was a golden eagle. Union Pacific staff immediately removed the engine car from the rail line and began working to free the eagle. Once the officers gained access to the eagle, they were able to capture it and remove it from the confined area that pinned its wings and body. The eagle had minor injuries and appeared to be in shock, so officers transported it to wildlife care/rehab for treatment. The eagle made a full recovery with hopes to return it to the wild.



WILDLIFE CONFLICT:

Wildlife officers received a call from a homeowner for a mountain lion acting strange on his house porch in the middle of the afternoon. The lion exhibited aggressive behavior toward the homeowner through the sliding glass door. Responding officers met with the homeowner who described the lion as a very large adult with a broken back leg, appearing very sick and lethargic. Officers found lion tracks in the snow around the residence, showing the cat was dragging its back leg. After a short track, the officers located the lion concealed in a tall boulder pile between two nearby rural residences. The officers attempted to haze the lion out of the area, but due to the extent of the animal's injury, the lion did not move. Officers coordinated with the local wildlife biologist by phone, and agreed the best course of action was to euthanize. Once successfully euthanized, the officers discovered the lion was extremely emaciated and had a broken femur.



Wildlife officers responded to a report of a mountain lion in a neighborhood next to a golf course. The lion was unable to find its way out due to high fence golf ball netting. The lion appeared blind in one eye, which made hazing and directing it toward a fence opening even harder. To prevent stressing and agitating the lion further, the officers successfully tranquilized and transported it. The mountain lion was successfully released without incident into the wild.



UNLAWFUL POSSESSION:

Wildlife officers received a CalTIP report of possible illegal possession of alligators. Officers responding to the reported address located two 3-year-old alligators approximately three to four feet long. The resident explained she was happy to turn over the alligators to a licensed facility, claiming they belonged to her recently deceased boyfriend. The officers seized the alligators and turned them over to a proper care facility.



Wildlife officers received a CalTIP regarding a raccoon being kept as a pet. Responding officers stood on the front porch and could see through the front window a large dog cage with a full-grown raccoon inside. The officers contacted the resident who referred to the raccoon as a pet and said they found it nine months prior as an infant before bringing it home and bottle-feeding it. The owner admitted never attempting to find a rehabilitation facility to take the wild animal. The animal was seized and taken to a nearby Zoo for safe and proper care. The staff hopes to utilize the animal for public education opportunities during tours of the facility.

GENERAL ENFORCEMENT:

Wildlife officers conducting routine patrols heard a call from the sheriff's office dispatch of a possible homicide at a residence near their location. Hearing further traffic that the nearest sheriff's deputy was approximately 50 minutes away from the remote area of the county, the two wildlife officers advised they were responding. The officers conducted a search of the property for suspects or victims needing assistance. The officers found two deceased victims and a semiautomatic handgun on the floor inside the residence. The victims appeared to have died from gunshot wounds. The officers secured the scene and awaited for the Sheriff's Deputies to arrive.

Wildlife officers assisted in a multi-agency suspect search after a vehicle chase ended in a foot pursuit. After an exhaustive and thorough search with no suspect located, many of the officers from various agencies left the scene. As a couple remaining wildlife officers continued to look around, they located the suspect fleeing through the woods. Wildlife officers detained the man without incident and turned him over to the pursuing agency. Follow-up on the vehicle the suspect was driving revealed it was stolen moments before the pursuit began. Officers located Heroin and a loaded syringe in the vehicle as well.

Wildlife officers heard a report a suspect stole property from a motorcyclist and was fleeing in a vehicle, along with the vehicle description. Officers observed the suspect vehicle traveling in the opposite direction of them, before immediately turning around and conducting an enforcement stop. Upon contact, officers saw the stolen property in plain view on the passenger seat and floorboard of the vehicle. Wildlife officers detained the suspect until Sheriff's Deputies arrived and arrested the suspect.

A **wildlife officer and K9** were called to assist with an incident involving a student that posted on social media, plans to "shoot the school up" as well as a posted photograph of a handgun. School Officials locked the school down in the event the student was in possession of the suspected firearm. The wildlife officer and K9 conducted an area search of the school grounds where a firearm would most likely be hidden. After a lengthy search, no firearm was recovered. The following day, a search warrant was executed at the student's residence, where the K9 was deployed to locate a suspected firearm. No firearm was located.

A **Wildlife officer** responded and assisted with the active shooter at a local hospital. The officer assisted with locking down the facilities, escorting residents and hostages out of the danger area and back to their rooms, along with security of the hot zones.

PUBLIC OUTREACH:

Wildlife officers met with students of an Administration of Justice program run through a local High School. The officers answered questions regarding job responsibilities, education requirements and hiring opportunities. Students were allotted additional time to get a close up look of a patrol vehicle.



A **wildlife officer and K9** conducted a presentation at a science based grade school for students who were studying the five senses. The team demonstrated canine sense of smell by conducting numerous area searches in the schoolyard, followed by allowing the students to ask questions. Additionally, students enjoyed playtime with the K-9 after the presentation.

RESCUE EFFORTS:

A **wildlife officer** came upon a traffic accident whereby the driver suffered a medical emergency while driving causing him to crash into a concrete wall. The officer accessed the victim noting his lips were blue, pupils dilated and did not have a pulse. A bystander helped the officer get the victim from the truck and begin CPR. The officer continued CPR until county paramedics arrived and took over. The officer was called later that night and advised the victim was in guarded condition, but alive.

A **wildlife officer**, returning from teaching a First Aid course, came across a minor vehicle accident blocking the number one lane of a major highway. After assisting the drivers to move their vehicles onto the shoulder, the officer was waiting for the tow truck to arrive. Suddenly the officer heard the loud screeching noise of tires and brakes from up the road. The officer looked and saw a five-vehicle accident approximately 50 yards back from the previous accident. He immediately responded to the accident, requested additional resources, and began triaging and treating victims. Fifteen people were involved and 11 were transported by ambulance, including a 5-month-old infant and a disabled adult.

Wildlife officers were conducting a vessel patrol when an emergency distress call came from a nearby dive charter vessel. The vessel was requesting assistance from the US Coast Guard for a diver that had ascended too quickly from roughly 40 feet. Within five minutes of hearing the distress call, the wildlife officers were on scene, assessing the condition of the victim and relaying information to an incoming USCG helicopter. The victim was conscious, alert, and had strong vitals, but complained of pain to the back of her head/neck. The victim was eventually hoisted by basket into the USCG helicopter and taken to a hyperbaric chamber for decompression.



DISPOSTIONS:

A **wildlife officer** received a disposition on a Pismo clams case involving four subject who took 69 undersized clams, the group was ordered to pay a total of \$5,000 in fines.

A **wildlife officer** appeared in court for a Pismo clams case. The subject received a fine of \$3,500 for the take of an over limit of Pismo clams.

A **wildlife officer** appeared in court for an undersized lingcod case. The subject was found guilty and received a fine of \$899.

A **wildlife officer** appeared in court for a case involving an over limit of sand crabs and an unlicensed angler. Both subjects were found guilty after a brief trial. One subject received a fine of \$750 for the over limit, the second received a fine of \$900 for the over limit and a fishing license violation.

A **wildlife officer** appeared in court for two cases. One subject was found guilty of possessing unfeathered doves and received a fine of \$238. The second subject was found guilty of possessing undersize CA halibut and received a fine of \$500.

A **wildlife officer** appeared in court for an abalone case. The subject was found guilty by a jury of taking 12 abalone over the limit and received a sentence of \$2,500 in fines, 100 hours community service, two years' probation, and two years' license revocation.

A **wildlife officer** received disposition of an abalone case. The subject received a fine of \$4,500 for possession and sale of sport caught abalone in a marketplace.

A **wildlife officer** appeared in court for two commercial fishermen crabbing in a closed marine protected area. Both subjects pled no contest; one subject received a fine of \$6,000, probation and forfeiture of gear. The second subject received a fine of \$5,000 and probation.

A **wildlife officer** appeared in court for illegal night hunting. The subject pled guilty and received a fine of \$3,000 and three years' probation.

A **wildlife officer** received disposition on a case involving taking a bear without a tag/license and tag fraud. The subject received a fine of \$1,000, three days of community service, three years of probation, and ordered to pay restitution to the butcher who processed the meat seized.

A **wildlife officer** appeared in court on a highly publicized case involving taking a deer in a residential neighborhood, caught on security cameras. The subject received a fine of \$1,000, 30 days of community service, three years of probation (with no hunting), and forfeit of equipment and deer meat.



Marine Region Update

**California Fish and Game Commission
Sacramento, CA
June 20, 2018**



**Craig Shuman, D. Env. , Marine Regional Manager
California Department of Fish and Wildlife**



MARINE REGION

2017 YEAR IN REVIEW



Palos Verdes Peninsula
in southern California
photo courtesy BLM

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www.wildlife.ca.gov/Fishing/Ocean/Year-In-Review



Spiny Lobster Fishery Management Plan Harvest Control Rule Annual Review for 2016-17

Lobster FMP adopted in 2016

- Requires annual review of the status of the fishery and resource using reference points for:
 - Catch
 - CPUE
 - Spawning Potential Ratio (SPR)

Annual Review includes:

- Status of the three reference points
- Commercial fishery trends
- Overview of Department research



Spiny Lobster Fishery Management Plan Harvest Control Rule Annual Review for 2016-17

Reference point values are in good standing

Reference Point	Action Level	2016-17 Season Value	Result
Catch	0.9	1.05	No Action Required
CPUE	0.9	0.95	No Action Required
SPR	25	35	No Action Required



Spiny Lobster Fishery Management Plan Harvest Control Rule Annual Review for 2016-17

Fishery Trends

- Commercial effort and catch shifting north in recent years
- Report explores how this trend may affect reference values

Ongoing Department Research

- Exploring relationship between larval recruitment and catch
- Collaborating with buyers to collect size data; key variable in the SPR model





Spiny Lobster Fishery Management Plan Harvest Control Rule Annual Review for 2016-17

More Information:

www.wildlife.ca.gov/Conservation/Marine/Lobster-FMP

The screenshot shows the California Department of Fish and Wildlife website. The header includes the "CA.GOV" logo, the department's name, and a search bar. A navigation menu contains links for Home, Fishing, Hunting, Licenses & Permits, Conservation, Learning, and Explore. The breadcrumb trail reads: [Home](#) | [Conservation](#) | [Marine](#) | [Lobster FMP](#). The main heading is "California Spiny Lobster Fishery Management Plan". Below it, a list of documents is shown, with the second item highlighted by a red box: "Final California Spiny Lobster FMP (PDF) (April 13, 2016)" and "Spiny Lobster Fishery Management Plan Harvest Control Rule Annual Review for 2016 - 17 (PDF) (April 9, 2018)". To the right is a photograph of a spiny lobster on a rocky seabed.

CA.GOV

CALIFORNIA DEPARTMENT OF FISH & WILDLIFE

California Department of Fish and Wildlife

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Home Fishing Hunting Licenses & Permits Conservation Learning Explore

[Home](#) | [Conservation](#) | [Marine](#) | [Lobster FMP](#)

California Spiny Lobster Fishery Management Plan

- Final California Spiny Lobster FMP (PDF) (April 13, 2016)
- Spiny Lobster Fishery Management Plan Harvest Control Rule Annual Review for 2016 - 17 (PDF) (April 9, 2018)

The California spiny lobster is an important natural resource managed by the state of California for over 100 years. The species supports a valuable commercial fishery and a significant recreational fishery, and acts as an important keystone predator within the southern California nearshore ecosystem. Beginning in the spring of 2012, the California Department of Fish and Wildlife (CDFW) conducted a comprehensive review of the California spiny lobster fishery to develop a management framework in the form of a Fishery Management Plan (FMP) under the

A photograph of a spiny lobster on a rocky seabed. The lobster is reddish-orange with long antennae and legs.



MARINE REGION

2017 YEAR IN REVIEW

Palos Verdes Peninsula
in southern California
photo courtesy BLM

A Message From Craig Shuman, Marine Region Manager

Our charge to protect, maintain, enhance, and restore California's marine ecosystems often ends up being a balancing act. Sometimes taking a "hands off" approach achieves our goal, while at other times we find it necessary to intervene.

One of our ongoing efforts to intervene continues to pit Region scientists and many of our partners against the [extinction of a species, the white abalone](#) (*Haliotis sorenseni*). In 2017, over 16,000 white abalone raised in a captive breeding program reached their first birthday, a milestone we celebrated with multiple agencies and institutions. These young mollusks may help increase the numbers of a federally listed endangered species.

It has been a rough year for more than one species of California abalone. Red abalone in northern California continued to struggle in starvation conditions brought about by large-scale ecological changes. California Department of Fish and Wildlife scientific divers, university divers, and others surveyed the equivalent of 4½ football fields across 11 northern California underwater sites in a heroic effort to gauge the status of red abalone and its habitat. Their findings led to an unprecedented recommendation to close the fishery.

For the third year in a row, high levels of domoic acid delayed parts of the commercial Dungeness crab season, and, for the first time, closed the commercial spiny lobster

fishery in some areas off the northern Channel Islands for three months. The recreational razor clam fishery remained closed in 2017 due to elevated domoic acid levels.

The sometimes gloomy developments of 2017 were balanced by a variety of positive events. Monitoring surveys found large numbers of young California Halibut, especially in San Francisco Bay – good news for fishermen in years to come. Seven new state saltwater angling records were set in 2017, with two brand new species entering the record books. Strict protections for rockfish were in part responsible for Bocaccio and Darkblotched Rockfish stocks being declared rebuilt and healthy in 2017 – a testament to the hard work and sacrifice of all those involved in the rebuilding plans for these species. Staff who monitor and manage the state's marine protected areas shifting their focus from initial surveys to long-term monitoring, and the approaching deployment of improved fishery data collection systems were all welcome signs of progress.

For myself and Marine Region staff, striving for balance across the many facets of our charge is a daily challenge we celebrate, learn from, and almost always welcome. In 2017 we continued sampling, testing, calculating, communicating, and monitoring to take stock of multiple situations, fisheries, and habitats, with an overarching goal of safeguarding the ocean environment for its ecological value and for everyone's use and enjoyment.

Marine Region Mission: To protect, maintain, enhance, and restore California's marine ecosystems for their ecological values and their use and enjoyment by the public through good science and effective communication.

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2017 Region-Wide Accomplishments, By The Numbers...

Sampled over **700 Kelp Bass** and **150 Barred Sand Bass** to evaluate sport fishing regulation changes

Processed **19,250** commercial passenger fishing vessel e-log submissions on the new electronic log system

Helped to produce **16,000 1-year-old white abalone**, a federally listed endangered species, as part of a joint captive breeding program

Contacted over **100,000** saltwater anglers. Observed and identified almost **196,000** fish and invertebrates, and measured almost **100,000** fish and invertebrates

Registered **7** new state diving and angling records

Entered about **53,000** commercial landing receipts

Sampled **nearly 28,000** salmon in the sport and commercial ocean salmon fisheries and processed **about 7,500** tags to determine the age, origin and other information for hatchery fish

Reviewed over **650** environmental documents

Helped to rebuild **2 groundfish stocks** - Bocaccio and Darkblotched Rockfish - to healthy status

State-Managed Marine Species Programs

These programs are responsible for fisheries managed by the State alone.

Abalone –

Recreational Red Abalone Fishery – Ocean conditions continued to negatively impact abalone resources in northern California. Ocean warming, coupled with a disease that affected sea star populations and a massive purple sea urchin population explosion, took their toll on red abalone in 2017 despite the return of cooler water temperatures.

The spring of 2017 saw continued starvation conditions for red abalone. Fishery-wide, 25 percent of the catch exhibited shrunken foot/body size with little reproductive tissue. Reproduction was poor in the fishery with few larvae or newly settled red abalone found during the summer of 2017. Dive survey efforts were stepped up in 2017, with divers surveying more than the equivalent of 4½ football fields of area across 10 fished sites and one marine protected area site.

Surveys revealed that the poor kelp and algal conditions along with large numbers of herbivorous purple sea urchins resulted in major mortality of red abalone in 2017. Red abalone densities dropped below the fishery closure level prescribed in the Abalone Recovery and Management Plan (less than 0.3 abalone per square meter). Average overall density for the 10 fished sites was 0.15 abalone per square meter, with an average 37 percent mortality rate across the fishery.

These dire, unprecedented results forced the California Department of Fish and Wildlife (CDFW) to recommend fishery closure to the California Fish and Game Commission in August 2017. After a meeting to discuss the findings in October, the Commission voted to close the 2018 fishery on December 7, 2017 with a one year sunset period, during which the Commission will revisit the fishery closure for 2019 and beyond.

A draft red abalone management framework developed in conjunction with fishery partners was presented to

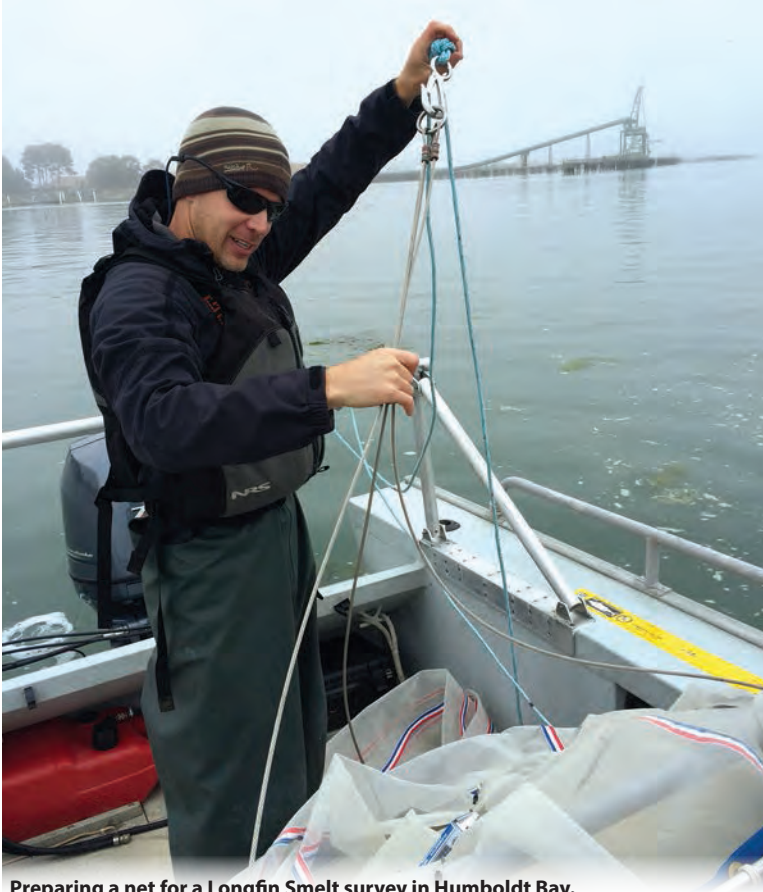
the Commission in December. The Nature Conservancy also developed a draft management framework. Both draft frameworks will be shared with the Recreational Abalone Advisory Committee and undergo independent scientific review in 2018.

Staff co-authored a paper published in scientific literature on the impacts of climate change on red abalone settlement and recruitment (O'Leary, J.K., Barry, J.P., Gabrielson, P.W., Rogers-Bennett, L., Potts, D.C., Palumbi, S.R., F. Micheli 2017. Calcifying algae maintain settlement cues to larval abalone following algal exposure to extreme ocean acidification. *Scientific Reports*. 7: article 5774 doi:10.1038/s41598-017-05502-x). The team worked with researchers at Stanford's Hopkins Marine Station to investigate the possible impacts of ocean acidification on the productivity of red abalone.

Abalone Restoration - Captive Breeding Program for Endangered White Abalone – The White Abalone Restoration Consortium (consisting of CDFW, university, federal, and aquarium scientists), which focuses on restoration of the critically endangered white abalone, continued their very successful work in 2017. The captive breeding program housed at the Bodega Marine Lab had its most productive year in 2017, producing twice as many 1-year-old white abalone (16,000) as the year before. The project also secured approval from NOAA



Empty red abalone shells off the town of Elk in northern California bear witness to an ongoing major mortality event
photo by K. Joe



Preparing a net for a Longfin Smelt survey in Humboldt Bay.
CDFW photo by K. Ramey

to check on the growth and survival of the red abalone stocked at the two sites.

For more information about abalone, visit the CDFW website at wildlife.ca.gov/Conservation/Marine/Invertebrates/Abalone.

Barred Sand Bass and Kelp Bass – To help evaluate the 2013 regulation changes for the basses, staff completed 14 sampling trips aboard commercial passenger fishing vessels to collect information on numbers, sizes, and mortality of released fish. Staff collected data on over 700 Kelp Bass and 150 Barred Sand Bass.

Between June and August 2017, staff completed sampling for a study on Kelp Bass that assesses food web dynamics as an indicator of ecosystem health in marine protected areas. Fin and muscle tissue samples were taken from a total of 63 Kelp Bass in marine protected areas and control sites at Anacapa and Santa Cruz islands, in addition to 85 Kelp Bass sampled at Catalina Island in 2016. Staff analyzed both tissue types to create estimates of the feeding level of Kelp Bass within the ecosystem.

Fisheries to collect 10 additional wild adult white abalone to supplement the broodstock for the 2018 spring spawn.

As part of this work, staff have been modeling restoration options to help determine factors affecting the success of white abalone restoration, such as abalone density, habitat quality, ocean warming, and poaching, and have published a paper on the work (see *Li, Y. and Rogers-Bennett, L. 2017. Evaluating factors affecting restoration of an endangered marine broadcast-spawning invertebrate using an individual-based model of white abalone. Endangered Species Res. 32:293-308. doi:10.3354/esr00804*).

Restoration of Abalone in Southern California – Staff led the effort to test methods for successful white abalone stocking and restoration, while also working towards restoring red abalone stocks in southern California in support of Abalone Recovery and Management Plan goals. The work is primarily designed to inform methods for future stocking and restoration of critically endangered white abalone, as well as aid in the restoration of red abalone, which once formed the basis for important fisheries in the region. Juvenile red abalone produced in aquaculture facilities were purchased, tagged and released into suitable habitat at two sites along the mainland coast: 3,200 juveniles off Los Angeles (January 2016) and 6,400 juveniles off San Diego (February 2017). In 2017, staff conducted surveys

Staff completed all field and laboratory work on age and growth for both Kelp Bass and Barred Sand Bass. The oldest aged fish was also the largest in our sample at 25 years old and 23.6 inches (600 mm) total length. Growth did not differ between males and females. Staff completed a pilot study to develop a new fishery-independent monitoring plan for Barred Sand Bass during the summer. Staff using scuba completed monthly fish surveys between June and October at natural and artificial reefs near Los Angeles Harbor and the Palos Verdes Peninsula. In addition, baited remote underwater video stations were constructed and deployed at each site over the same time frame. Both divers and the video stations successfully recorded Barred Sand Bass. Staff presented preliminary results at CDFW's Science Symposium in November.

For more information about bass research and management, visit the CDFW website at wildlife.ca.gov/Conservation/Marine/SCFRMP.

Bay Management – Staff conducted two onboard observations of the commercial bay shrimp fishery in San Francisco Bay, documenting the trawling process, catch, bycatch, and fishing locations. Participation in the bay shrimp fishery is increasing.

As part of a multi-year ecological study in Drakes Estero, Point Reyes National Seashore, staff divers conducted the first round of post-restoration surveys following removal of the wooden rack infrastructure that was associated with a decades-long oyster operation.

Staff collaborated with the Environmental Review and Water Quality Project staff to survey the Russian and Navarro river estuaries (Estero Americano and Estero San Antonio) for eelgrass, which completes a three-year effort to update the statewide eelgrass spatial database.

Staff assisted the Invertebrate Management Project in coordinating the collection of Dungeness crab from commercial fishermen in Crescent City, Trinidad, and Eureka for domoic acid testing. Staff also collected and shipped razor clam samples for domoic acid testing. Razor clams continued to test above the alert level for domoic acid, and the fishery remained closed in northern California.

Staff actively sampled for Longfin Smelt in Humboldt Bay and two main tributaries to the bay as part of a State Wildlife Grant Program-funded project to evaluate the spawning and larval distribution of Longfin Smelt in the bay and tributaries.

Staff collaborated with various researchers throughout the year on studies focused on Humboldt Bay including the following: Dr. John Chapman from Oregon State University sampling for the presence of the mud shrimp, *Upogebia pugettensis*, as part of his research; Jim Kaldy of the U.S. Environmental Protection Agency and visiting Chinese scientists in their efforts to collect samples of the non-native eelgrass, *Zostera japonica*, as part of a West Coast genetic study; and researchers from Humboldt State University, California Sea Grant, and the Wiyot Tribe who are expanding the ongoing eelgrass monitoring study as part of an eelgrass/ocean acidification project in the bay.

For more information about saltwater bay management, visit the CDFW website at wildlife.ca.gov/Conservation/Marine/ABMP.

Box Crab – Landings of box crab incidental to other targeted trap fisheries increased dramatically in 2017. The California Fish and Game Commission received two petitions for experimental gear permits to target box crab in 2017. CDFW staff presented the best available information on the species and its regulatory status to the Commission's Marine Resources Committee at its November meeting. As directed by the Commission at its December meeting, staff are working on a two-step process to manage the increase in landings and to determine sustainability. First, a regulatory proposal to limit incidental take in other fisheries is in development. Second, staff are working with fishermen and other partners to explore the feasibility and potential outcomes of an experimental gear permit and associated research.

For more information about box crab, read this NOAA Fisheries report on underutilized species: <https://swfsc.noaa.gov/publications/CR/1992/9248.PDF>.

California Halibut – Staff continued observations and sampling of the California Halibut fisheries in central California. Fishing effort and success increased in 2017 compared with the recent past. Commercial landings were sampled dockside, bycatch samples collected, and observations made onboard commercial hook-and-line vessels, commercial trawl vessels, and commercial passenger fishing vessels. Staff also continued sampling from a fishery-independent research trawl vessel and sampled at a halibut derby. Due to recent episodes of good recruitment likely associated with prolonged warm water events, increased encounters with undersized California Halibut occurred in the hook-and-line fisheries, particularly inside San Francisco Bay. Staff worked with



California Halibut and other bottom fishes on the deck of the trawler F/V Verona in the Gulf of the Farallones. CDFW photo by K. Lesyna



CDFW Scientific Aid Marisa Morse measures a spiny lobster taken off Anacapa Island for domoic acid testing
photo by D. Stein

California Spiny Lobster – The 2016-17 lobster fishing season saw nearly 670,000 pounds of lobster landed by the commercial fishery, a 16 percent decline from the previous season. The 2016-17 recreational lobster season saw a lobster report card return rate of 50 percent. The estimated catch for the recreational fishery was approximately 271,000 pounds, or 29 percent of the total (commercial plus recreational) catch.

New regulations for the commercial and recreational fisheries went into effect on April 1, 2017, to implement the [Spiny Lobster Fishery Management Plan](#). Regulation changes include a new commercial lobster trap limit and trap tag program as well as new recreational gear marking requirements beginning with the 2017-18 season. Staff answered a variety of questions from the public regarding the new trap tag program and regulations.

Staff observed a decline in commercial catch-per-unit-effort (CPUE). For the 2016-17 season, the average catch was 0.41 legal-sized lobster per trap pull, while the 2015-16 season average catch was 0.47 legal-sized lobster per trap pull. Staff also observed a significant shift in commercial fishing effort to the Santa Barbara-Ventura area and the northern Channel Islands from the rest of southern California. Further adjustments within the commercial fishery are expected with the implementation of the new trap limit. Staff will continue to monitor and manage the fishery as prescribed by the Spiny Lobster Fishery Management Plan harvest control rules, in response to changes in the fishery and ocean conditions.

As part of the continuing effort to implement the Spiny Lobster Fishery Management Plan, staff and a team of CDFW Natural Resource Volunteers completed a first-ever survey of lobster report card purchasers to help evaluate report card data. The survey concluded that while report card data provide a reliable estimate in terms of catch, overall effort may be underestimated. Staff will assess how future surveys can be refined to improve effort estimates for the recreational fishery.

Due to human health concerns caused by high levels of domoic acid in lobster, waters around Anacapa Island, Ventura County, the east end of Santa Cruz Island, Santa Barbara County were closed to the commercial take of spiny lobster on October 24, 2017, as recommended by state health agencies. Staff coordinated with the California Department of Public Health and the Office of Environmental Health Hazard Assessment to inform the public and commercial fishery participants of the area

recreational and commercial fishermen to create a [guide outlining the best methods for handling and releasing undersized fish](#).

Using the assessment program Stock Synthesis, staff worked towards completing two separate stock assessments for California Halibut: one north and one south of Point Conception. Staff analyzed over three million CPFV logbook records and produced a model that generated a relative abundance index for six regions along the California coast. Staff also analyzed length composition data from the recreational and commercial fisheries dating back to 1971 and produced figures that summarize changes in length composition.

In Southern California a total of 36 California Halibut were sampled from commercial markets, recreational launch ramps, fishing derbies, and fishery-independent trawl surveys; the largest weighed 28 pounds. Additionally, 122 juvenile California Halibut were caught during a research trawl as part of a pilot study to acquire an index of juvenile California Halibut abundance across multiple embayments and offshore locations in Southern California.

For more information about California Halibut, visit the CDFW website at wildlife.ca.gov/Conservation/Marine/NCCFRMP/Halibut-Studies.

closures via press releases and updates on the CDFW California Spiny Lobster website. Staff provided lobster samples to the California Department of Public Health from November to December. The commercial spiny lobster fishery closure was lifted on January 25, 2018.

For more information about California spiny lobster, visit the Marine Region website at wildlife.ca.gov/Conservation/Marine/Invertebrates/Lobster.

Clams – Northern California supports active recreational clam fisheries that primarily target Pacific gaper clam. CDFW conducted four days of creel surveys in the spring of 2017 at Tomales Bay, the largest site in the fishery. Samplers conducted 114 interviews and measured 6,496 clams of eight different species, with Pacific gaper clams making up 92 percent of the catch. Samplers also interviewed clambers at Bodega Harbor (Bodega Bay) on the same low tide, conducting 57 interviews and measuring 1,035 clams comprised of eight species. Both Pacific gaper clams and Washington/butter clams (*Saxidomus nuttalli*) were targeted at Bodega Harbor, with the two species accounting for 63 percent and 23 percent of the catch, respectively.

Razor Clams – The recreational razor clam fishery closure in Humboldt and Del Norte counties continued in 2017 due to high levels of domoic acid. Staff and volunteers carried out opportunistic sampling during good weather windows and minus tides throughout the year. In Humboldt County, samples were collected monthly during the first part of the year where tissue samples continued to exceed the alert level for domoic acid of 20 parts per million (ppm). Samples were generally greater than 100 ppm. During the last two months of the year, samples tested high with many clams over 100 ppm and one sample testing as high as 390 ppm. In Del Norte County, samples were only collected in November and all tested above 100 ppm.

For more information about clams, visit the Marine Region website at wildlife.ca.gov/Conservation/Marine/Invertebrates/Bivalves.

Diving Safety Program – CDFW divers completed more than 3,000 scuba dives in 2017, which equaled 63 days of bottom time. This is the greatest level of diver activity recorded in more

than 10 years. Driving the increased activity were law enforcement staff conducting patrol-related diving work, and biological staff continuing research and monitoring efforts for fisheries management and conservation work. CDFW divers also participated in annual continuing education and requalification workshops held at three locations statewide. In addition, six new candidates qualified as CDFW scientific divers following successful completion of the 100-hour CDFW training held at Catalina Island. The year also saw an unprecedented level of collaboration underwater among universities and agencies, with nineteen organizations providing more than 70 visiting divers to CDFW for collaborative field projects.

For more information about the Diving Safety Program, visit the CDFW website at wildlife.ca.gov/Conservation/Marine/Diving-Safety.

Dungeness Crab – Although the commercial fishery began on time at the start of the 2016-17 Dungeness crab season, some areas continued to be subject to domoic acid delays, with the last area opening to fishing on January 16, 2017. The California Fish and Game Commission, in consultation with the California Department of Public Health and the Office of Environmental Health Hazard Assessment, recommended opening the recreational fishery on time with a health advisory in place for these same areas. Commercial landings for the season, at 22.7 million pounds, are the highest in recent seasons. However, 2016-17 landings are only slightly above the 10-season average of 18.4 million pounds. Both management areas, divided at the Sonoma/Mendocino county line, contributed equally to the 2016-17 landings total.



Razor clam tissue samples tested by the California Department of Public Health continued to exceed the alert level for domoic acid in 2017, and the fishery remained closed. CDFW photo by J. Ray



Fisherman brings aboard a pot full of Dungeness crab
CDFW photo

A new approach to declaring fishery delays and closures was enacted by the adoption of California Fish and Game Code Section 5523 on January 1, 2017. The new legislation authorizes the CDFW Director to close and restrict any fishery in state waters if the Director of the Office of Environmental Health Hazard Assessment, in consultation with the California Department of Public Health, determines that any species of fish is likely to pose a human health risk due to high levels of toxic substances. Conversely, when the Office of Environmental Health Hazard Assessment determines that a health risk no longer exists in a closed area, the CDFW Director must open the fishery and lift any restrictions. With this new authority in place, the Director is responsible for declaring fishery closures for both the recreational and commercial fisheries.

The Dungeness Crab Fishing Gear Working Group met several times throughout the year to continue to focus on whale entanglement risk and reducing interactions with Dungeness crab fishing gear. [New research](#) supported by the working group has shown that the presence of certain forage species can be predicted by observing ocean conditions. If conditions are optimal for krill, the preferred forage species for humpback whales, the whales will feed offshore and potentially have a lower risk of interacting with Dungeness crab gear, which is set near shore. However, if the whales switch to anchovies because ocean conditions favor anchovies over krill, whales will feed closer to shore and entanglement risk will likely increase.

This new information prompted the group to create the [Risk Assessment Mitigation Program](#) as a risk assessment tool that uses scoring factors such as whale presence,

forage species and fishing effort at key time periods during the fishing season to assess whale entanglement risk and provide the fleet with management measures that adaptively respond to increased risk scenarios. The Dungeness Crab Fishing Gear Working Group began piloting the Risk Assessment Mitigation Program at the start of the 2017-18 season in November, with the intention of incorporating it as a permanent strategy to combat whale entanglements in the Dungeness crab fishery.

In addition, the Dungeness Crab Fishing Gear Working Group released an updated

[Best Practices Guide](#) for the current fishing season. The Guide raises awareness within the fishing fleet by highlighting voluntary measures that fishermen can observe, such as maintaining gear in good working condition and shortening surface lines, in an effort to reduce the risk of whale entanglements.

No delays occurred in the Central Management Area (south of the Sonoma/Mendocino county line) for the start of the 2017-18 commercial season, while the Northern Management Area was delayed due to pre-season quality test results indicating that crab were not yet filled out following the molting period. The area opening was delayed until January 15, 2018, the latest the season can be delayed by poor quality test results. By that time, any northern California health advisories for the recreational fishery due to domoic acid had cleared, so the commercial season was not further delayed.

In 2017, staff sampled two locations in central California daily for Dungeness crab larvae during the spring months. These samples contained the lowest cumulative totals yet recorded in the 11-year time series. The data collected from the sampling is helping CDFW scientists understand the recruitment dynamics of the crab fishery. This was also the fifth year of collaboration with California State University Monterey Bay undergraduates, who conducted the sampling at Moss Landing.

For more information about Dungeness crab, visit the CDFW website at wildlife.ca.gov/Crabs.

Giant Red Sea Cucumber and Ridgeback Prawn

– Staff continued to assist in assessing the spatial distribution of trawl activity to inform the essential

fisheries habitat knowledge base, and other conservation area designations. Staff also continued to assist NOAA Fisheries with observation of invertebrate trawl activities.

For more information about giant red sea cucumber and ridgeback prawn, visit the CDFW Invertebrates web pages at wildlife.ca.gov/Conservation/Marine/Invertebrates.

Giant Sea Bass – Staff completed analyses that assessed the incidental catch of Giant Sea Bass in both the recreational and commercial fisheries. Although prohibited to take since 1981, regulations allow one Giant Sea Bass to be retained per vessel when incidentally caught in gill nets. Giant Sea Bass incidental gill net catch has declined dramatically since 1994 when gill netting was banned in state waters, and has continued to decline with decreasing gill net fishing pressure.

For more information about Giant Sea Bass, [read this chapter in the CDFW Status of the Fisheries report](#).

Kelp and Other Marine Algae – Staff continued work on commercial kelp and other marine algae rulemaking activities, including: providing notification of the rulemaking to Tribes, kelp harvest permittees, and interested stakeholders; researching marine algae life histories and sustainable harvest methods; presenting updates to the California Fish and Game Commission's Marine Resources and Tribal committees, and meeting with the InterTribal Sinkiyone Wilderness Council to discuss Tribal concerns regarding the rulemaking.

Staff finalized the 2016 aerial kelp survey shapefiles and posted them on CDFW's [MarineBIOS](#), a marine and coastal data viewer. The 2016 aerial kelp survey data was also featured in a CDFW [Science Spotlight article](#).

Staff provided reviews and feedback on various projects involving kelp and marine algae, including a request from Catalina Sea Ranch to collect giant kelp, *Gracilaria*, and dulse for their offshore mariculture farm, and review of The Bay Foundation's urchin suppression/kelp restoration study at Palos Verdes. Letters of Authorization were issued to the Wrigley Institute of Environmental Studies to outplant kelp for a biofuel study, and to the Partnership for the Interdisciplinary Studies of Coastal

Oceans to conduct ongoing *Fucus* sp. transplant and restoration work in San Francisco Bay.

For more information about kelp and other marine algae, visit the CDFW website at wildlife.ca.gov/Conservation/Marine/Kelp.

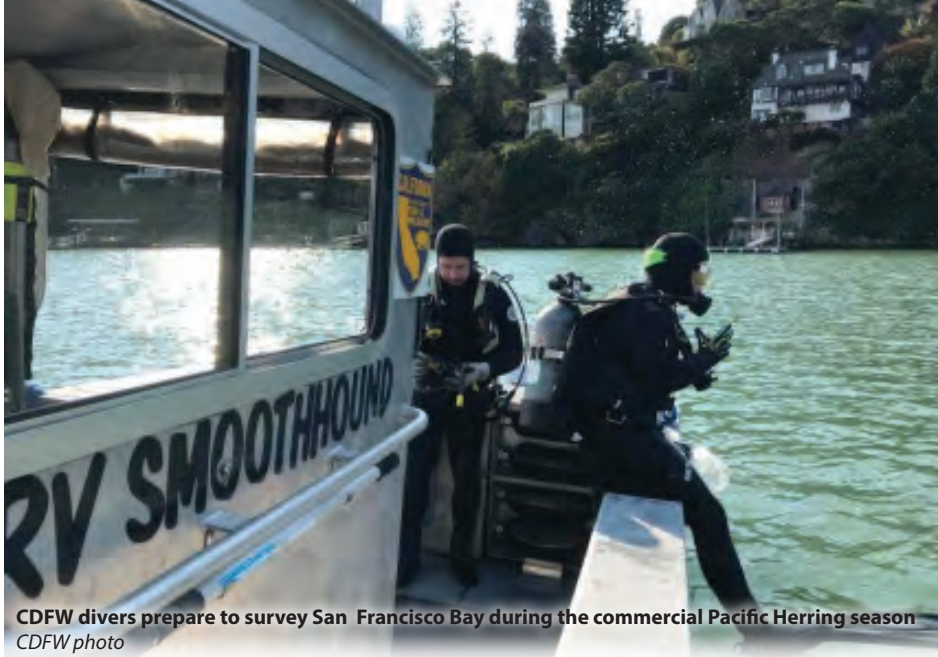
Marine Aquaculture – Staff compiled a variety of aquaculture-related data in response to multiple Public Records Act and other requests. With assistance from the Environmental Review and Water Quality Project, staff completed several lease inspections to document existing aquaculture infrastructure in Tomales Bay, in an effort to develop a baseline map for clean-up cost estimates for all state-managed leases. Staff engaged in a California Fish and Game Commission rulemaking effort to develop best management practices for mariculture activities in the state, and participated in a stakeholder meeting at Tomales Bay. Staff processed, reviewed, and approved 52 Live Importation Permits, reviewed and approved 60 Aquaculture Registrations and one Private Stocking Permit, prepared four Wild Broodstock Collecting Permits, prepared four Letters of Authorization, and reviewed and approved eight Restricted Species Permits.

For more information about marine aquaculture, visit the CDFW website at wildlife.ca.gov/Conservation/Marine/ABMP/Aquaculture.

Marine Life Management Master Plan – In collaboration with Tribes and stakeholders, CDFW continued to make progress on the amendment of the Marine Life Management Act (MLMA) Master Plan for Fisheries. A series of stakeholder discussions via webinars and informational updates at Marine Resources Committee and Fish and Game Commission meetings were held



Giant red sea cucumber
photo by C. Bauder



CDFW divers prepare to survey San Francisco Bay during the commercial Pacific Herring season
CDFW photo

For more information about the Ocean Resources Enhancement and Hatchery Program, visit the CDFW website at wildlife.ca.gov/Conservation/Marine/ABMP/OREHP.

Pacific Hagfish – Program staff sampled the Pacific Hagfish fishery at Port San Luis, Morro Bay, Moss Landing, and Eureka. Despite market demand fluctuations, commercial landings for Pacific Hagfish have remained relatively stable since 2007, ranging from one to two million pounds annually. In 2017, market orders from Korean importers were reduced, causing exporters to

to inform the development of the draft framework for MLMA-based management, the draft 2018 Master Plan, and associated Information-gathering projects. Feedback from Tribes was solicited through letters and updates at the Commission's Tribal Committee meetings. An initial draft of the 2018 Master Plan was released for Tribal and stakeholder review and comment in Fall 2017. It is anticipated the Commission will adopt the 2018 MLMA Master Plan in mid-2018.

For more information about the MLMA Master Plan amendment process, visit the CDFW website at wildlife.ca.gov/Conservation/Marine/MLMA/Master-Plan.

Ocean Resources Enhancement and Hatchery Program

– In collaboration with California Sea Grant, staff completed the multi-year evaluation of the Ocean Resources Enhancement and Hatchery Program. The evaluation report concluded that while the program has significantly contributed to the scientific understanding of marine enhancement science, it has not substantially increased the abundance of legal-sized White Seabass. The information generated by the program can be used as a learning experience for enhancement of wild populations, whether focusing on White Seabass or other species. CDFW will use this information along with public input to guide decisions regarding the future of the program. Additionally, staff worked with the CDFW's Office of General Council, Redondo SEA Lab, and the King Harbor Growout Facility to update the memorandum of agreement to allow continued use of the SEA Lab's facility for White Seabass growout.

place limits on their fishermen or to change practices. While California-caught Pacific Hagfish are normally exported live to Korea, exporters are experimenting with packaging frozen Pacific Hagfish. Effort and demand is driven by external market conditions such as the South Korean economy and the fishing activities of Oregon and Washington.

For more information about Pacific Hagfish, visit the CDFW website at wildlife.ca.gov/Conservation/Marine/NCCFRMP#29429329-hagfish.

Pacific Herring – Staff finalized the stock assessment model for the Pacific Herring population in San Francisco Bay, which will be used to support aspects of the Pacific Herring Fishery Management Plan, now in development. Staff continued to work on various aspects of the plan, including: soliciting feedback from permittees through a survey focused on permit structure, developing a collaborative research protocol, considering harvest control rules and a management strategy evaluation, and reviewing an ecosystem model that was developed by the Farallon Institute.

The 2016-17 Pacific Herring season in San Francisco Bay ended with a below average spawning biomass estimate of 18,300 tons. This was the third year in a row below the 40-year average of 49,400 tons, but an increase from the 2014-15 and 2015-16 seasons. There were 13 spawn events throughout the season, with the first recorded spawn of the season on December 14, 2016, and the last recorded spawn on February 27, 2017. The total fishery quota for San Francisco Bay was set at 834 short tons for the 2016-17 season. The gill net fishing fleet landed less

than five percent (37 short tons) of the San Francisco Bay quota during the commercial season. Staff monitored the Pacific Herring spawning population in Humboldt Bay and Crescent City and documented three and two spawn events there, respectively.

For more information about Pacific Herring, visit the Pacific Herring Management News blogsite at cdfwherring.wordpress.com and the CDFW website at wildlife.ca.gov/Fishing/Commercial/Herring.

Pacific Ocean (Pink) Shrimp – As directed by the California Fish and Game Commission, staff conducted a review of capacity for the northern fishery and presented findings to the Commission's Marine Resources Committee at its November meeting. As part of that review, staff joined their Oregon and Washington fisheries management counterparts, and representatives of the Marine Stewardship Council, to better understand the dynamics of the pink shrimp stock as a whole, seek opportunities for collaboration among the states, and promote potential certification for California. The Commission directed CDFW to propose new regulations to improve management of the fishery without increasing the number of permits at this time. Staff will work to bring a regulatory package to notice within the coming year. Staff also continued to bring fisheries-dependent datastreams up to date.

For more information about Pacific ocean shrimp, [read this chapter from CDFW's Status of the Fisheries report](#).

Research Vessel Operations – The R/V *Garibaldi* assisted in a variety of CDFW research studies as well as collaborative studies, from San Diego to Point Conception, including the Channel Islands. The vessel was at sea for 120 days on 32 cruises, traveled 4,165 nautical miles, and used 6,634 gallons of fuel. The R/V *Garibaldi* was in the boatyard for 63 days for routine maintenance and repairs to address hydraulic and steering issues.

An initiative to improve the Marine Region's capacity for research and monitoring was undertaken in 2017. With support from the Ocean Protection Council, the Region moved forward with needed research vessel repairs and replacements, and improvements to scientific diving infrastructure. Improvements to the aging research vessel fleet included:

- R/V *Garibaldi*, 45 ft., San Pedro - safety and operational improvements
- R/V *Irish Lord*, 26 ft., Ventura - operational improvements and repower
- New research vessel, 22 ft., San Diego - replaced non-functioning vessel
- New research vessel, 29 ft., Monterey - replaced aging vessel

Support for scientific diving projects was provided by the acquisition of two new breathing air compressor systems. All repairs and acquisitions will be completed and placed into service in 2018 and will be used to support ongoing fishery management and marine protected area monitoring efforts in northern and southern California.

For more information about research vessel operations, visit the CDFW website at wildlife.ca.gov/Regions/Marine/Projects#29376852-research-vessel-operations-project-rvop.

Saltwater Angling and Diving Records – Seven new saltwater angling and diving records were accepted in 2017 (previous records in parenthesis):

- **Monkeyface Prickleback** angling record: 6 lb. 6 oz. (6 lb. 1 oz.)
- **Yellowfin Tuna** angling record: 265 lb. 0 oz. (239 lb. 0 oz.)



Research Vessel Garibaldi
CDFW photo by D. Stein



Daniel Silveira with his state diving record Bocaccio, the first state diving record for this species
photo courtesy D. Silveira

changes. Sea urchin harvest for both the north and south areas of the state are still far below the average catch in the last decade, and staff continue to watch this fishery to determine if additional management measures are necessary.

For more information about sea urchin, visit the Marine Region website at wildlife.ca.gov/Conservation/Marine/Invertebrates/Sea-Urchin

Surfperch and Other Surf Fishes – Program staff continued to monitor commercial and recreational surfperch hook-and-line fisheries in central and northern California. Barred Surfperch and Redtail Surfperch continued to dominate commercial landings and recreational catch. The Morro Bay port complex is the hub of the Barred Surfperch commercial fishery, while Redtail Surfperch are landed primarily in Eureka. Preliminary statewide Barred Surfperch annual landings remained above the 13-year average from 2005 to 2017. Improved catches in 2017 south of San Luis Obispo County are attributed to a return to favorable conditions (lower water temperatures) in the Southern California Bight following the 2014-2016 El Niño event. Redtail Surfperch recreational catch and commercial landings continued to trend upward, reaching a 5-year high. Of note, 2017 marked the emergence of a hook-and-line live surfperch fishery in the Fort Bragg port complex. Landings there were comprised of Redtail Surfperch and Calico Surfperch.

Staff continued collecting essential fisheries information using fishery-independent surveys with hook-and-line gear from San Luis Obispo to Mendocino counties and progressive angler surveys to document angler effort along Monterey County sandy beaches. Staff completed a pilot study examining daily growth rings in Redtail Surfperch otoliths in collaboration with Humboldt Area Saltwater Anglers, a sportfishing group. In collaboration with the Marine Science Institute in Redwood City, staff completed the field portion of an age validation study using Barred Surfperch treated with oxytetracycline, an otolith marker. A fluorescence laser microscope was used to observe and photograph the surfperch otoliths at San Francisco State University.

Staff continue to analyze data from a 2007-2009 study of surf fishes in Southern California, when over 400 beach seine hauls were completed. The catch was dominated by surfperches, croakers, and silversides; preliminary

- **Soupfish Shark** (Tope) angling record: 38 lb. 4 oz. (first state angling record for this species)
- **Blue Rockfish** diving record: 4 lb. 7 oz. (3 lb. 6 oz.)
- **Bocaccio** diving record: 4 lb. 9 oz. (first state diving record for this species)
- **Shortfin Mako Shark** diving record: 484 lb. 4 oz. (426 lb. 0 oz.)
- **Calico Surfperch** angling record: 1 lb. 14 oz. (tie with previous record)

For more information about record saltwater fish and invertebrates, visit the CDFW website at wildlife.ca.gov/Fishing/Ocean/Records.

Sea Urchin – Staff worked collaboratively with the California Sea Urchin Commission to propose new sea urchin regulations for the 2018 season. The new regulations are designed to reduce the number of permits from 300 to 150, institute a preference draw system for new entrants, and add Friday to the fishing season from June through October in the southern part of the fishery. In December, the California Fish and Game Commission unanimously adopted the proposed

analyses focused primarily on Barred Surfperch, Walleye Surfperch, California Corbina, Spotfin Croaker, and Yellowfin Croaker. Surfperches were more abundant at sites with greater exposure and wave action, while Yellowfin Croaker preferred calmer, more protected sites. Most of these species appear to prefer the low- to mid-range height of the tidal cycle, while tidal flux (ebb/flow) appears to be much less important.

For more information about surfperch and surf fish studies, visit the CDFW website at wildlife.ca.gov/Conservation/Marine/SCFRMP/Surf-Fish and www.wildlife.ca.gov/Conservation/Marine/NCCFRMP/Surfperch-Studies.

True Smelts – Preliminary commercial Night Smelt landings totaled 289,488 pounds in 2017, increasing just over five percent from 2016. Despite a return to favorable environmental conditions in 2017 with the abatement of the 2014-2016 El Niño, Surf Smelt or “Day Fish” landings continued to decline to an all-time low of 688 pounds, down from 5,854 pounds in 2016—a decline of over 88 percent. Historically, both species were targeted in California from Monterey County to the Oregon border; however, most landings originate in northern California. These fisheries, commercial and recreational, are shore-based. Fishermen use A-frame dip nets for taking Night Smelt and Surf Smelt, although casting nets are now popular for Surf Smelt.

For more information about true smelts, visit the CDFW website at www.wildlife.ca.gov/Conservation/Marine/NCCFRMP/True-Smelts.

Warty Sea Cucumber – Staff worked with the commercial dive fishery to develop a seasonal closure to protect spawning groups of warty sea cucumber. The seasonal closure starts in 2018 and extends from March 1-June 14.

Staff completed the fourth consecutive year of dive and laboratory research to collect essential fishery information for warty sea cucumber populations at the northern Channel Islands. Staff performed seasonal dive surveys at six different locations (inside and outside of marine protected areas) to measure seasonal changes in density and to characterize size distributions. To date,

2,182 sea cucumbers have been collected and dissected to determine spawning condition, sex ratio, fecundity, and length/weight relationships. Findings from CDFW research along with other independent monitoring have highlighted concerns about the sustainability of the resource. CDFW plans to monitor populations during the first seasonal closure period to measure the degree to which this new regulation is protecting spawning groups. CDFW is currently prioritizing future management measures that will assist this fishery in reaching sustainable harvest levels.

For more information about warty sea cucumber, [read this entry in the CDFW Status of the Fisheries report](#).

White Seabass – Continued collaboration with recreational anglers provided staff with five additional samples for a study updating the age at maturity for White Seabass. Staff have now sampled 31 individual fish. As part of the annual review of the White Seabass Fishery Management Plan for the 2016-2017 season, staff collected and analyzed commercial and recreational data. Staff evaluated the numbers and sizes of White Seabass landed, information on forage fish availability, and socioeconomic data to determine if points of concern had been met. None of the five main points of concern were met for the season and no further action was needed.

For more information about White Seabass, visit the CDFW website at www.wildlife.ca.gov/Conservation/Marine/NCCFRMP/White-Seabass.



Using an A-frame dip net to collect samples of Night Smelt in Pacifica, San Mateo County. CDFW photo by K. Ramey

State/Federal Marine Species Programs

This program is responsible for fisheries jointly managed by state and federal entities.

Coastal Pelagic Species (CPS - market squid, anchovy, mackerel, sardine) – In 2017, CPS staff were actively involved with federal fisheries management as members of the Pacific Fishery Management Council and the CPS Management Team. Staff attended meetings and helped prepare reports on topics related to Pacific Sardine harvest specifications, Northern Anchovy management status, the federal acoustic trawl survey methodology review, regulatory provisions for small-scale take of CPS finfish during closures, and exempted fishing permit evaluations. The annual stock assessment for Pacific Sardine resulted in a low biomass estimate resulting in closure of the directed commercial Pacific Sardine fishery for another fishing season. Incidental Pacific Sardine take was allowed in other CPS landings.

In addition, staff from CDFW and the California Wetfish Producers Association conducted the California Coastal Pelagic Species Aerial Survey. Summer surveys occurred between Point Arena and Morro Bay with approximately 350 survey miles flown. The aerial survey

was conditionally approved for use in future CPS stock assessments in a methodology review by the Pacific Fishery Management Council. Work next year will help address some of the questions from the review.

For more information about coastal pelagic species, visit the CDFW website at www.wildlife.ca.gov/Conservation/Marine/Pelagic.

Groundfish –

Management and Research – Due to active monitoring and management by state and partner agencies and stakeholders, California's sport and commercial groundfish fisheries (which include over 90 species of rockfish, roundfish, ratfish, skates and sharks) remained within prescribed annual catch limits and accountability measures in 2017.

Staff co-authored a stock assessment on California Scorpionfish that showed the stock to be healthy, and recommended harvest levels for upcoming years.

Two important stocks that were previously designated "overfished" — Bocaccio and Darkblotched Rockfish — have rebuilt to healthy levels ahead of schedule.

Rebuilding of overfished groundfish stocks is proceeding more quickly than projected, in part due to strict protections and favorable ocean conditions that resulted in successful reproduction, as well as management and outreach efforts to avoid and minimize discard mortality for species of concern. Only two of the nine overfished stocks are still considered overfished, Yelloweye Rockfish and Cowcod.

Staff provided guidance in development of a federal exempted fishing permit for the trawl fishery to allow targeting of midwater rockfish inside rockfish conservation areas with midwater trawl gear. This exempted fishing permit is expected to provide data that will inform future management changes, including re-establishment of a historical midwater rockfish fishery.



Staff participated in an extensive analysis and review of the Trawl Catch Share Program with federal agency partners. The review identified program challenges and areas for future improvement.

In collaboration with federal agency partners, staff provided guidance on final electronic monitoring regulations in the Pacific Whiting midwater trawl, fixed gear, non-Pacific Whiting midwater trawl, and bottom trawl fisheries. This would allow for use of video cameras in lieu of the mandatory 100 percent human observer requirement in the Trawl Catch Share Program. The electronic monitoring program is expected to increase flexibility and reduce operating costs for some of the fleet while still achieving overall program goals.

Staff provided analyses to inform two Endangered Species Act Biological Opinions related to take of listed salmon in the Pacific coast groundfish fishery and the Pacific Halibut fishery. Staff also developed recommendations regarding the threshold for incidental catch levels and mitigation measures for 2019-2020, including those that can be implemented in-season to prevent thresholds from being exceeded.

Staff participated in reviews of the non-salmon, Endangered Species Act-listed species in the groundfish fishery. Staff reviewed new analyses to improve bycatch estimates, considered whether Incidental Take Statement amounts were appropriate, and recommended conservation and management measures to minimize bycatch of listed species where appropriate.

In collaboration with federal agency partners and non-governmental agencies, staff provided guidance on alternatives to evaluate modifications for essential fish habitat for groundfish, and adjust the trawl rockfish conservation area. The goal was to minimize adverse effects on sensitive habitat that can occur when fishing with trawl gear, allow increased access to productive fishing grounds, and increase resource-use efficiency.

Staff completed a California Fish and Game Commission regulatory change to modify transfer requirements for Nearshore Fishery Permits and Deeper Nearshore Fishery Permits. Starting in 2018, only one Nearshore Fishery Permit or one Deeper Nearshore Fishery Permit will be required to transfer a permit from one person to another. Previously, the Nearshore Fishery Permit required two



Cabezon, one of over 90 species of groundfish found off California
CDFW photo by D. Stein

permits for transfer, and no transfers were allowed for the Deeper Nearshore Fishery Permit. In the last 14 years, the number of nearshore permits has declined 35 percent due to permit transfers and attrition. These changes will make it easier for new entrants to get into the fishery and older participants to retire.

Staff are leading efforts to incorporate data into stock assessments that has been collected by visual surveys in nearshore waters during remotely operated vehicle studies. Developing a fishery-independent method for determining groundfish abundance in nearshore waters will be useful for many stock assessments. The data could provide estimates of abundance inside marine protected areas where extractive surveys or harvest are prohibited, and help to inform the status of nearshore stocks.

Education and Outreach – With help from the California Recreational Fisheries Survey project, staff completed 30 outreach assignments during season-opening weekends in the Northern, Mendocino, San Francisco and Central recreational groundfish management areas. Staff provided anglers with over 4,500 packets containing the 2017 recreational groundfish regulations, species identification flyers, and information on the CalTIP program. Staff also distributed approximately 100 descending devices (donated for this purpose by the National Marine Fisheries Service) and educated anglers regarding the importance of using a descending device when discarding fish suffering from barotrauma.

For more information about groundfish, visit the CDFW website at www.wildlife.ca.gov/conservation/marine/groundfish.



CRFS Sampler Torrey Soland measures Pacific Halibut
CDFW photo by E. W. Roberts III

Highly Migratory Species (tuna, swordfish, etc.) –

The CDFW Pelagic Fisheries and Ecosystems Program enhanced quality control procedures for highly migratory species' commercial landings data. Staff developed an automated error-checking program that flags potential outliers within the Commercial Fishery Information System database. Staff participated directly in the Pacific Fishery Management Council process and on the Council's Highly Migratory Species Management Team. Staff provided leadership in pursuing policies and analyzing options to manage highly migratory species fisheries off California.

Staff coordinated with NOAA Fisheries to collect biological samples and monitor commercial and recreational take of Bluefin Tuna in accordance with international treaty agreements. Throughout 2017, staff visited southern California ports to collect Bluefin Tuna samples from five commercial purse seine landings, obtaining biological data from more than 100 fish. Staff collected fin clips for NOAA Fisheries' close-kin mark-recapture genetic testing study. Staff conducted in-season tracking of Bluefin Tuna landing receipts with cooperation from fishery participants.

CDFW staff on the Council's Ecosystem Workgroup developed the next ecosystem initiative, "Climate Shift

and Fishing Communities". The initiative will review Council decision-making and how it might be improved to account for increased variability and uncertainty. The initiative is scheduled for completion in 2019.

For more information about highly migratory species, visit the CDFW website at www.wildlife.ca.gov/Conservation/Marine/Pelagic.

Pacific Halibut – CDFW continues to actively manage the recreational Pacific Halibut fishery in California waters. The 2017 open season was scheduled for May 1-June 15, July 1-15, August 1-15, and September 1-October 31 dependent upon available quota. However, based on projected early attainment of the 2017 California quota, an in-season fishery closure was implemented on September 11, following discussions with the International Pacific Halibut Commission (IPHC), Pacific Fishery Management Council and National Marine Fisheries Service. Final 2017 recreational catch estimates totaled 30,541 net pounds, 88 percent of the quota. The average net weight per kept fish in 2017 was approximately 19 pounds, one pound greater than the average weight of fish taken in California's 2016 fishery.

In 2017, five vessels participated across three of the opening days in the commercial directed fishery; the preliminary landings were 3,872 net pounds. CDFW staff were present at the offloads to conduct biological sampling in coordination with the IPHC's commercial fishery sampling program.

The IPHC expanded its fishery-independent setline survey into California in 2017, this time surveying southward to waters just north of San Francisco. Previous surveys in 2013 and 2014 in California reached as far south as Cape Mendocino and Point Arena, respectively. CDFW coordinated with the IPHC to ensure survey stations did not impact marine protected areas and other protected areas.

For more information about Pacific Halibut, visit the CDFW website at www.wildlife.ca.gov/Conservation/Marine/Pacific-Halibut.

Salmon – Project staff organized the annual California Ocean Salmon Information Meeting, which attracted about 100 interested stakeholders. At the meeting, staff provided information on 2016 ocean salmon fisheries, spawning escapement, stock-specific abundance forecasts, and the outlook for 2017 sport and commercial

ocean salmon fisheries. Members of the public provided input to a panel of California salmon scientists, managers, and representatives for consideration in the development of 2017 ocean salmon regulations.

Project staff involved on the Klamath River Technical Team coordinated with federal, tribal, and other state agencies to consolidate and summarize catch and other survey information on Klamath River fall Chinook Salmon for use in the 2017 management cycle.

Staff participated in the process of drafting 2017 ocean salmon seasons with the Pacific Fishery Management Council and collaborated with federal, tribal, and other state agencies to produce the *Review of 2016 Ocean Salmon Fisheries* report and several other pre-season reports. These documents include information on ocean harvest, inland escapement, abundance forecasts, regulatory season alternatives, and final ocean salmon fisheries regulations.

CDFW and the Pacific Fishery Management Council worked together to take additional actions to protect endangered Sacramento River winter Chinook Salmon, which have been impacted by California's severe drought. Commercial and recreational industry representatives on the Council's Salmon Advisory Subpanel also recognized the need for additional protections. As a result of this cooperation between industry representatives and regulatory bodies, fishing seasons were curtailed to reduce fishery impact rates on this endangered stock.

During the ocean salmon fishing season, recreational and commercial fisheries were monitored at approximately 20 ports along the California coast. In the commercial fishery, staff sampled approximately 12,200 salmon, and collected snouts from more than 2,800 adipose fin-clipped (or "ad-clipped") salmon for subsequent coded-wire tag processing. In the recreational fishery, field staff coordinated with California Recreational Fisheries Survey staff to sample nearly 15,700 Chinook Salmon caught by 17,500 anglers and collect approximately 4,500 heads from ad-clipped salmon. Staff used these sample data to produce annual ocean catch and effort estimates by fishery, management area, and half-month period.

Staff processed approximately 7,500 coded-wire tags from ocean salmon fisheries and uploaded these data, along with their respective catch-sample data, to the Regional Mark Processing Center in Portland, Oregon. Staff and others use these data to determine stock

contributions and fishery impacts, information needed to sustainably manage West Coast fisheries and protect California salmon stocks. The majority of salmon caught in California ocean fisheries are of hatchery origin, with almost all fish produced, raised, and released in the Central Valley and Klamath-Trinity river basins. In 2017, over half (54 percent) of the sampled ad-clipped fish were Sacramento River fall Chinook Salmon.

Staff responded to nearly 115 public inquiries received through the Ocean Salmon Courtesy Request Program. Recreational anglers and commercial trollers may request information about ad-clipped salmon sampled by project staff. Based on the unique head-tag number assigned to each fish and submitted by the requestor, staff provided information obtained from the coded-wire tag recoveries, including hatchery of origin, brood year, stock name, run type, release date, and location.

For more information about ocean salmon, visit the CDFW website at www.wildlife.ca.gov/oceansalmon.



A large Chinook salmon caught outside of Bodega Bay
CDFW photo

Resource Assessment Program

This program is responsible for collecting and disseminating recreational and commercial fishery-dependent data.

California Recreational Fisheries Survey (CRFS) – CRFS field operations are supported by 15 permanent staff and, on average, 75 temporary Fish and Wildlife scientific aids. CRFS collected data on the catch of over 100,000 anglers in 2017. Those anglers caught about 577,000 fish and invertebrates, and CRFS samplers examined nearly 196,000 of the retained fish and invertebrates. In addition, CRFS samplers measured almost 100,000 fish. CRFS staff entered the data collected during the field surveys into the CRFS data system (see *Recreational Fisheries Data System*, pg. 19).

California Recreational Fisheries Survey Outreach – CRFS field staff provide outreach to the recreational fishing community by sharing informational materials on sportfishing regulations, species identification, marine protected areas, barotrauma and the use of descending devices, whale entanglement, and domoic acid. In

addition, staff solicited volunteers for the NOAA Fisheries National Economic Survey conducted by CIC Research Inc. For more information about the California Recreational Fisheries Survey, visit the CDFW website at www.wildlife.ca.gov/Conservation/Marine/CRFS.

Marine Fisheries Statistical Unit – Staff collects, processes, and audits commercial fishery landings data, including landing receipts, commercial passenger fishing vessel logbooks, spiny lobster logbooks, and transportation receipts. Staff design, order, and distribute all paper landing receipts and commercial passenger fishing vessel logs for our constituents. In addition, Marine Fisheries Statistical Unit staff process all commercial fishery data requests received from commercial fishing license holders and other authorized requestors. The Marine Fisheries Statistical Unit received and keyed approximately 53,000 commercial landing receipts for 2017.

For more information about the Marine Fisheries Statistical Unit, visit the CDFW website at www.wildlife.ca.gov/Conservation/Marine/MFSU.

Pacific Recreational Fisheries Information Network (RecFIN)

– The Marine Region submits all CRFS estimates to RecFIN on a monthly basis. RecFIN provides a centralized data system to house recreational fisheries information from California, Oregon, and Washington. CRFS and Recreational Fisheries Data Project staff represented California on the RecFIN Technical Committee and Data and Technology Subcommittee, and chaired the Statistical Subcommittee. Through these committees, staff support RecFIN efforts to coordinate the coastwide collection of marine recreational finfish data and procedures for estimating catch, effort and participation. CRFS and the Recreational Fisheries Data Project also collaborated with RecFIN programmers validating estimates and routines on the new RecFIN database, which was launched in spring, 2017.

For more information about RecFIN, visit their website at www.recfin.org.



Recreational Fisheries Data Project – The Recreational Fisheries Data Project and Data and Technology Division staff continued to develop and maintain a data system for CRFS catch, effort, and biological and spatial data and estimates.

The system includes a centralized relational database to store information, a data entry system with built-in error checks, validation routines to improve data accuracy, and automated reports. The data system increased CDFW efficiency, improved data accuracy and provided the flexibility to align data capture with changing management needs.

CRFS data and estimates are essential for managing California's diverse marine fisheries. CDFW, the California Fish and Game Commission, the Pacific Fishery Management Council, the International Pacific Halibut Commission and National Marine Fisheries Service used CRFS data and estimates for fishery management in 2017. These uses included: in-season monitoring for species of concern such as Cowcod, Yelloweye Rockfish and Pacific Halibut; developing harvest guidelines; conducting regulatory analyses, and making other critical management decisions. CRFS data and estimates were used in stock assessments conducted in 2017 for Blue Rockfish, Bocaccio, California Scorpionfish, Cowcod, Lingcod, Yelloweye Rockfish and Yellowtail Rockfish. In addition, CRFS data were used for spatial planning and evaluation of marine protected areas.

Improving Data Systems – In addition to the recreational fisheries data system described above, CDFW's Marine Region and Data and Technology Division have made progress on developing two very important commercial fisheries data systems: the Marine Log System and the Marine Landings Database System. These data systems will provide CDFW with modern fisheries-dependent data systems that ensure secure, centralized, and easily accessible data. The goal is to move towards electronic reporting such that near real-time data will be available for fishery managers to use in decision making. The e-log application continues to be improved as enhancements are implemented. In 2017, 19,250 commercial passenger fishing vessel logs were submitted electronically. This represents approximately 60 percent of the 33,954 commercial passenger fishing vessel logs submitted in 2017. There are 239 commercial passenger fishing vessels and 316 operators signed up to submit logs electronically.

Development of the Marine Landings Data System is now in its final phase, and initial implementation will take



CRFS Sampler Travis Massey
photo by E. W. Roberts III

place by July 1, 2018. The Marine Landings Data System will replace the Commercial Fisheries Information System and will integrate with the federal commercial fisheries reporting system known as E-Tix, which is required for the groundfish trawl individual quota program and for all sablefish landings. The benefits to fish businesses will be the use of a single reporting system to meet both state and federal reporting requirements for all landings. Benefits to CDFW staff include a data warehouse and a robust set of reports to extract and analyze Marine Landings Data System data.

Statistical and Technical Support – Recreational Fisheries Data Project staff provided statistical and technical support to various projects related to the management and restoration of fish stocks. These included:

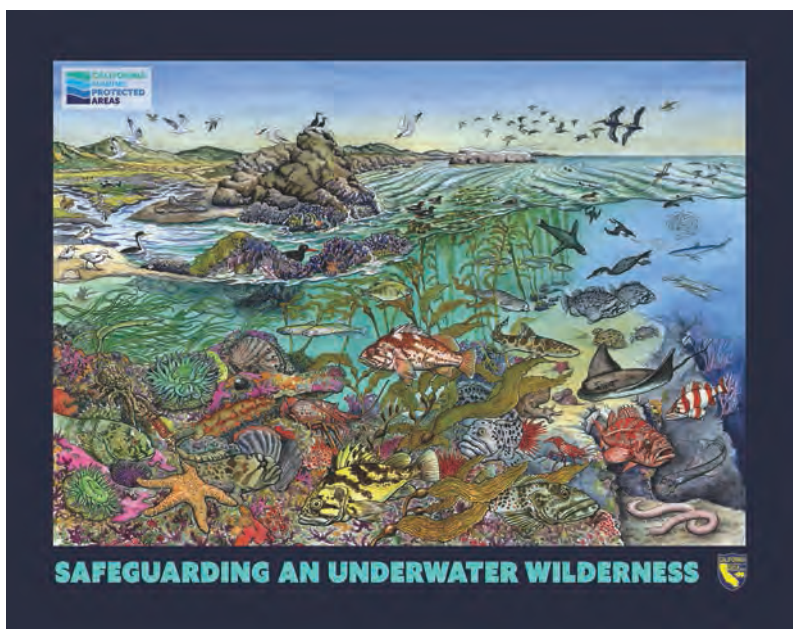
- Providing advice on use of CRFS data and estimates
- Conducting GIS analyses using CRFS spatial data and reviewing spatial analyses conducted by other researchers (for example, see [MarineBIOS](#))
- Providing data and data summaries to various CDFW projects, stock assessors, university researchers, graduate students, and the U.S. Navy
- Providing statistical advice on survey design and estimation procedures for sardine biomass aerial surveys
- Updating the CRFS methods document, which provides the sampling design, survey methods and estimation procedures for each of CRFS' eight component surveys.

For more information about the Recreational Fisheries Data Project, visit the CDFW website at www.wildlife.ca.gov/Conservation/Marine/Recreational-Fisheries-Data

Habitat Conservation Program

Environmental Review – In 2017, the Environmental Review and Water Quality Project continued to work on a wide variety of statewide plans, permits, and projects. Staff participated in over 65 pre-project review meetings and reviewed over 650 environmental documents. The review effort included over 80 California Environmental Quality Act documents, 180 U.S. Army Corps of Engineers Public Notices, 175 monitoring reports, 35 invasive species survey reports, and 60 permits from various agencies. Topics reviewed included: wave energy, desalination plant impacts, power plant impacts, dredging impacts, beach nourishment projects, contaminant site remediation, mitigation projects, California Endangered Species Act impacts, Tribal concerns, State Water Resources Control Board policy review, artificial reefs, mitigation proposals, eelgrass restoration, invasive species control projects, Scientific Collecting Permits, aquaculture projects, and dock and pier construction impacts. In addition, staff participated in the review and development of several U.S. Navy, U.S. Marines and U.S. Air Force Integrated Natural Resource Management Plans.

For more information about environmental review, visit the CDFW website at www.wildlife.ca.gov/Regions/Marine/Projects#29376850-environmental-review-and-water-quality-project



Marine Protected Area Habitats and Species Most Likely to Benefit poster

Statewide Marine Protected Area (MPA) Management

– The Statewide MPA Management Project facilitates the monitoring and ongoing adaptive management of California’s MPA Network to meet the goals of the Marine Life Protection Act. The California MPA network is the largest scientifically designed MPA network in North America, including 124 MPAs and 15 special closures encompassing approximately 16 percent of state waters.

Outreach and Education – In 2017, efforts continued to focus on encouraging compliance with MPA regulations, including increasing public understanding and awareness of California’s MPA network. [Regional MPA guidebooks and brochures](#) with MPA-specific maps and regulations and [MPA network posters](#) were distributed at public presentations, outreach events, distribution locations, and by request. Staff also presented information about MPA management and research activities at many academic, public, Tribal, and agency events in 2017.

Staff responded to email correspondence, wrote MPA-related articles for NOAA Fisheries, the [MPA Collaborative Network](#), and [CDFW](#) blogsites, reviewed onsite MPA signage produced by partners, and helped to develop [MPA video-conferencing classroom programs](#). Staff also spearheaded efforts to produce an [MPA informational video](#), a [poster](#) highlighting the habitats and marine life likely to benefit from MPA protection, and a comprehensive [MPA network brochure](#), for planned distribution in 2018. Staff also increased participation in MPA Collaborative Network meetings and launched a new [MPA Management Program listserv](#) to help stakeholders stay informed of MPA management activities.

Monitoring and Research – CDFW, the Ocean Protection Council, and the California Fish and Game Commission collaboratively led the MPA Monitoring Program, which consists of two phases- Phase One: Regional Baseline Monitoring, and Phase Two: Statewide Long-Term Monitoring.

South Coast: In March, CDFW and partners held five community gatherings in each of the South Coast’s counties (Santa Barbara, Ventura, Los

Angeles, Orange, and San Diego), to share and discuss baseline information and next steps.

North Coast: Key products developed for Phase One in the North Coast include peer-reviewed technical reports, completed by each of the baseline projects in the spring, the [State of the California North Coast report](#), and the North Coast MPA Monitoring Plan. In November, CDFW and partners also held community gatherings in Crescent City, Eureka, and Fort Bragg to share and discuss baseline information and next steps. The final step for Phase One in the North Coast is for CDFW to inform the Commission about the state of the North Coast MPAs, including the initial five-year management review, anticipated for early 2018.

With the completion of Phase One for all regions, CDFW, the Ocean Protection Council, and the Commission began to develop Phase Two: Long-Term Monitoring. Phase Two will leverage cost-effective and sustainable strategies for long term MPA monitoring to evaluate the efficacy of the statewide MPA network relative to Marine Life Protection Act goals. In partnership with the Ocean Protection Council, staff began to develop the Statewide MPA Monitoring Action Plan which will draw from regional baseline monitoring, and incorporate additional expert input and analyses, peer review, and public input to identify long term monitoring priorities and strategies. Staff worked with partners to develop quantitative and expert approaches to inform the Statewide MPA Monitoring Action Plan. These approaches included co-mentoring three UC Davis post-doctoral researchers, and tailoring the Regional Oceanographic Modeling System with researchers at UC Santa Cruz to help prioritize monitoring sites.

In collaboration with the Partnership for Interdisciplinary Studies of Coastal Oceans and Reef Check California, CDFW research vessels and scientific divers conducted subtidal nearshore census counts to assist those organizations in implementing state-funded MPA monitoring work in the central, north central, and south coast regions. Staff also participated in rocky intertidal MPA long-term monitoring surveys in the north central and central coast regions, and assisted the National Parks Service with their annual kelp forest monitoring cruise within the Channel Islands National Park off the south coast.

Policy and Permitting – Staff continued to represent CDFW on the MPA Statewide Leadership Team, an



Researchers from CDFW and UC Santa Cruz, with help from local volunteers, conduct rocky intertidal long-term monitoring at Del Mar Landing State Marine Reserve. photo by D. Lohse

advisory body convened by the Ocean Protection Council to ensure communication and collaboration among entities that have significant authority, mandates, or interests that relate to the MPA network. Notable MPA Statewide Leadership Team accomplishments in 2017 included formalizing the state's partnership with the MPA Collaborative Network through signing a Memorandum of Understanding, and working with California Tribes to include Tribal representation on the Leadership Team.

In April 2017, staff presented a five-year management review regarding the south coast MPAs along with the [State of the California South Coast report](#) to the Commission. CDFW recommended that no regulatory changes be made at that time, given that baseline monitoring data can only provide a characterization of conditions and not an assessment of MPA efficacy. However, staff provided recommendations to help effectively manage and facilitate adaptive management of the MPA network based on lessons learned from baseline monitoring.

CDFW staff and the Ocean Protection Council's Science Advisory Team developed an ecologically based decision framework that uses an ecological impact assessment tool to estimate impacts of scientific collecting in MPAs. The goal of this work is to shield MPAs against cumulative impacts from educational and research activities. The Science Advisory team published a [technical report](#) detailing the four steps used to inform permitting decisions for scientific research within MPAs. Beta testing of the assessment tool on a variety of MPA-related projects is ongoing, and full implementation will take place by the end of 2018.

For more information about California's marine protected areas, visit the CDFW website at www.wildlife.ca.gov/MPAs




Administration

Marine Region administrative staff bind together all the working parts of the expansive Marine Region, which extends from the border with Mexico all the way to the Oregon state line, through administrative guidance and support. It is no easy task. Administrative staff work tirelessly behind the scenes to support Region staff and make sure they have the tools they need to get the job done.

Administrative staff help to hire all of the Marine Region's temporary and permanent staff, manage storage and office facilities for staff and vessels, procure all supplies for field work, scientific cruises, offices and laboratories, and


track and process all out-of-state travel and training requests, while managing and staying within the Region's budget.

Administrative staff also help various staff conform to state laws and CDFW policies as they work to achieve their project goals. From San Diego to Crescent City, Marine Region scientists, biologists, and others rely on the services provided by Marine Region administrative staff — without whose help it would be a much tougher job to protect, maintain, enhance, and restore California's marine ecosystems for all to enjoy.



Marine Region Mission: To protect, maintain, enhance, and restore California's marine ecosystems for their ecological values and their use and enjoyment by the public through good science and effective communication.

For more information about CDFW's Marine Region, visit the CDFW website at wildlife.ca.gov/regions/marine



Spiny Lobster Fishery Management Plan Harvest Control Rule

Annual Review for 2016-17

California Department of Fish and Wildlife

Marin Region Invertebrate Project

The California Fish and Game Commission (Commission) adopted the [California Spiny Lobster Fishery Management Plan](#) (FMP) in April 2016. The FMP requires California Department of Fish and Wildlife (Department) to monitor and assess the California lobster stock every year using reference points based on three types of commercial fishery-dependent data (analysis of recreational catch can be found [here](#)):

1. Catch
2. Catch-per-unit-effort (CPUE)
3. Average weight

The threshold for the catch-based reference point is exceeded when the average catch of the three most recent seasons divided by the average catch of the ten most recent seasons is less than or equal to 0.9. Similarly, the CPUE-based reference point threshold is exceeded if the average CPUE of the three most recent seasons divided by the average CPUE of the ten most recent seasons is less than or equal to 0.9. These reference points are designed primarily to detect trends in catch and CPUE. Both values can fluctuate from year to year due to socioeconomic, environmental, and biological factors (e.g., catch might drop during economic downturn due to diminishing demand while the lobster stock is still healthy). These annual fluctuations often do not reflect problems that warrant management responses. Averaging catch and CPUE from the three most recent seasons for the reference point numerator serves to smooth those fluctuations.

The third reference point is calculated using a model to translate average weight in the commercial catch to a [spawning potential ratio](#) (SPR). The threshold for the SPR is set to the average SPR between 2000 and 2008, when the fishery was considered productive and sustainable according to the 2011 stock assessment. When a threshold is crossed, the Department must investigate the underlying causes and address any fishery or stock sustainability issues using a set of management tools prescribed by the FMP.

2016-17 Status of the HCR

None of the thresholds were exceeded in the 2016-17 fishing season (Table 1). The stock's SPR value improved slightly compared to the previous season. Both catch and CPUE decreased, but not to an extent that would cause the thresholds to be crossed. Based on these findings, the Department has determined that no management response is necessary at this time.

Table 1. Status of the Harvest Control Rule Reference Points

Reference Point	Threshold	2016-17 Season Value	Result
Catch	0.9	1.05	No Action Necessary
CPUE	0.9	0.95	No Action Necessary
SPR	25	35	No Action Necessary

2016-17 Commercial Lobster Catch

Landings for the 2016-17 season totaled 669,301 lbs. This is a decrease from the 2015-16 season total of 794,724 lbs, as well as the lowest landings in the past ten fishing seasons (Figure 1). The abundance of lobster and their catchability are thought to be correlated with the Pacific Decadal Oscillation (PDO), with warm water associated with higher catch.^{i,ii} The drop in catch during a warm water year is thus running counter to Department's expectation. However, this lower catch does not deviate drastically from other recent seasons. The average total landings of California spiny lobster in the past ten seasons is 769,435 lbs, while the average total landings in the past three seasons is 807,725 lbs. This yields a catch reference point value (catch index) of 1.05, and suggests that the fishery is still in a stable condition (Figure 1).

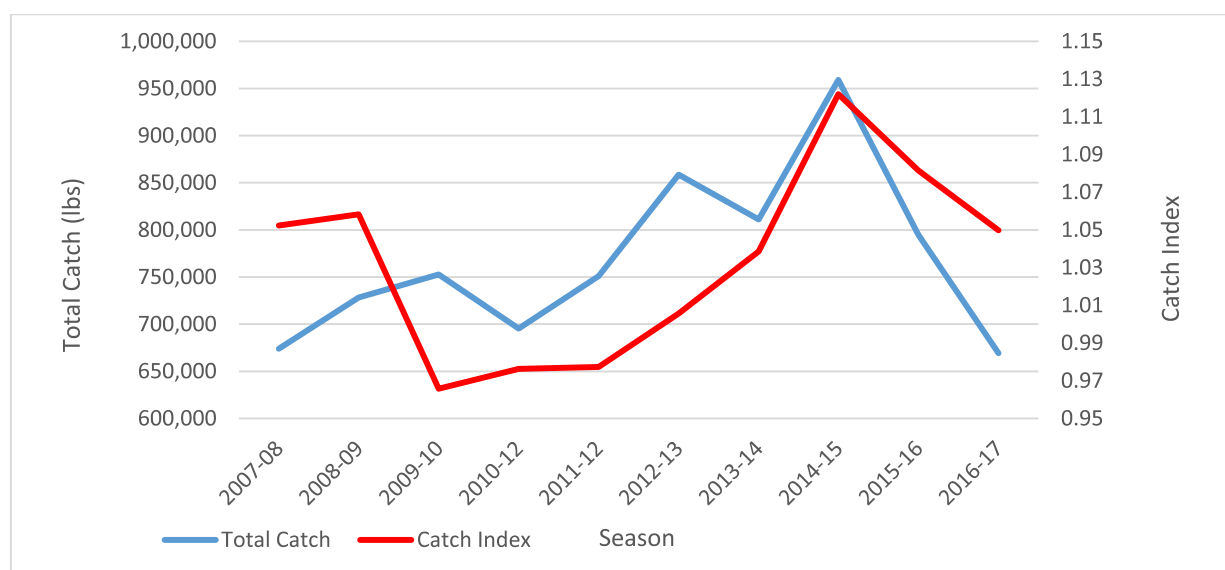


Figure 1: Total Catch and Catch Index (3 year average/10 year average) for each Commercial Fishing Season from 2007-2017 (Source: Department Landings Data); Catch Index Threshold Is 0.9.

There are several distinct hot spots such as San Diego and the northern Channel Islands that are relatively more productive than the rest of the coast (Figure 2). Overall, more catch originated from the northern Channel Islands in the 2016-17 commercial season than the rest of southern California. Comparison between seasons suggests that a geographical shift in catch may be occurring. Total statewide landings for any given season have historically been split relatively equally in thirds between Santa Barbara & Ventura County ports, Los Angeles & Orange County ports, and San Diego County ports. In the 2016-17 season, however, Santa Barbara and Ventura County ports landed approximately half of the state's lobster catch (Figure 3).

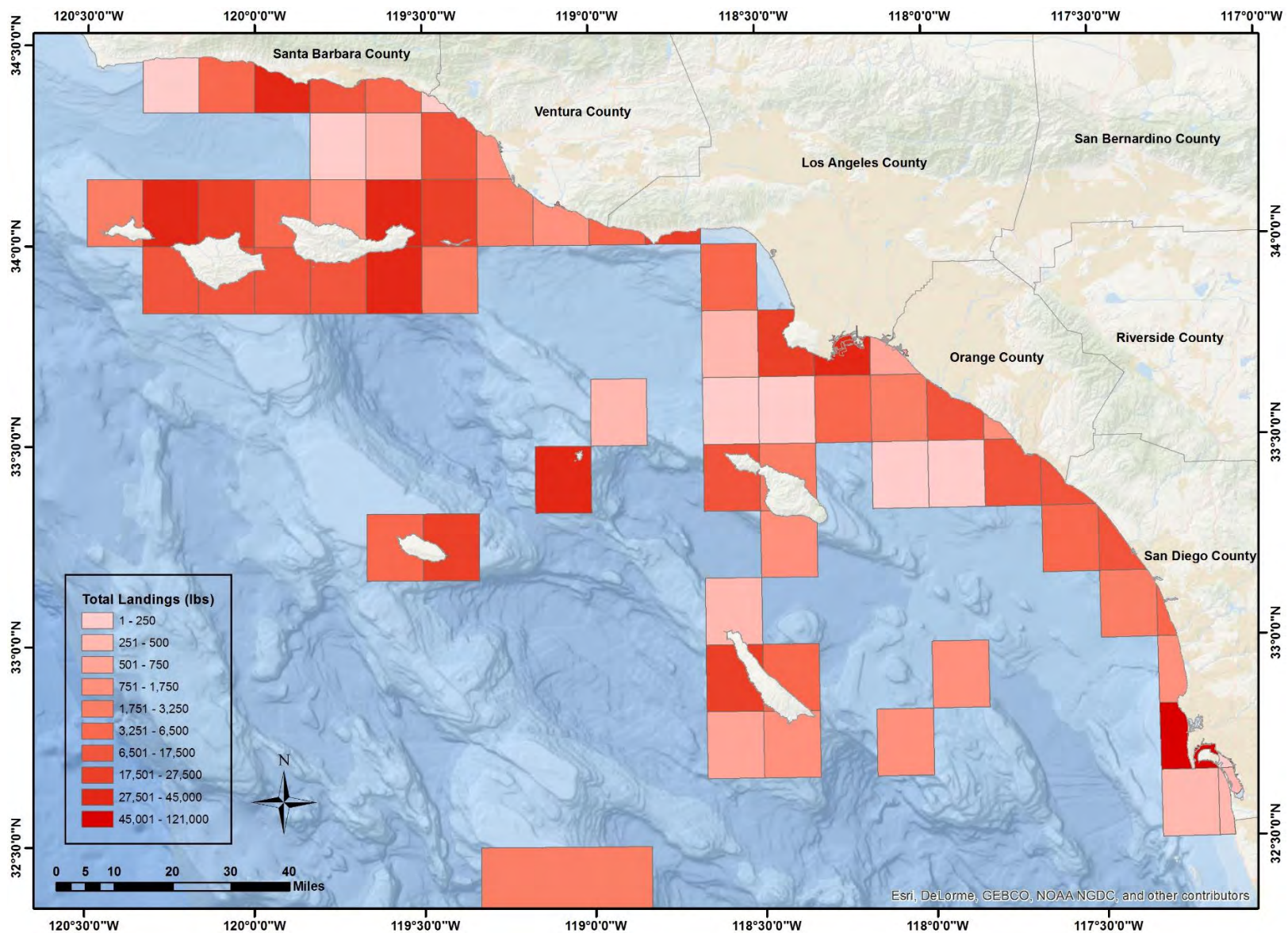


Figure 2: Commercial Lobster Landings (lbs) by CDFW commercial fishing block during 2016-17 Fishing Season (Source: Department Landings Data).

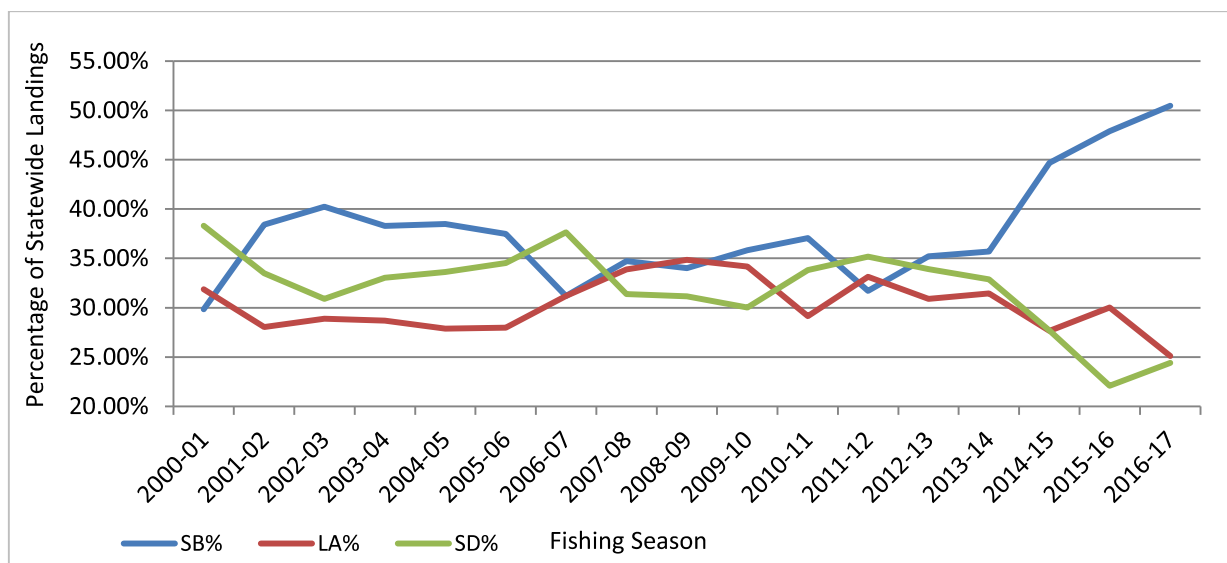


Figure 3: Percent of Total Commercial Landings by Port Region for Santa Barbara and Ventura County Ports (SB), Los Angeles and Orange County Ports (LA), and San Diego County Ports (SD) for each Fishing Season from 2000-2017 (Source: Department CFIS database).

2016-17 Commercial Fishing Effort and Catch-Per-Unit-Effort

In the 2016-17 permit year (from April 1 of one year to March 31 of next year), 139 transferable and 45 non-transferable lobster operator permits were issued, with 139 permit holders making landings during the 2016-17 fishing season. During the same permit year, 229 lobster crewmember permits were issued. The efficiency (CPUE) of the fleet has been more volatile than its catch for the last ten seasons, and retroactive calculations of the CPUE reference point for the past ten seasons show that the threshold was crossed four times (Figure 4). CPUE for the 2016-17 season was 0.41 legal size lobsters per trap pull, bringing the three year average to 0.46 and the ten year average to 0.49 (Figure 4). The CPUE reference point value (CPUE index) is thus currently at 0.95 (Figure 4). The 2016-17 CPUE is the lowest within the ten season period, but the implementation of a trap limit for the 2017-18 fishing season is expected to reduce effort in the fishery, which may raise the fleet's CPUE. However; if next season's CPUE remains at the same level, the CPUE threshold of 0.9 will be reached.

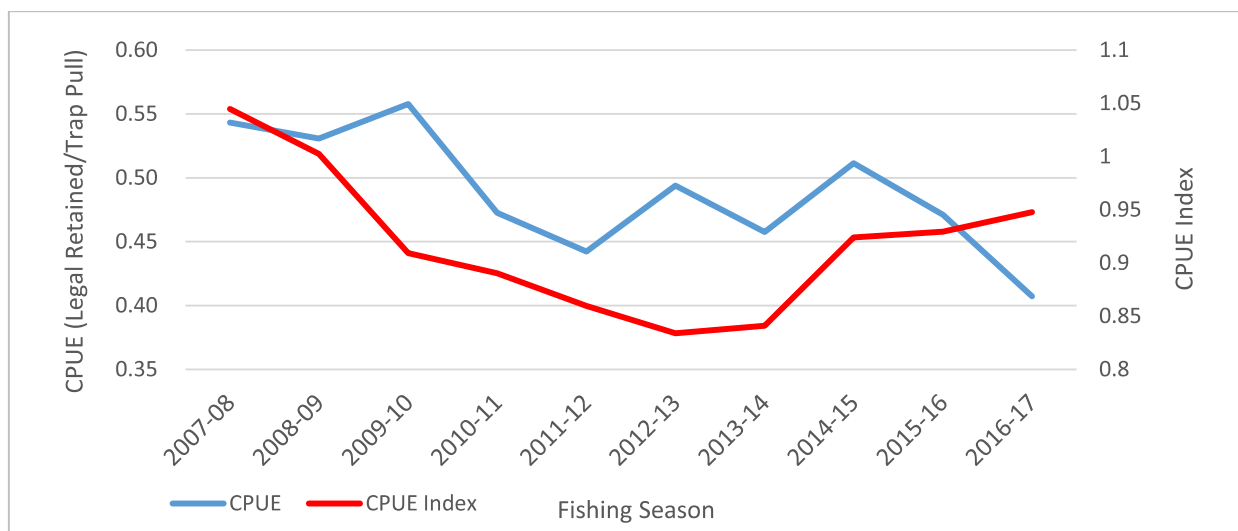


Figure 4. Average CPUE and CPUE Index (3 year average/10 year average) for each Fishing Season from 2007–2017 (Source: Department Lobster Logbook Data); CPUE Index Threshold Is 0.9.

CPUE generally exhibited a downward trend as the 2016-17 fishing season progressed (Figure 5). The slight uptick in CPUE at the end of a fishing season observed in most fishing seasons did not occur for the 2016-17 fishing season. A closer look at different regions of Southern California over the past ten fishing seasons also reveals important details about the fishery (Figure 6). CPUE in every region along the coast has declined in the past 3 fishing seasons, and while vessels from the Los Angeles & Orange County ports have always exhibited the lowest CPUE, vessels from the Santa Barbara & Ventura County ports experienced the sharpest drop during the 2016-17 fishing season (Figure 6). This drop in CPUE could be explained by a measurable effort shift towards the region, as more of the fleet’s fishing effort measured in trap pulls has shifted to the Santa Barbara & Ventura region (Figure 7).

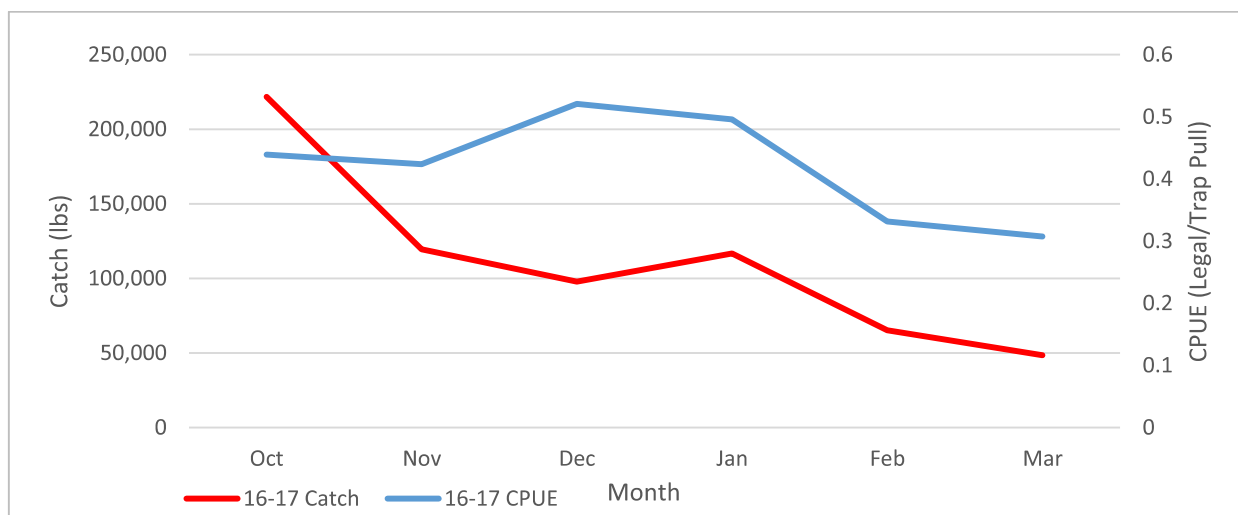


Figure 5. 2016-17 Fishing Season Catch and Average CPUE by Month (Sources: Department Lobster Logbook Data & Department Landings Data).

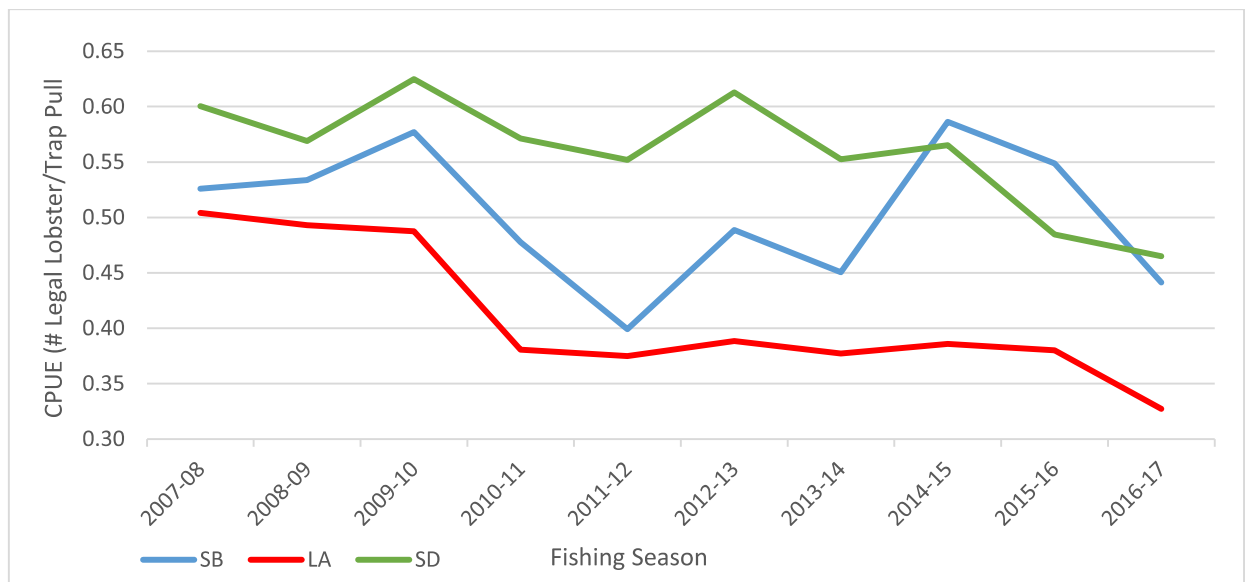


Figure 6. Commercial CPUE by Region 2007–2017 for Santa Barbara and Ventura County Ports (SB), Los Angeles and Orange County Ports (LA), and San Diego County Ports (SD) for each Fishing Season from 2007-2017 (Sources: Department Lobster Logbook Data).

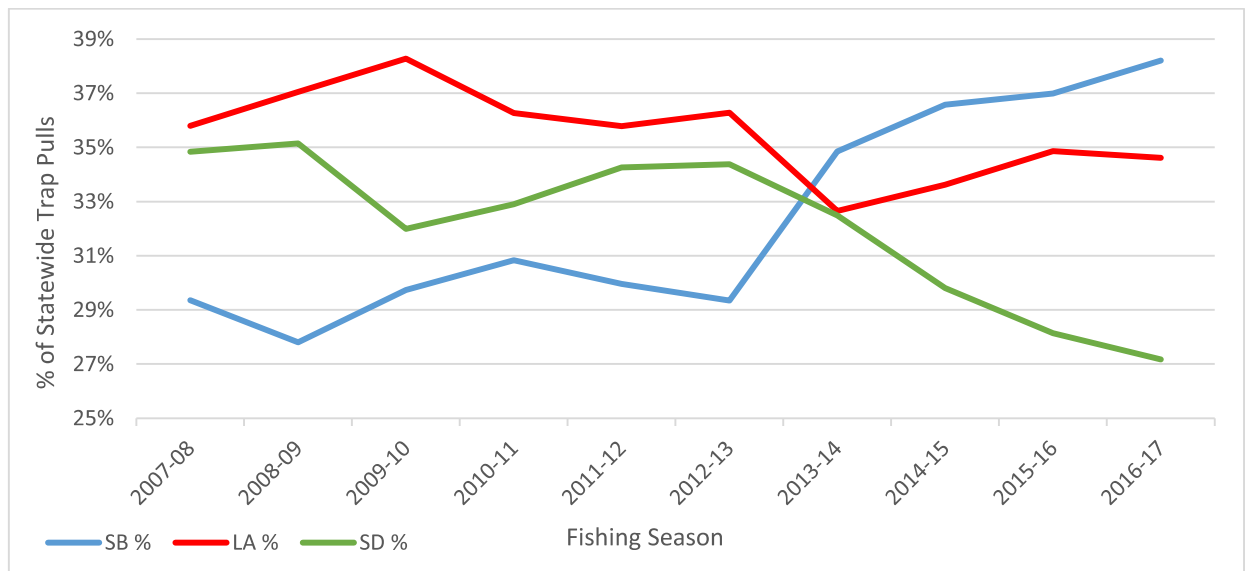


Figure 7. Percentage of Total Commercial Effort by Region 2007-2017 for Santa Barbara and Ventura County Ports (SB), Los Angeles and Orange County Ports (LA), and San Diego County Ports (SD) for each Fishing Season from 2007-2017 (Sources: Department Lobster Logbook Data).

2016-17 Stock Health

The SPR reference point serves to gauge the reproductive potential of the lobster stock with average weight being the only variable model input from year to year. The average weight of an individual lobster landed during the 2016-17 season was 1.71 lbs, which corresponds to an SPR value of 35 according to the [Cable-CDFW SPR model](#). Because the current SPR value is higher than that of the stable

reference seasons from 2008-2012, which is 25, no management response is necessary at this time. Retrospective analyses of SPR using data from the past 17 seasons shows that SPR threshold has only been crossed one time (2005-06 season) (Figure 8).

However, there is evidence that regional differences in the average individual weight landed could influence SPR. The overall increase in the average weight over the last four seasons (Figure 8) is likely driven by a higher portion of the catch (Figure 3) coming from the Santa Barbara/Ventura area. This area traditionally has had a higher average weight compared to the southern part of the fishery (1.78 lbs for the 2016-17 fishing season compared to 1.61 lbs in the south). This is in line with the recent rise in effort experienced in that region (Figure 6), suggesting that the increasing average weight and SPR reflects a shift in catch and effort to the northern region. The Department will continue to monitor and evaluate regional differences in landings and average weight and their influence on SPR.

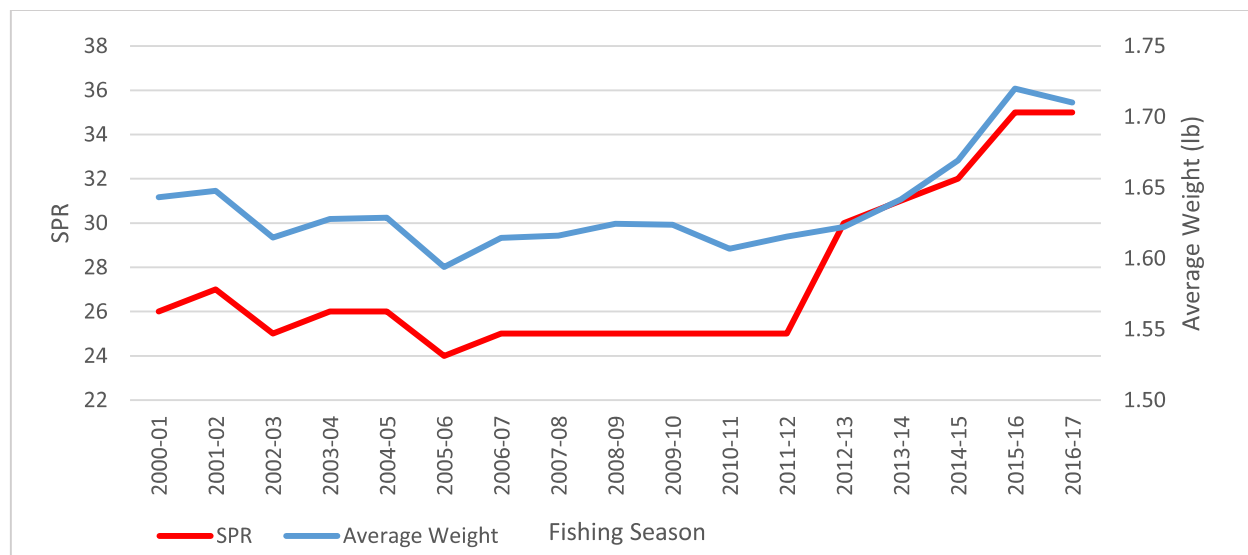


Figure 8. Average Weight and SPR Values 2000-2017 (Source: Department Lobster Logbook Data); SPR Index Threshold Is 25.

2016-17 Value

The total commercial ex-vessel value of California spiny lobster was \$13,691,364 for the 2016 calendar year. This makes the lobster fishery the third-most valuable fishery by ex-vessel value, behind only the market squid fishery and the Dungeness crab fishery. The ex-vessel price of the species started at approximately \$19.00/lb during the beginning of the 2016-17 season and increased to approximately \$21.50/lb before ending the season at just under \$18.00/lb (Figure 9). This is the first time in the past five fishing seasons that the per-pound ex-vessel price at the beginning of the fishing season was higher than the price at the end of the fishing season.

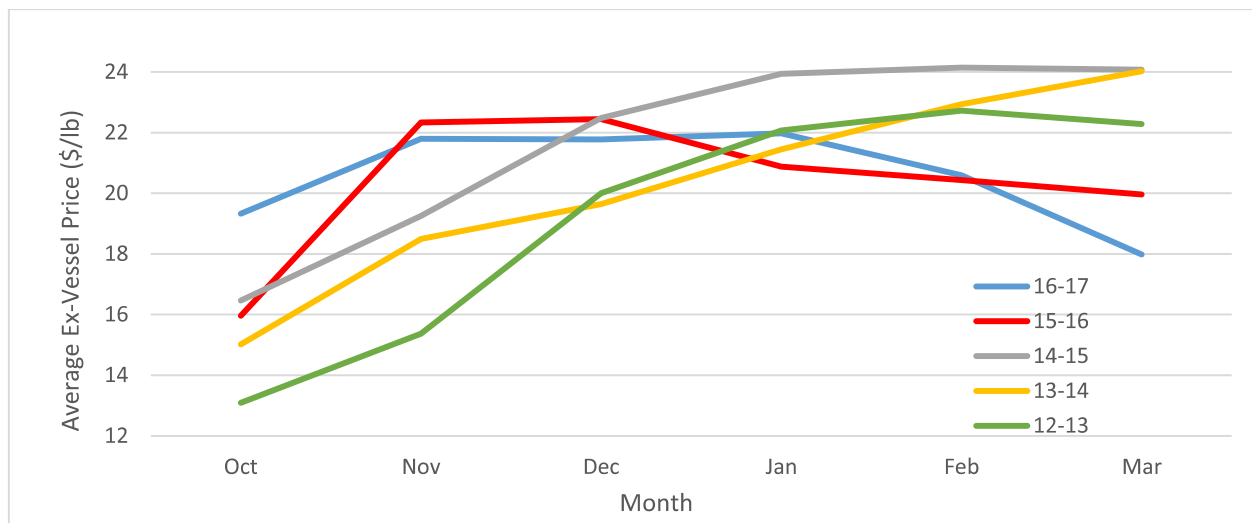


Figure 9. Average Per-Pound Ex-Vessel Value of California Spiny Lobster by Month and Season from the 2012-13 Fishing Season to the 2016-17 Fishing Season (Source: Department Landings Data).

Ongoing Department Research- Early Stage Lobster Larvae (Phyllosoma)

The Department has initiated a study examining the abundance and distribution of California spiny lobster larvae to provide indicators for fishery management. Recruitment is likely the most important driver of stock size and structure as well as catch for the species but little is understood about larval and early-post larval (newly settled) life because of the long pelagic larval phase and the long dispersal distance of this species. However, recruitment monitoring has been successful in some areas and plays an important role in ongoing stock assessments for Western Australian rock lobster (*Panulirus cygnus*), which has a similarly long pelagic larval phase.ⁱⁱⁱ Moreover, Department researchers have previously identified important relationships between lobster larval abundance and environmental factors using samples collected by the California Cooperative Oceanic and Fisheries Investigations (CalCOFI) long-term monitoring program.^{iv}

The Department is one of three partnering institutions in the CalCOFI program, along with the Scripps Institution of Oceanography and NOAA Fisheries Service. The program's long history allows for detection of long-term patterns in larval abundance as they relate to environmental conditions and fishery catch history. The broad geographic scope of sampling extending across the California spiny lobster stock and up to 220 nm from shore encompasses the area where the wide-ranging larvae are likely to be found. Additionally, CalCOFI staff already routinely separate phyllosoma from other larvae in the samples. Finally, the harvest control rule used by the Department to manage the stock relies exclusively on fishery -dependent data. The recently approved lobster FMP identifies both the strengthening of our understanding of the species' larval dynamics as well as the development of fishery -independent data streams as important management needs.

Ongoing Department Research-Individual Lobster Size Monitoring

Beginning with the 2016-17 lobster season, the Department began a monitoring program to collect data on individual lobster sizes in the commercial landings. This effort serves two primary purposes: 1) to

provide an additional method to calculate the average size of commercially retained California spiny lobster for the HCR and 2) to develop a time series of the population's size structure that will allow the use of additional stock assessment methods.

The age and/or size structure of the catch is a commonly collected data time series, even in data poor fisheries, and is required by many modern fisheries models. Average weight of commercially landed lobsters is the key empirical data input to the [Cable-CDFW model](#) for calculating SPR, which is used in the HCR. The currently available method for calculating average weight relies on matching commercial lobster logbook data (number caught) to the associated landing receipt (pounds landed) data. This process requires a variety of assumptions and discards a significant portion of the available data from the logbooks and receipts that can't be matched. Therefore, improvement of this data stream is a high priority. A revised landing receipt developed for use in 2018 will require reporting the number of lobster landed in addition to pounds. This should improve the Department's future ability to calculate average weight as both the number and pounds landed are available from one source.

Benefits of the Cable-CDFW model include its suitability for the readily available data, ability to incorporate MPAs in population dynamics, and ability to investigate relative impacts of alternative management strategies. However, equilibrium assumptions and the relative lack of resolution provided by average weight rather than size structure present drawbacks. The Cable-CDFW model cannot estimate the biomass of the California spiny lobster stock, forecast future catches, or incorporate variability in biomass resulting from recruitment variability or shifting spatial dynamics within the fishery, among others. The FMP's scientific peer review panel recommended that the Department work towards the implementation of a fisheries model utilizing annual estimates of the size structure of the catch, which allows tracking of individual cohorts through time. A dockside or market sampling program conducted by Department staff could ensure that a well-structured sample of lobsters are accurately measured. This type of sampling program would also initiate a time series of size frequency of catch that could build towards more sophisticated assessments.

Department staff are working with fishermen and buyers to sample lobster sizes both at the dock and at buyer facilities. The Department greatly appreciates the cooperation of those who have assisted. While cooperation has been voluntary to date, the Department does have the authority to require staff entry to any vessel or place of business to collect information pertaining to commercial fishing (Fish & Game Code § 7702). We strive to make our sampling efforts as quick and convenient for fishermen and buyers as possible and stress that this effort is restricted to sampling for the purposes of biological monitoring and is entirely separate from any enforcement effort.

ⁱ Miller, E. 2014a. Status and Trends in the Southern California Spiny Lobster Fishery and Population: 1980-2011. Bulletin of the Southern California Academy of Sciences. 113(1): 14-33; Koslow, J.A., L. Rogers-Bennett, and D.J. Neilson. 2012. A time series of California spiny lobster (*Panulirus interruptus*) phyllosoma from 1951-2008 links abundance to warm water oceanographic conditions in southern California. California Cooperative Oceanic Fisheries Investigations Report 53: 132-139.

ⁱⁱ Neilson, D.J. 2011. Assessment of the California Spiny Lobster (*Panulirus interruptus*). Final, post technical review, report submitted to and approved by the California Fish and Game Commission. 138p.

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- ⁱⁱⁱ Caputi, N., Feng, M., Pearce, A., Benthuyssen, J., Denham, A., Hetzel, Y., ... & Chandrapavan, A. (2014). *Management implications of climate change effect on fisheries in Western Australia Part 1: Environmental change and risk assessment*. Tech. Rep. 2010/535, FRDC.
- ^{iv} Koslow, J. A., Rogers-Bennett, L., & Neilson, D. J. (2012). A time series of California spiny lobster (*Panulirus interruptus*) phyllosoma from 1951 to 2008 links abundance to warm oceanographic conditions in southern California. *Calif. Coop. Ocean. Fish. Invest. Rep*, 53, 132-139.



CA Sheephead Fillet Length Collaborative Study



Fish and Game Commission
June 20, 2018

Background/ Regulation Need



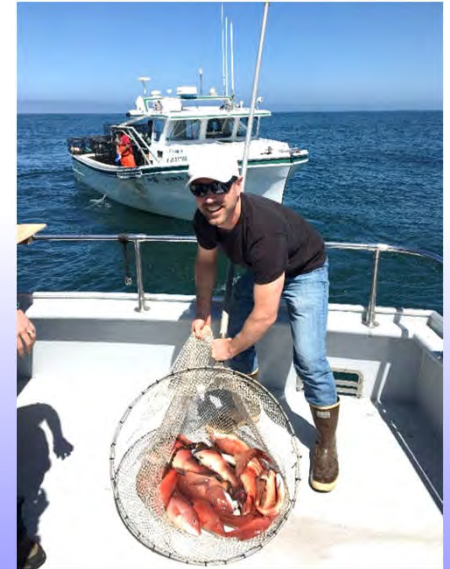
- Sheephead minimum size limit in 2001
 - No corresponding fillet length
- Benefits of fillet length regulation
 - Difficult to fillet
 - Less wastage of fish
 - Provides income for industry
 - Supported by anglers, industry (SAC), CDFW Law Enforcement Division
- Some historical data available
 - More data needed



Collaboration



- CDFW and SAC developed sampling protocols
- SAC organized three sampling trips
 - Point Loma, Dana Point, Long Beach
- Commercial trap fishers collected Sheephead
- CPFV deckhands filleted fish
- CDFW biologists measured fish and fillets



Acknowledgements



- SAC
- Commercial passenger fishing vessel fleet
 - San Mateo, El Dorado, Outer Limits
- Commercial trap fishers



Memorandum

2018 MAY 14 AM 11:55

Date: May 11, 2018

To: Valerie Termini
Executive Director
Fish and Game Commission

From: Charlton H. Bonham
Director



Subject: **Agenda Item for the June 20 - 21, 2018, Fish and Game Commission Meeting
Duck Stamp Proposals for Fiscal Year 2018-19**

Pursuant to Fish and Game Code § 3702-3705, the Department of Fish and Wildlife (Department) submits the attached summary of proposed projects to the Fish and Game Commission (Commission) for consideration and approval for funding with Duck Stamp Dedicated Account (Account) funds in Fiscal Year (FY) 2018-19. These projects were reviewed by the Department and the Duck Stamp Advisory Committee.

The estimated Account FY 2018-19 balance will be \$4,687,841 on July 1, 2018, with estimated revenue of \$1,383,217 from the sale of duck stamps during FY 2017-18. The Department proposes to spend revenues to accomplish the goals established for the Duck Stamp Dedicated Account as authorized.

For FY 2018-19, spending authority for expenditures from this Account is \$1,500,000. After deducting the required administrative overhead costs (limited to 6% per §3701 or \$81,041), the mandated amount portioned to Canada (\$2.25 per stamp/validation per §3704 or \$150,966) a total of \$1,267,992 is available for new and ongoing projects.

The Department reviewed 20 project proposals totaling over \$1.9 million dollars. The attached list of recommended projects includes ongoing projects (approved in past years) recommended for continued authorization. The new and ongoing projects in California total \$1,267,992. This figure includes contingency funding to allow for emergencies or project costs that may differ slightly from the original estimates.

As always, the Department appreciates the Commission's consideration of our proposal and requests its approval for funding of the noted projects totaling \$1,500,000. If you have any questions regarding this item, please contact Kari Lewis, Chief, Wildlife Branch, at (916) 445-3555.

Attachment

ec: Department of Fish and Wildlife

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Valerie Termini, Executive Director
Fish and Game Commission
May 11, 2018
Page 2

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**Summary of Department Recommendations
For FY 2018-19 California Duck Stamp
(project costs rounded to nearest dollar)**

Canada Habitat Project

Wetland and Upland Conservation – Alberta/Saskatchewan, Canada\$150,966

Establish a conservation easement and or restore wetlands associated with key breeding uplands in Alberta for pintail. Specific project parameters are still in development with the landowner. This project will also be matched by North America Wetland Conservation Act dollars.

Ongoing Projects - California

Duck Banding (pintail) – California Waterfowl Association\$37,000

This is a cooperative project to maintain sufficient banded samples of pintail to assess harvest and survival rates.

Duck Banding (mallard)\$10,000

Mallard banding is used for the Western Mallard Model. The model is used to establish the duck hunting frameworks for most duck species in the Pacific Flyway.

CA VCF Portion of Breeding Population Survey\$50,000

This project will continue the survey to estimate visibility correction factors for the California waterfowl breeding population survey.

Tule Greater White-fronted Goose Population Study\$7,000

This project will continue ongoing population estimation, habitat use, and distribution of these special status geese by purchasing and marking birds with radio transmitters.

Department of Fish and Wildlife – Internal Expenditures\$125,000

This funding provides the match for the Pittman Robertson Act funding for the Waterfowl Program in the Wildlife Branch.

Department of Fish and Wildlife – Duck Stamp Administration.....\$3,000

The Department recommends these funds to complete the delivery of physical stamps to purchasers, as required under Fish and Game Code, and other administrative charges related to ALDS.

Department of Fish and Wildlife – Contingency Fund\$93,677

The Department recommends this continuing funding to provide for small funding adjustments for authorized projects and to provide flexibility for emergencies (drought related or otherwise) as may occur. In addition, the Department may contribute to an easement for waterfowl habitat in California in cooperation with the Intermountain West Joint Venture, with a cost of \$50,000 from the contingency fund. Contribution to the easement depends on the establishment timeline and the ability to obtain all funds.

New Projects – California

Ash Creek Wildlife Area – Wayman Wetland and Wet Meadow\$79,278

Maintain 107 wetland acres by refurbishing levees.

Lower Klamath National Wildlife Refuge – Fairchild Island\$250,015

Enhance 854 upland acres by replacing water structures.

Gray Lodge – Field 30\$104,783

Enhance 35 wetland acres by re-contouring, swales, and replacing water structures.

Colusa National Wildlife Refuge – Tracts 1, 2, 2A\$175,003

Enhance 225 wetland acres by re-contouring and replacing water structures.

Sacramento National Wildlife Refuge – Pool 8, 10\$144,823

Enhance 377 wetland and 10 upland acres by replacing water structures, swales, and potholes.

Eden Landing Wildlife Area – Pond E11\$109,488

Enhance 332 wetland acres by replacing water structures.

Los Banos Wildlife Area – Unit 1, 16, 27\$54,883

Enhance 110 wetland acres by replacing water structures and rebuilding levees, and swales.

Morro Bay National Estuary Program.....\$24,041

Expansion of eelgrass restoration efforts.

State of California
Department of Fish and Wildlife

RECEIVED
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COMMISSION

2018 MAY 31 PM 1:30

Memorandum

Date: May 31, 2018

To: Valerie Termini
Executive Director
Fish and Game Commission

From: Charlton H. Bonham
Director



Subject: **Agenda Item for the June 20-21, 2018 Fish and Game Commission (Commission) Meeting Private Lands Wildlife Habitat Enhancement and Management (PLM) Area Licenses**

The Department of Fish and Wildlife (Department) has reviewed the Annual renewals, 5-year renewals and an Initial PLM Management Plan for 53 properties in 16 counties consisting of approximately 635,948 acres.

The Annual renewal PLM areas were previously licensed under Commission regulations Section 601, Title 14, California Code of Regulations. Full payment was made for all tags used in 2017, and all habitat work was completed.

The Initial and 5-year renewal management plans are in compliance with Commission policy for private lands management. The applicants have identified the location where records will be kept and made available for inspection. Public notices were published in local newspapers, and certified letters were mailed to adjacent landowners with notification of the Initial applicant intent to enter into the program. No letters of concern were received by the Department.

Habitat improvements accomplished under these plans will enhance and maintain wildlife resources on and around the PLM areas. The goals and objectives stated in the management plans are compatible with Department management plans for applicable species in these areas. In addition, access to public lands will not be diminished under implementation of these management plans.

Valerie Termini, Executive Director
Fish and Game Commission
May 31, 2018
Page 2

The Department recommends Commission approval of the specified wildlife management plans, applications, and each 2018/19 harvest program under conditions specified in the attached tables.

If you have any questions, please contact Ms. Victoria Barr at (916) 445-4034 or by email at victoria.barr@wildlife.ca.gov.

Attachments

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PLM AREA LICENSE
INITIAL MANAGEMENT PLAN, 2018-2023
PROPOSED SEASON, HARVEST, AND HABITAT IMPROVEMENTS

PLM Area	Proposed Season and Harvest	Habitat Improvement Program
NORTHERN REGION		
OBSERVATION PEAK RANCH DEER ZONE X5B LASSEN 640 ACRES	<p>Authorized Harvest: 1 buck deer forked horn or better</p> <ul style="list-style-type: none"> ➤ Issue 1 buck tag for the period of September 25, 2018 through November 30, 2018. ➤ No person shall take more than 1 buck deer annually in the X zones. 	<ul style="list-style-type: none"> ➤ Install a 750 gallon wildlife guzzler with wildlife-friendly livestock exclusion fencing. ➤ Seed 1 acre of mountain mahogany at a rate of 0.20 pounds per acre. ➤ Water bitterbrush seedlings during the summer.

PLM AREA LICENSE
NEW 5-YEAR MANAGEMENT PLANS, 2018-2023
PROPOSED SEASONS, HARVESTS, AND HABITAT IMPROVEMENTS

PLM Area	Proposed Season and Harvest	Habitat Improvement Program
NORTHERN REGION		
BASIN VIEW RANCH DEER ZONE X2 MODOC 8,500 ACRES	<p>Authorized Harvest: 7 buck deer forked horn or better</p> <ul style="list-style-type: none"> • Issue 7 buck deer tags for the period of October 6, 2018 through November 25, 2018. • No person shall take more than 1 buck deer annually in the X zones. 	<ul style="list-style-type: none"> ➤ Remove all western junipers from 50 acres in Unit 9 in order to encourage shrub and forb recruitment. ➤ Inspect and, as necessary, repair 10 miles of interior fencing that controls livestock movement and grazing. ➤ Exclude livestock grazing from 1 of the rotation management units (775 acres) year-round. ➤ Till and seed annual grain on 90 acres in Unit 9 for weed control, with the eventual goal of establishing permanent range grasses. ➤ Maintain and repair any damage to 5 ponds and springs.
BLACK RANCH SHASTA DEER ZONE C3 1,000 ACRES	<p>Authorized Harvest: 2 buck deer forked horn or better, 2 antlerless deer, 1 bull elk, and 1 antlerless elk</p> <ul style="list-style-type: none"> • Issue 2 buck deer tags and 2 antlerless deer tags for the period of November 1, 2018 through November 30, 2018. • Issue 1 bull elk tag and 1 antlerless elk tag for the period of November 1, 2018 through November 30, 2018. 	<ul style="list-style-type: none"> ➤ Maintain the 145 acre wetland project that was constructed last year to re-establish the native hydrology of the floodplain to Burney Creek. ➤ Install wildlife-friendly fencing around the 145 acre wetlands. ➤ Maintain 4 owl boxes, 7 bat boxes, and 6 goose nesting platforms by checking use and replacing nesting material as necessary. ➤ Build and install 20 new wood duck boxes. ➤ Remove 1,300 feet of internal barbed wire fencing running north-south to reduce wildlife entanglement. ➤ Limit livestock grazing to a 5 acre pen and barn area (exclusion area is 990 acres). ➤ Selective thinning of overstocked stands to improve forest health and promote the growth of understory forage species.

PLM AREA LICENSE
NEW 5-YEAR MANAGEMENT PLANS, 2018-2023
PROPOSED SEASONS, HARVESTS, AND HABITAT IMPROVEMENTS

PLM Area	Proposed Season and Harvest	Habitat Improvement Program
HATHAWAY OAK RUN RANCH DEER ZONE C3 SHASTA 6,640 ACRES	<p>Authorized Harvest: 12 buck deer forked horn or better</p> <ul style="list-style-type: none"> • Issue 12 buck deer tags for the period September 15, 2018 through November 30, 2018. • No more than 9 buck deer may be harvested after October 21, 2018. 	<ul style="list-style-type: none"> ➤ Maintain the 6 acre riparian livestock exclusion on Swede Creek by inspecting fencing and making any necessary repairs. ➤ Maintain or improve 7 springs that provide year-round water for wildlife by checking for broken pipes and repairing as necessary, and clearing sediment and vegetation from the sources. ➤ Develop 1 new spring in the south east corner of Section 3. ➤ Maintain existing deer forage areas by diverting spring water over the maximum area possible and along the contour through a shallow ditch system. ➤ Promote vernal pool flora and fauna by protecting and maintaining 2 vernal pools in Section 9 and 18 from mechanical disruption and allowing cattle to graze. ➤ Maintain 2 owl boxes along Oak Run Creek by checking use and replacing material as necessary. ➤ Install 1 new pre-fabricated bat house. ➤ Plant 3 container stock cottonwood trees and install fencing to exclude livestock.
SL RANCH DEER ZONE X3A MODOC 7,500 ACRES	<p>Authorized Harvest: 4 buck deer forked horn or better and 1 buck pronghorn antelope</p> <ul style="list-style-type: none"> • Issue 4 buck deer tags for the period of August 15, 2018 through November 15, 2018. • Issue 1 buck pronghorn antelope tag for the period of August 1, 2018 through September 30, 2018. • No person shall take more than 1 buck deer annually in the X zones. 	<ul style="list-style-type: none"> ➤ Use a combination of chainsaws and herbicides to remove western juniper from 5 to 10 acres. ➤ Flood 400 acres of harvested wild rice fields for waterfowl use. ➤ Maintain the livestock exclusion fence around the spring below Likely Mill to exclude cattle. ➤ Maintain 2 springs on Rocky Prairie and 1 pond by ensuring that fencing excludes cattle. Any damaged fences and structures will be repaired as necessary. ➤ Maintain the livestock exclusion fencing along the West Side Canal where willows are present. Fences and structures will be repaired as necessary. ➤ Plant 200 willow shoots along the north and south banks of the West Canal. ➤ Maintain and replace goose nesting platforms as needed.

PLM AREA LICENSE
NEW 5-YEAR MANAGEMENT PLANS, 2018-2023
PROPOSED SEASONS, HARVESTS, AND HABITAT IMPROVEMENTS

PLM Area	Proposed Season and Harvest	Habitat Improvement Program
NORTH CENTRAL REGION		
SUGARLOAF-BANGOR RANCH DEER ZONE D3 YUBA 2,626 ACRES	<p>Authorized Harvest: 12 buck deer forked horn or better, 50 turkey, and 200 quail</p> <ul style="list-style-type: none"> • Issue 12 buck deer tags for the period of September 22, 2018 through November 30, 2018. • Issue 50 turkey tags for the periods of October 1, 2018 through January 15, 2019 (fall season, either-sex harvest) and March 1, 2019 through May 15, 2019 (spring season, bearded-only harvest). • Issue 200 upland game seals for the period of September 1, 2018 through February 28, 2019. Additional orders are approved in 100 seal increments up to the authorized harvest. 	<ul style="list-style-type: none"> ➤ Moderate livestock grazing program. ➤ Clear roads of downed trees from October 2017 Cascade Fire. ➤ Repair and replace fencing (wildlife friendly design), gates, and PLM signs damaged in fire. ➤ Repair Wood Duck Lake damaged water supply system. ➤ Clear and improve existing fire breaks from county road.
CENTRAL REGION		
ALEXANDER RANCH DEER ZONE A MONTEREY 786 ACRES	<p>Authorized Harvest: 1 buck deer forked horn or better, 1 bull elk, and 2 antlerless elk</p> <ul style="list-style-type: none"> • Issue 1 buck deer tag for the period July 2, 2018 through November 30, 2018. • Issue 1 bull elk tag for the period of July 2, 2018 through December 31, 2018. • Issue 2 antlerless elk tags for the period of August 15, 2018 through December 31, 2018. 	<ul style="list-style-type: none"> ➤ Maintain existing springs, troughs and reservoirs to provide water for wildlife. ➤ Limit cattle stocking rate to 75 animals to enhance and provide habitat and feed for wildlife. ➤ Create 5 brush piles for use by wildlife. ➤ Plant 5 acres to benefit wildlife forage (elk and deer). ➤ Conduct 2 elk counts per year (count deer when possible also).
CARRIZO RANCH SAN LUIS OBISPO 11,040 ACRES	<p>Authorized Harvest: 3 bull elk, 2 antlerless elk</p> <ul style="list-style-type: none"> • Issue 3 bull elk tags for the period July 15, 2018 through December 31, 2018. • Issue 2 antlerless elk tags for the period August 15, 2018 through December 31, 2018. 	<ul style="list-style-type: none"> ➤ Maintain fence around Big Spring riparian area and the 2 windmill ponds to reserve water for wildlife. ➤ Plant 5 trees around Elk windmill pond for use by wildlife. ➤ Plant 100 acres of barley for wildlife in the Lewis pasture. ➤ Take actions to improve water quality in Big Spring.

PLM AREA LICENSE
NEW 5-YEAR MANAGEMENT PLANS, 2018-2023
PROPOSED SEASONS, HARVESTS, AND HABITAT IMPROVEMENTS

PLM Area	Proposed Season and Harvest	Habitat Improvement Program
HARTNELL RANCH DEER ZONE A MONTEREY 4,600 ACRES	<p>Authorized Harvest: 2 buck deer forked horn or better, 1 bull elk, and 2 antlerless elk</p> <ul style="list-style-type: none"> • Issue 2 buck deer tags for the period July 2, 2018 through November 30, 2018. • Issue 1 bull elk tag for the period of July 2, 2018 through December 31, 2018. • Issue 2 antlerless elk tags for the period of August 15, 2018 through December 31, 2018. 	<ul style="list-style-type: none"> ➤ Maintain existing springs, troughs and reservoirs to provide water for wildlife. ➤ Limit cattle stocking rate to 250 animals to enhance and provide habitat and feed for wildlife. ➤ Create 8 brush piles for use by wildlife. ➤ Plant 10 acres to benefit wildlife forage (elk and deer). ➤ Conduct 3 elk counts per year (count deer when possible too).
MORISOLI RANCH MONTEREY AND SAN BENITO 14,700 ACRES	<p>Authorized Harvest: 4 bull elk and 4 antlerless elk</p> <ul style="list-style-type: none"> • Issue 3 bull elk tags for the period July 1, 2018 through December 31, 2018. • Issue 3 antlerless elk tags for the period August 15, 2018 through December 31, 2018. <p>Note: The Morisoli Ranch wanted to request their full allocation of elk tags for the upcoming season but that would represent an increase in tags and is not possible without approval of the new statewide elk management plan. Harvest levels remain unchanged from last year.</p>	<ul style="list-style-type: none"> ➤ Build 1 elk crossing. ➤ Construct 5 brush piles for use by wildlife. ➤ Develop 1 new water source for wildlife. ➤ Build and install one bird nest box. ➤ Plant 10 acres of forage mix for use by wildlife. ➤ Clear 5 acres of old growth brush to stimulate new forage growth for use by wildlife. ➤ Seed cleared areas with barley/vetch mixture to provide additional forage for wildlife.
SOUTH COAST REGION		
SANTA CATALINA ISLAND DEER ZONE D15 LOS ANGELES 42,100 ACRES	<p>Authorized Harvest: 500 deer: 250 antlerless and 250 either-sex deer</p> <ul style="list-style-type: none"> • Issue 300 tags, 150 antlerless deer tags and 150 either-sex deer tags for the period of July 1, 2018 to December 31, 2018. • On or before October 1, 2018, the licensee may request (in writing) up to 50 additional antlerless deer tags and up to 50 additional either-sex deer tags to accomplish the authorized harvest. Any tags not requested during this request period can be rolled over into and allocated during the next request period. 	<ul style="list-style-type: none"> ➤ Continue successful recovery of the Catalina Island Fox. ➤ Continued monitoring of island for non-native mammals (e.g., raccoons). ➤ Continued bison herd management. ➤ Continue animal and plant baseline monitoring activities. ➤ Continue expanded weather data collection. ➤ Continue Catalina Habitat Improvement and Restoration Program (CHIRP). ➤ Continue plant community fencing and monitoring from the past fire impacts. ➤ Continue and expand education and outreach programs.

PLM AREA LICENSE
NEW 5-YEAR MANAGEMENT PLANS, 2018-2023
PROPOSED SEASONS, HARVESTS, AND HABITAT IMPROVEMENTS

PLM Area	Proposed Season and Harvest	Habitat Improvement Program
SANTA CATALINA ISLAND CONT.	<ul style="list-style-type: none"> On or before December 1, 2018, the licensee may request (in writing) up to 50 additional antlerless deer tags and up to 50 additional either-sex deer tags to accomplish the authorized harvest. 	<ul style="list-style-type: none"> ➤ Continue review of long-term Mule Deer Management Plan for Catalina Island. ➤ Bullfrog control program. ➤ Survey and population analysis of rare species.
INLAND DESERTS REGION		
BIG MORONGO SPRINGS RANCH DEER ZONE D14 SAN BERNARDINO 6,632 ACRES	<p>Authorized Harvest: 12 buck deer forked horn or better, 2 antlerless deer, and 5 black bear</p> <ul style="list-style-type: none"> Issue 12 buck deer tags and 2 antlerless deer tags for the period of September 8, 2018 through December 2, 2018. Issue 5 bear tags to take black bear for the period of September 8, 2018 through December 30, 2018 or when the statewide quota of 1,700 is met. 	<ul style="list-style-type: none"> ➤ Continue to exclude livestock use on the ranch. ➤ Repair or replace all pipelines and tanks damaged by Sawtooth wildfire. ➤ Repair fire-damaged roads within PLM. ➤ Continue monitoring of water sources with trail cameras.

California Fish and Game Commission
Alphabetical Listing of PLM Properties for Five-Year Licenses and Area
Plans for June 20-21, 2018 Meeting

Approve five-year PLM 2018-2023 licenses and area plans for:

- (A) Alexander Ranch (Monterey County)
- (B) Basin View Ranch (Modoc County)
- (C) Big Morongo Springs Ranch (San Bernardino County)
- (D) Black Ranch (Shasta County)
- (E) Carrizo Ranch (San Luis Obispo County)
- (F) Hartnell Ranch (Monterey County)
- (G) Hathaway Oak Run Ranch (Shasta County)
- (H) Morisoli Ranch (Monterey County/San Benito County)
- (I) Santa Catalina Island (Los Angeles County)
- (J) SL Ranch (Modoc County)
- (K) Sugarloaf-Bangor Ranch (Yuba County)

PLM AREA LICENSE
ANNUAL RENEWALS, 2018/2019
PROPOSED SEASONS, HARVESTS, AND HABITAT IMPROVEMENTS

PLM Area	Proposed Season and Harvest	Habitat Improvement Program
NORTHERN REGION		
ACKERMAN-SOUTH DAUGHERTY WMA DEER ZONE A MENDOCINO 10,831 ACRES	<p>Authorized Harvest: 18 buck deer forked horn or better</p> <ul style="list-style-type: none"> • Issue 16 buck deer tags for the period of July 14, 2018 through November 30, 2018. • No more than 14 buck deer may be harvested after September 23, 2018. • On or before October 15, 2018, the licensee may request (in writing) up to 8 additional buck tags to accomplish the authorized harvest. • In no case shall the number of tags issued be used to exceed the authorized harvest. • The number of tag holders actively hunting shall not exceed the number of deer available to harvest. 	<ul style="list-style-type: none"> ➤ Remove encroaching Douglas-fir up to 16 inches diameter-at-breast-height (DBH) by chainsaw or hand tools from 10 acres of grassy openings near Bark Dump. ➤ Enhance access to and depth within a new water source by mechanically removing vegetation and developing a gradual ramp. ➤ Remove an additional 0.25 mile of hog wire fencing to facilitate fawn movement. ➤ Burn vegetation and/or rip topsoil on 15 acres of grassland at Bark Dump.
ASH VALLEY RANCH DEER ZONE X3A LASSEN 8,736 ACRES	<p>Authorized Harvest: 4 buck deer forked horn or better and 1 buck pronghorn antelope</p> <ul style="list-style-type: none"> • Issue 6 buck deer tags for the period August 18, 2018 through November 30, 2018. • No person shall take more than 1 buck deer annually in the X zones. • In no case shall the number of tags issued be used to exceed the authorized harvest. • The number of tag holders actively hunting shall not exceed the number of deer available to harvest. • Issue 1 buck pronghorn antelope tag for the period of August 4, 2018 through September 30, 2018. 	<ul style="list-style-type: none"> ➤ Remove noxious weeds from at least 20 acres by grubbing and/or chemical application. ➤ Maintain previously completed habitat restoration work through the use of rotational grazing prescriptions. ➤ Replace 0.50 mile of perimeter fence with wildlife-friendly fence.

PLM AREA LICENSE
ANNUAL RENEWALS, 2018/2019
PROPOSED SEASONS, HARVESTS, AND HABITAT IMPROVEMENTS

PLM Area	Proposed Season and Harvest	Habitat Improvement Program
<p>BIG BLUFF RANCH</p> <p>DEER ZONE B5</p> <p>TEHAMA</p> <p>3,736 ACRES</p>	<p>Authorized Harvest: 8 deer of which no more than 5 may be buck deer forked horn or better</p> <ul style="list-style-type: none"> • Issue 8 either-sex deer tags for the period of August 15, 2018 through November 30, 2018. • No antlerless deer shall be harvested before September 15, 2018. 	<ul style="list-style-type: none"> ➤ Maintain and improve the Red Bank Restoration Project improvements (native vegetation restoration of 30 acres along 3 miles of creek) by repairing any damage to the livestock control fencing and irrigating until plants are fully established. ➤ Maintain the water development at Miller Place as needed to provide water for wildlife by repairing any damage to the system. ➤ Maintain the wildlife-friendly fence below Sunflower Dam to exclude livestock and allow wildlife access to wetlands. ➤ Fill a 500 gallon water trough and 3,000 gallon storage tank as needed to provide water for livestock and wildlife away from riparian areas. ➤ Participate in the Sunflower Coordinated Resource Management Program which is working, in part, to improve wildlife habitat on the surrounding 40,000 acres. ➤ Continue to participate in the CAL FIRE Vegetation Management Program to manage mixed chaparral fuels, enhance wildlife habitat, and reduce exotic weeds.
<p>CAPISTRAN RANCH</p> <p>DEER ZONE B1</p> <p>MENDOCINO</p> <p>13,200 ACRES</p>	<p>Authorized Harvest: 20 deer of which no more than 15 may be buck deer forked horn or better, 2 bull elk, and 2 antlerless elk</p> <ul style="list-style-type: none"> • Issue 10 either-sex deer tags for the period of August 1, 2018 through November 30, 2018. • No antlerless deer shall be harvested before September 15, 2018. • No more than 10 buck deer may be harvested after October 21, 2018. • On or before October 15, 2018, the licensee may request (in writing) up to 10 additional either-sex tags to accomplish the authorized harvest. 	<ul style="list-style-type: none"> ➤ Continue the reduced amount of livestock grazing (no more than 200 cow/calf pairs on 13,200 acres) for the period of October 15, 2018 through June 20, 2019 to increase residual vegetation for wildlife and reduce competition. ➤ Manage invasive plants by focused high-intensity, short-term grazing. ➤ Maintain 10 springs by checking the flow and wildlife escape ramps and repairing any damaged parts. ➤ Exclude trespass livestock from USFS and BLM grazing allotments by inspecting and repairing the boundary fence. ➤ Replace the nesting material in 3 bluebird nest boxes. Boxes will be relocated if not used the previous season. ➤ Maintain 3 wood duck nest boxes.

PLM AREA LICENSE
ANNUAL RENEWALS, 2018/2019
PROPOSED SEASONS, HARVESTS, AND HABITAT IMPROVEMENTS

PLM Area	Proposed Season and Harvest	Habitat Improvement Program
CAPISTRAN RANCH CONT.	<ul style="list-style-type: none"> • Issue 2 bull elk tags for the period of August 1, 2018 through December 1, 2018. • Issue 2 antlerless elk tags for the period of September 15, 2018 through December 1, 2018. 	<ul style="list-style-type: none"> ➤ Construct a brush pile for wildlife cover and oak seedling protection. The 20 feet wide by 5 feet tall pile will be created using slash from down trees and brush, and will be located near a routinely-used water source. ➤ Maintain and monitor 3 approximately 1,000-square foot food plots spread out over the property and in areas where green summer browse is limited. Each food plot is fenced from cattle and wild pigs. Each will have a motion-sensing camera to record day and night deer activity. The annual report will include a table of total number and composition of deer photographed. ➤ Using a tractor, create a 6 feet wide and 300 foot long trail through decadent chaparral to provide access and new palatable forage for wildlife.
CLARKS VALLEY RANCH DEER ZONE X3B LASSEN 2,793 ACRES	<p>Authorized Harvest: 1 buck deer forked horn or better</p> <ul style="list-style-type: none"> • Issue 3 buck deer tags for the period of August 11, 2018 through November 30, 2018. • In no case shall the number of tags issued be used to exceed the authorized harvest. • The number of tag holders actively hunting shall not exceed the number of deer available to harvest. • No person shall take more than 1 buck deer annually in the X zones. 	<ul style="list-style-type: none"> ➤ Remove western juniper from 40 acres in Sections 27 or 23 in Clarks Valley. ➤ Maintain previously-developed springs by checking for broken pipes and repairing as necessary. ➤ Maintain 3 aspen and willow enclosures by inspecting fencing and making any necessary repairs. ➤ Continue rotational grazing by resting a different pasture each spring to protect critical wildlife habitat areas and aspen. ➤ Remove western juniper from 2 acres within the aspen and willow enclosures to encourage aspen and willow growth.
CLOVER CREEK RANCH PLM DEER ZONE C3 SHASTA 880 ACRES	<p>Authorized Harvest: 3 buck deer forked horn or better</p> <ul style="list-style-type: none"> • Issue 3 buck deer tags for the period of August 1, 2018 through November 30, 2018. 	<ul style="list-style-type: none"> ➤ Replace the bottom strand of barbed wire with smooth wire 18 inches from the ground on at least 1 mile of fencing. ➤ Enhance a spring by removing encroaching blackberries. ➤ Develop an irrigated forage plot and wildlife-friendly water trough by installing 600 feet of pipe from the spring to a 2,500 gallon water tank.

PLM AREA LICENSE
ANNUAL RENEWALS, 2018/2019
PROPOSED SEASONS, HARVESTS, AND HABITAT IMPROVEMENTS

PLM Area	Proposed Season and Harvest	Habitat Improvement Program
CLOVER CREEK RANCH PLM CONT.		<ul style="list-style-type: none"> ➤ Maintain 6 wood duck boxes on Clover Creek. ➤ Develop 1 pond in an area of the ranch that does not currently have water to encourage less cattle use of riparian areas. ➤ Plant a 1 acre, fenced dry land food plot with grain or legumes using 70 pounds of seed/acre, or alfalfa using 15 to 25 pounds of seed per acre. ➤ Continue reducing erosion and control sediment by creating water bars on graded dirt roads. ➤ Manage grazing intensity to retain 400 pounds of Residual Dry Matter (RDM) per acre. ➤ Begin spring grazing after grass height reaches at least 8 inches and end by May 1 to provide forage for wildlife. Continue grazing with reduced cattle numbers.
CORNING LAND AND CATTLE COMPANY DEER ZONE B5 TEHAMA 6,200 ACRES	<p>Authorized Harvest: 7 buck deer forked horn or better, 3 antlerless deer, and 300 quail</p> <ul style="list-style-type: none"> • Issue 7 buck deer tags and 3 antlerless deer tags for the period of August 11, 2018 through November 30, 2018. • Issue 300 quail seals for the period of September 1, 2018, through February 28, 2019. 	<ul style="list-style-type: none"> ➤ Retain 8 irrigated forage plots, totaling 20 acres, planted in a grain/vetch/forb combination for use by wildlife. ➤ Continue reduced livestock numbers at 150 and deferred grazing from December 1, 2018 through May 1, 2019. ➤ Develop a 1 acre irrigated forage plot of alfalfa in an area that lacks green forage for use by wildlife. ➤ Burn at least 700 acres of decadent brush to improve wildlife forage.
DIXIE VALLEY RANCH DEER ZONE X3A LASSEN 12,500 ACRES	<p>Authorized Harvest: 4 buck deer forked horn or better, and 1 buck pronghorn antelope</p> <ul style="list-style-type: none"> • Issue 4 buck deer tags for the period of August 1, 2018 through November 30, 2018. • No more than 3 buck deer may be harvested after October 21, 2018. • No person shall take more than 1 buck deer annually in the X zones. 	<ul style="list-style-type: none"> ➤ Remove all western juniper from 100 acres (goal is 1,000 junipers per year) to increase shrub recruitment for wildlife forage. ➤ Manage 30 days of timed cattle grazing on 250 acres of natural pasture containing a large pond, a creek, and several springs to provide forage and water for wildlife. ➤ Establish a 10 acre legume plot for elk within the 800 acre irrigated pasture from which cattle are excluded. ➤ Plant and irrigate at least 50 acres of grain or other suitable deer food, retaining 5 of the 50 acres unharvested to provide forage for wildlife.

PLM AREA LICENSE
ANNUAL RENEWALS, 2018/2019
PROPOSED SEASONS, HARVESTS, AND HABITAT IMPROVEMENTS

PLM Area	Proposed Season and Harvest	Habitat Improvement Program
DIXIE VALLEY RANCH CONT.	<ul style="list-style-type: none"> Issue 1 buck pronghorn antelope tag for the period of August 11, 2018 through September 30, 2018. 	<ul style="list-style-type: none"> ➤ Maintain and improve existing water sources by removing obstacles, checking dams for erosion or cattle damage, repairing spillways, and where appropriate, enlarging ponds. ➤ Plant 15 willow saplings at a water source. ➤ Install 10 Canada goose nesting platforms at Saw Mill pond, Jacks Hole and in the large marsh area.
EL RANCHO RIO FRIO DEER ZONE B5 TEHAMA 12,682 ACRES	<p>Authorized Harvest: 24 buck deer forked horn or better</p> <ul style="list-style-type: none"> Issue 24 buck deer tags for the period of August 15, 2018 through November 30, 2018. No more than 12 deer may be harvested after October 21, 2018. 	<ul style="list-style-type: none"> ➤ Complete the installation of two 10,000-gallon guzzlers to provide additional water for wildlife. ➤ Burn 300 to 500 acres of decadent shrubs (mostly chamise) to enhance deer habitat. ➤ Continue to develop a 3 acre irrigated forage plot by first ripping to dislodge brush and then spraying brush sprouts with herbicide. Seed any mechanically disturbed areas with a mix of perennial grasses and annual clovers.
FIVE DOT RANCH - AVILA DEER ZONE X3A LASSEN 11,000 ACRES	<p>Authorized Harvest: 6 buck deer forked horn or better and 1 buck pronghorn antelope</p> <ul style="list-style-type: none"> Issue 12 buck deer tags to take 6 deer for the period of September 15, 2018 through November 30, 2018. No person shall take more than 1 buck deer annually in the X zones. In no case shall the number of tags issued be used to exceed the authorized harvest. The number of tag holders actively hunting shall not exceed the number of deer available to harvest. Issue 1 buck pronghorn antelope tag for the period of August 8, 2018 through September 20, 2018. 	<ul style="list-style-type: none"> ➤ Continue reduced livestock use at 300 to 400 head (previously 450 head). ➤ Continue to exclude livestock from 7 aspen and wetland habitat enclosures by inspecting fencing and making any necessary repairs. These areas provide important deer fawning habitat. ➤ Maintain 6 nesting platforms for Canada geese at 4 reservoirs by checking use and replacing nesting material as necessary. ➤ Cut and disperse 50 to 100 mountain mahogany branches with ripe seeds in order to recruit young plants. ➤ Maintain 6 existing springs by checking for broken pipes and repairing as necessary. ➤ Maintain 4 existing reservoirs by inspecting spillways and dams for damage and making any necessary repairs.

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PLM Area	Proposed Season and Harvest	Habitat Improvement Program
<p>FIVE DOT RANCH - HORSE LAKE</p> <p>DEER ZONE X5A</p> <p>LASSEN</p> <p>8,025 ACRES</p>	<p>Authorized Harvest: 1 buck deer forked horn or better and 1 buck pronghorn antelope</p> <ul style="list-style-type: none"> • Issue 1 buck deer tag for the period of September 15, 2018 through November 30, 2018. • No person shall take more than 1 buck deer annually in the X zones. • Issue 1 buck pronghorn antelope tag for the period of August 11, 2018 through September 16, 2018. 	<ul style="list-style-type: none"> ➤ Rehabilitate a spring and riparian vegetation on 20 acres by excluding cattle (allow grazing for 4 to 5 days only), installing a water storage tank, solar panel, and troughs, and removing juniper from 80 acres surrounding the spring. ➤ Defer livestock grazing of the 300 acre Packard Field until after July 1 to improve duck and goose brood survival. Grazing will occur between July 1, 2018 and October 1, 2018. ➤ Maintain 5 goose nesting platforms at Packard Reservoir and Coon Camp Reservoir as needed. ➤ Knock seed off bitterbrush plants so cattle can stomp them into the ground for regeneration. Bitterbrush regeneration will be monitored annually.
<p>FIVE DOT RANCH – SCHOOL SECTION</p> <p>DEER ZONE X5A</p> <p>LASSEN</p> <p>640 ACRES</p>	<p>Authorized Harvest: 1 buck deer forked horn or better</p> <ul style="list-style-type: none"> • Issue 1 buck deer tag for the period of September 15, 2018 through November 30, 2018. • No person shall take more than 1 buck deer annually in the X zones. 	<ul style="list-style-type: none"> ➤ Maintain reduced cattle grazing in 2018. ➤ Maintain livestock exclusion fence around a 0.50 acre aspen patch by inspecting it regularly and making any necessary repairs. ➤ Cut and disperse 50 mountain mahogany branches with ripe seeds in order to recruit young plants.
<p>FIVE DOT RANCH - TUNNEL SPRINGS</p> <p>DEER ZONE X5A</p> <p>LASSEN</p> <p>2,600 ACRES</p>	<p>Authorized Harvest: 1 buck deer forked horn or better and 2 buck pronghorn antelope</p> <ul style="list-style-type: none"> • Issue 1 buck deer tag for the period of September 15, 2018 through November 30, 2018. • No person shall take more than 1 buck deer annually in the X zones. • Issue 2 buck pronghorn antelope tags for the period of August 11, 2018 through September 16, 2018. 	<ul style="list-style-type: none"> ➤ Repair damaged livestock-exclusion fencing with wildlife-friendly fencing at Tunnel Springs. ➤ Retain water in 2 reservoirs at 50% of the current year's water capacity for wildlife by filling them as needed. ➤ Remove 100 western junipers from around Tunnel Springs and the reservoirs. ➤ Knock seeds off bitterbrush plants in the fall so cattle can stomp them into the ground for regeneration. Bitterbrush regeneration will be monitored annually. ➤ Maintain the solar panel water pump system that keeps 12 water troughs full to provide water for wildlife. ➤ Coordinate with BLM to facilitate the gathering of wild horses on the property as soon as possible.

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PLM Area	Proposed Season and Harvest	Habitat Improvement Program
<p>FIVE DOT RANCH - WILLOW CREEK</p> <p>DEER ZONE X4</p> <p>LASSEN</p> <p>7,200 ACRES</p>	<p>Authorized Harvest: 7 buck deer forked horn or better and 2 buck pronghorn antelope</p> <ul style="list-style-type: none"> • Issue 8 buck deer tags to take 7 buck deer for the period of September 15, 2018 through November 30, 2018. • No person shall take more than 1 buck deer annually in the X zones. • In no case shall the number of tags issued be used to exceed the authorized harvest. • The number of tag holders actively hunting shall not exceed the number of deer available to harvest. • Issue 2 buck pronghorn antelope tags for the period of August 4, 2018 through September 9, 2018. 	<ul style="list-style-type: none"> ➤ Repair any damaged livestock-exclusion fencing around 4 aspen and willow stands totaling 30 acres that provide deer fawning habitat. ➤ Crush at least 35 acres of snowbrush to provide new palatable forage at different sites in Sections 21, 22, 27, or 28. ➤ Exclude livestock grazing on 50 acres of native sagebrush vegetation in the Triangle Field for sage-grouse and other sagebrush dependent species. ➤ Retain water in reservoirs and ponds at 50% of the current year's water capacity for wildlife by filling them as needed. ➤ Leave the 3rd cutting of alfalfa on 100 acres west of Hwy 139 for deer and pronghorn antelope use. ➤ Maintain a 50 acre field of alfalfa and grass, providing forage for deer. ➤ At Round Valley Reservoir, maintain trout population by stocking and restricting fishing to catch and release only and maintain 4 goose nesting platforms.
<p>JS RANCH</p> <p>DEER ZONE C3</p> <p>SHASTA</p> <p>6,500 ACRES</p>	<p>Authorized Harvest: 12 buck deer forked horn or better and 1 bull elk</p> <ul style="list-style-type: none"> • Issue 12 buck deer tags for the period of August 1, 2018 through November 30, 2018. • No more than 6 buck deer may be harvested after October 21, 2018. • Issue 1 bull elk tag for the period of August 1, 2018 through November 30, 2018. 	<ul style="list-style-type: none"> ➤ Retain vegetation for wildlife cover along irrigation canal banks to the extent it does not interfere with ditch maintenance. ➤ Inspect and repair check dams in irrigation canals. Water is kept in canals year-round and is accessible to wildlife. ➤ Mechanically control the spread of extensive blackberry thickets within a 650 acre area. Bramble margins and some interior areas will be cut or crushed to reduce blackberry water consumption and increase forage. ➤ Install water bars on dirt roads adjacent to Cow Creek to prevent sediment erosion. ➤ Maintain the exclusion of livestock from 0.50 miles of riparian area by inspecting exclusion fencing and repairing any damage. ➤ Improve water coverage by adding irrigation to 20 to 30 acres in Clover Creek Flats.

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PLM Area	Proposed Season and Harvest	Habitat Improvement Program
JS RANCH CONT.		<ul style="list-style-type: none"> ➤ Increase field size for 1 food plot from 10 to 15 acres to 20 to 30 acres. ➤ Expand livestock exclusion area from 650 acres to 1,000 acres to provide forage for wildlife during late summer and early fall. Livestock are excluded from June 1, 2018 through October 31, 2018. ➤ Remove a minimum of 0.50 mile of interior fencing to enhance wildlife movement. ➤ Maintain 50 existing wood duck boxes. Check all boxes for use annually on Old Cow Creek and Clover Creek. ➤ Enhance and maintain 2 ponds by enlarging and repairing spillways and dams and making any other necessary repairs. ➤ Maintain a 200 acre fenced area with no human disturbance or cattle grazing for wildlife use year-round.
KRAMER RANCH PLM DEER ZONE X1 LASSEN 4,070 ACRES	<p>Authorized Harvest: 5 buck deer forked horn or better and 1 buck pronghorn antelope</p> <ul style="list-style-type: none"> • Issue 5 buck deer tags for the period of August 20, 2018 through November 30, 2018. • No person shall take more than 1 buck deer annually in the X zones. • Issue 1 buck pronghorn antelope tag for the period of August 20, 2018 through September 30, 2018. 	<ul style="list-style-type: none"> ➤ Remove all western junipers from at least 33 acres in Area 2 except for any large, old-growth juniper that are being used by wildlife. ➤ Create 1 brush pile for every 1 to 5 acres of western juniper removal to provide cover for wildlife. ➤ Replace 4,230 feet of 5-strand barbed wire fencing with wildlife-friendly fencing. ➤ Remove noxious weeds including scotch thistle, perennial pepper weed, and diffuse knapweed from at least 2 acres by chemical treatment or hand grubbing. ➤ Implement rotational grazing practices in the juniper removal area to allow for establishment of native grasses, forbs, and shrubs for wildlife. Rotate cattle to next pasture before grasses reach a 6 inch stubble height. Available forage for wildlife on the ranch will be monitored using 1 square meter grazing enclosure cages.

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<p>LITTLE DRY CREEK RANCH</p> <p>DEER ZONE C4</p> <p>TEHAMA</p> <p>2,000 ACRES</p>	<p>Authorized Harvest: 2 buck deer forked horn or better</p> <ul style="list-style-type: none"> • Issue 2 buck deer tags for the period of October 20, 2018 through November 30, 2018. 	<ul style="list-style-type: none"> ➤ Continue to exclude livestock grazing from the entire ranch to benefit wildlife. ➤ Maintain 3 springs by checking for broken pipes and repairing as necessary. Install wildlife escapement ramps within existing troughs. ➤ Treat at least 2 acres of yellow star thistle with herbicides. ➤ Keep trespass livestock off the ranch by annually inspecting the perimeter fence and repairing any damage.
<p>LONG PRAIRIE FARMS</p> <p>DEER ZONE X1</p> <p>SISKIYOU</p> <p>1,814 ACRES</p>	<p>Authorized Harvest: 2 either-sex deer and 1 bull elk</p> <ul style="list-style-type: none"> • Issue 2 either-sex deer tags for the period of September 15, 2018 through November 30, 2018. • No person shall take more than 1 buck deer annually in the X zones. • Only 1 buck deer shall be harvested after October 21, 2018. • Issue 1 bull elk tag for the period of September 1, 2018 through December 31, 2018. 	<ul style="list-style-type: none"> ➤ Remove western juniper from at least 5 acres to improve shrub recruitment. ➤ Increase forage quality for wildlife by pruning bitterbrush and mechanically disturbing the soil within a 5 acre area. ➤ Maintain 8 miles of exclusion fencing on the ranch to prohibit grazing from trespass cattle. ➤ Use ground water pumps to create and maintain a 1 acre wetland to provide year-round water for wildlife. ➤ Retain 150 acres of alfalfa and timothy grass in the crop pivot corners to provide fall forage for wildlife. ➤ Identify and retain at least 3 pine and/or juniper trees currently providing nesting opportunities for raptors on the ranch.
<p>LOOKOUT RANCH</p> <p>DEER ZONE X1</p> <p>MODOC</p> <p>6,880 ACRES</p>	<p>Authorized Harvest: 6 buck deer forked horn or better and 1 buck pronghorn antelope</p> <ul style="list-style-type: none"> • Issue 6 buck deer tags for the period of August 15, 2018 through November 30, 2018. • No person shall take more than 1 buck deer annually in the X zones. • Issue 1 buck pronghorn antelope tag for the period of August 20, 2018 through September 20, 2018. 	<ul style="list-style-type: none"> ➤ Renovate and re-level at least 80 acres of wild rice to improve water storage for waterfowl. ➤ Remove western junipers from 3 acres at Moon Pasture. ➤ Plant 250 willows in the Buck Pasture draw below the 3rd pond and 250 willows in the southwest corner of the marsh. ➤ Plant 30 acres of millet, chufa, and dwarf corn on the eastside marsh to be left unharvested and ungrazed, 12 acres of wild rice to be left unharvested in Buck Pasture, 10 acres of barley to be left unharvested in Bass Pond, and 15 acres in the pivot corners to provide forage for wildlife.

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PLM Area	Proposed Season and Harvest	Habitat Improvement Program
LOOKOUT RANCH CONT.		<ul style="list-style-type: none"> ➤ Rotate 200 head of cattle through all of deeded ground. During summer, graze 75% of cattle on private lease ground, then bring cattle back to the ranch in fall to manage crop residue that restricts plant growth and development. Gather cattle and ship to winter pasture. ➤ Build at least 5 brush piles (average size 12 feet wide by 8 feet tall) in the Moon Pasture to provide escape cover for wildlife.
MENDIBOURE COLD SPRINGS RANCH DEER ZONE X5B LASSEN 1,880 ACRES	<p>Authorized Harvest: 1 buck deer forked horn or better and 1 buck pronghorn antelope</p> <ul style="list-style-type: none"> • Issue 1 buck deer tag for the period of October 6, 2018 through November 4, 2018. • No person shall take more than 1 buck deer annually in the X zones. • Issue 1 buck pronghorn antelope tag for the period of August 18, 2018 through September 16, 2018 	<ul style="list-style-type: none"> ➤ Protect young aspen above Hall Cabin with a 2 acre livestock enclosure. ➤ Cut at least 50 mountain mahogany branches with ripe seeds and disperse on the ground in order to recruit young plants. ➤ Mechanically remove western juniper from 5 acres in the southeast corner of Section 36 to improve shrub and forb recruitment. ➤ Maintain East Meadow spring by checking and repairing any damaged parts. ➤ Maintain the Halls Cabin pond by digging out the pond to make it deeper. ➤ Continue rotational cattle grazing between 2 pastures so that the residual dry matter does not fall below 40% using the Double-Weight sampling technique.
MENDIBOURE RANCH DEER ZONE X5B LASSEN 8,840 ACRES	<p>Authorized Harvest: 3 buck deer forked horn or better and 1 buck pronghorn antelope</p> <ul style="list-style-type: none"> • Issue 6 buck deer tags for the period of October 6, 2018 through November 4, 2018. • No person may take more than 1 buck deer annually in the X zones. • In no case shall the number of tags issued be used to exceed the authorized harvest. 	<ul style="list-style-type: none"> ➤ Maintain aspen and willow livestock enclosure fencing at Etchecopar Spring, Van Loan Creek, and Big Springs by checking and repairing fencing if needed. ➤ Monitor 60 acres of dryland alfalfa and reseed as necessary for wildlife. ➤ Construct a wildlife-friendly fence to exclude cattle from the plot. ➤ Maintain springs and water sources. ➤ Cut 100 to 150 mountain mahogany branches with ripe seeds and disperse on the ground in order to recruit young plants. ➤ Maintain perimeter fences.

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PLM Area	Proposed Season and Harvest	Habitat Improvement Program
MENDIBOURE RANCH CONT.	<ul style="list-style-type: none"> The number of tag holders actively hunting shall not exceed the number of deer available to harvest. Issue 1 buck pronghorn antelope tag for the period of August 18, 2018 through September 16, 2018. 	<ul style="list-style-type: none"> Continue rotational cattle grazing so that the residual dry matter does not fall below 40% using the Double-Weight sampling technique. Build 2 floating goose nests at Mendiboure Reservoir.
PONDOSA DEER ZONE X1 SISKIYOU 27,734 ACRES	<p>Authorized Harvest: 3 either-sex deer, 2 bull elk, and 2 antlerless elk</p> <ul style="list-style-type: none"> Issue 3 either-sex deer tags for the period of August 15, 2018 through November 15, 2018. No antlerless deer shall be harvested before September 15, 2018. Issue 2 bull elk tags and 2 antlerless elk tags for the period of September 1, 2018 through November 15, 2018. 	<ul style="list-style-type: none"> Maintain at least 25 acres of aspen and meadow restoration areas by removing encroaching conifer seedlings and saplings. Create 5 brush piles for wildlife cover. Continue ongoing study that utilizes trail cameras to estimate cow/calf ratios on the property. Recruit 30 acres of late seral habitat by retaining up to 10% of the standing inventory within even-aged timber units. Decommission 1 mile of unused road by blocking access and installing erosion control.
RED ROCK RANCH LASSEN DEER ZONE X3B 6,887 ACRES	<p>Authorized Harvest: 7 buck deer forked horn or better and 2 buck pronghorn antelope</p> <ul style="list-style-type: none"> Issue 7 buck deer tags for the period of August 11, 2018 through November 30, 2018. No person shall take more than 1 buck deer annually in the X zones. Issue 2 buck pronghorn antelope tags for the period of August 4, 2018 through September 30, 2018. 	<ul style="list-style-type: none"> Maintain the livestock fencing at 2 springs near Windy Flat to exclude livestock. Maintain a spring box at Windy Flat by checking and repairing any damaged parts. Inspect and make any necessary repairs to the livestock exclusion fencing around 2 aspen and willow stands that provide deer fawning habitat. Cut 100 to 150 mountain mahogany branches with ripe seeds and disperse on the ground in order to recruit young plants. Remove all western juniper from upper Neuland area to enhance shrub recruitment. Maintain aspen enclosure in Boot Lake Canyon, west of Boot Lake, to exclude livestock grazing and encourage the development of additional fawning habitat. Continue rotational grazing to rest at least 1 meadow for wildlife cover and forage.

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<p>RED ROCK VALLEY FARMS</p> <p>DEER ZONE X1</p> <p>SISKIYOU</p> <p>5,562 ACRES</p>	<p>Authorized Harvest: 3 either-sex deer and 1 bull elk</p> <ul style="list-style-type: none"> • Issue 3 either-sex deer tags for the period of September 15, 2018 through November 30, 2018. • No antlerless deer shall be harvested before September 15, 2018. • No person shall take more than 1 buck deer annually in the X zones. • Only 1 buck deer shall be harvested after October 21, 2018. • Issue 1 bull elk tag for the period of September 1, 2018 through December 31, 2018. 	<ul style="list-style-type: none"> ➤ Selectively remove western juniper from at least 5 acres to improve shrub recruitment. ➤ Increase forage quality for wildlife by pruning bitterbrush and mechanically disturbing the soil within a 5 acre area. ➤ Maintain 12 miles of exclusion fencing on the ranch to prohibit grazing from trespass cattle. ➤ Retain 400 acres of alfalfa and timothy grass in the crop pivot corners to provide fall forage for wildlife. ➤ Maintain a restored 2 acre wetland by pumping water into it to providing year-round water for wildlife. ➤ Identify and retain at least 5 pine and juniper trees that provide nesting and perching opportunities for raptors. ➤ Maintain Tecnor Spring by removing western juniper trees and silt as necessary.
<p>RICKERT RANCH</p> <p>DEER ZONE C3</p> <p>SHASTA</p> <p>4,441 ACRES</p>	<p>Authorized Harvest: 5 buck deer forked horn or better</p> <ul style="list-style-type: none"> • Issue 7 buck deer tags for the period of August 1, 2018 through November 30, 2018. • Only 3 buck deer shall be harvested after October 21, 2018. • In no case shall the number of tags issued be used to exceed the authorized harvest. • The number of tag holders actively hunting shall not exceed the number of deer available to harvest. 	<ul style="list-style-type: none"> ➤ Install a solar pump and wildlife friendly drinker at Swede Creek Homestead well. ➤ Install wildlife-friendly fencing around the forage plot to exclude livestock. ➤ Crush decadent manzanita and buckbrush along 0.50 linear mile on the south rim of Little French Creek to enhance seeding and regeneration of brush to improve forage for wildlife. ➤ Develop a 0.50 acre dry land grain (wheat and/or barley) forage plot in French Creek Flats area. Install wildlife-friendly fencing to exclude livestock from the forage plot. ➤ Create 5 brush piles in 5 acres of Little French Creek. Piles will be 12 feet wide by 6 feet tall for quail habitat.

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R-R RANCH MENDOCINO 1,460 ACRES	<p>Authorized Harvest: 2 bull elk and 6 antlerless elk</p> <ul style="list-style-type: none"> • Issue 2 bull elk tags for the period of August 1, 2018 through November 30, 2018. • Issue 3 antlerless elk tags for the period of September 15, 2018 through November 30, 2018. • On or before October 15, 2018, the licensee may request (in writing) up to 3 additional antlerless elk tags to accomplish the authorized harvest. 	<ul style="list-style-type: none"> ➤ Irrigate a 7 acre alfalfa pasture. If the alfalfa production falls below a total cover of 50% in the fall, rip, replant and roll the pasture at a rate of 20 pounds per acre the following March or April with a clover and alfalfa seed mix to provide high quality forage for wildlife. ➤ Maintain the existing 100 acre dryland plot with a rye grass/clover mix by harvesting and thatching every summer. ➤ Manually fill 2 water troughs near the irrigated alfalfa as needed for elk use. ➤ Clean (through a rotor-rooter process) and maintain 3 natural springs and associated bathtub holding structures found on the Ranch to facilitate water flow from the springs to the tubs. ➤ Exclude livestock from the ranch to improve forage and cover for wildlife. ➤ Expand (remove sediment and enlarge) Mud Lake with a tractor in late summer when the pond has dried and as conditions allow to ensure the lake holds water all year. ➤ Make wood piles for non-game wildlife. The location, size, and number are determined by the amount of large oak trees and branches that have fallen during the winter. However, in an effort to help pre-suppress wildfire on the Ranch approximately 50% of the piles will be burned each year.
SALT CREEK RANCH DEER ZONE B5 TEHAMA 640 ACRES	<p>Authorized Harvest: 3 buck deer forked horn or better</p> <ul style="list-style-type: none"> • Issue 3 buck deer tags for the period of September 1, 2018 through November 30, 2018. 	<ul style="list-style-type: none"> ➤ Mechanically crush at least 5 acres of decadent brush to promote new growth. ➤ Maintain existing open areas (approximately 18 acres have been brush-cleared) by replanting with annual grains and clover. ➤ Continue to improve water retention ponds by repairing and plugging any leaks in the dams.

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SCHNEIDER RANCH DEER ZONE B1 MENDOCINO 4,222 ACRES	<p>Authorized Harvest: 9 buck deer forked horn or better</p> <ul style="list-style-type: none"> • Issue 9 buck deer tags for the period of August 1, 2018 through November 30, 2018. • No more than 4 buck deer may be harvested after October 21, 2018. 	<ul style="list-style-type: none"> ➤ Maintain the 1 acre irrigated forage plot at Mark's Place, which provides valuable summer forage and also contributes subsurface water to an additional 8 acres downslope. Maintenance includes weed control, soil management, and ensuring the functionality of the water supply system. ➤ Cultivate with tractor equipment and irrigate the 1 acre Cabin food plot, which provides a year-round deer feeding area. ➤ Create 6 brush piles for wildlife cover. The piles will each be approximately 10 feet wide and 6 feet tall and will provide good habitat for both deer and quail. ➤ Burn 6 brush piles. The remnant charcoal and ashes are nutrient rich and deer roll in them, perhaps for control of external parasites. ➤ Cut/hinge at least 10 smaller sub-canopy oaks so they droop to a point where branches are within reach of deer. ➤ Inspect 8 previously improved springs and repair any damaged parts, clear any brush that is intruding on the collection galleries, cleaning out accumulated debris and mud, and ensure the box is structurally sound. ➤ Exclude all livestock from the ranch, including regular fence maintenance in order to prohibit trespass cattle from USFS and BLM grazing allotments.
TRIPLE B RANCH DEER ZONE C3 SHASTA 600 ACRES	<p>Authorized Harvest: 3 buck deer forked horn or better</p> <ul style="list-style-type: none"> • Issue 3 buck deer tags for the period of August 1, 2018 through November 30, 2018. 	<ul style="list-style-type: none"> ➤ Maintain 10 water sources to provide water for wildlife by checking for broken pipes and repairing as necessary. ➤ Maintain 20 artificial cavity nesting structures by checking boxes, repairing any if necessary and cleaning out the boxes each year. ➤ Maintain 15 wood duck nesting boxes. ➤ Complete solar pumping station #2 to pipe water to ponds to provide water for wildlife.

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PLM Area	Proposed Season and Harvest	Habitat Improvement Program
TRIPLE B RANCH CONT.		<ul style="list-style-type: none"> ➤ Maintain livestock at 150 Animal Unit Months (AUM) during the winter grazing period (December through April) in order to reduce erosion impacts to streams. ➤ Plant a 5 acre forage plot with wheat for wildlife use. ➤ Maintain a pond by repairing erosion in the spillway area of the dam. ➤ Maintain all cattle watering areas to reduce cattle incursion into riparian habitats.
WALTON HOMESTEAD FAMILY, LLC DEER ZONE X3A LASSEN 5,980 ACRES	<p>Authorized Harvest: 5 either-sex deer and 1 buck pronghorn antelope</p> <ul style="list-style-type: none"> • Issue 5 either-sex deer tags for the period of August 19, 2018 through November 30, 2018. • No antlerless deer shall be harvested before September 15, 2018. • No person shall take more than 1 buck deer annually in the X zones. • Issue 1 buck pronghorn antelope tag for the period of August 1, 2018 through September 15, 2018. 	<ul style="list-style-type: none"> ➤ Thin or remove western juniper (200 to 500 acres per year) and seed with native grasses and wildflowers. Use residual slash to create wildlife brush piles. ➤ Maintain the containment basin, piping and water trough downhill from the spring for Hanna's and Horse Meadow Springs. ➤ Maintain wildlife-friendly livestock enclosure fencing around springs and basins and use solar pumping or gravity flow to give cattle and wildlife water access outside the fence. ➤ Replace perimeter fencing with wildlife-friendly fencing (200 to 500 yards per year). ➤ Construct and install 2 owl nesting boxes. ➤ Maintain aspen enclosure fencing and continue to remove junipers and pine trees within the enclosures.
NORTH CENTRAL REGION		
BIRD HAVEN RANCH DEER ZONE D3 GLENN 2,500 ACRES	<p>Authorized Harvest: 6 buck deer forked horn or better</p> <ul style="list-style-type: none"> • Issue 6 buck deer tags, with 1 of the 6 tags being reserved for a junior hunter. One or 2 of these tags can be donated to a non-profit such as California Waterfowl Association or Ducks Unlimited, or sold to generate revenue for any such non-profit. The harvest period will be from August 18, 2018 through November 30, 2018. 	<ul style="list-style-type: none"> ➤ Maintain current conditions. ➤ Plant 10 valley oak trees. ➤ Install and monitor 5 wood duck boxes. ➤ Install 5 bat boxes. ➤ Create 5 brush piles. ➤ Plant 4 separate 3 to 5 acre corn or milo food plots (total 12 to 20 acres).

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PROPOSED SEASONS, HARVESTS, AND HABITAT IMPROVEMENTS

PLM Area	Proposed Season and Harvest	Habitat Improvement Program
<p>DESERET FARMS- BALLARD UNIT</p> <p>DEER ZONE C4</p> <p>BUTTE</p> <p>2,948 ACRES</p>	<p>Authorized Harvest: 2 buck deer forked horn or better and 10 antlerless deer</p> <ul style="list-style-type: none"> • Issue 2 buck deer tags and 10 antlerless tags for the period of November 1, 2018 through December 31, 2018. One of the antlerless tags must be a junior tag. 	<ul style="list-style-type: none"> ➤ Flatten off existing waterfowl nesting mounds to ease access for waterfowl. ➤ Build and install 10 owl boxes. ➤ Continue star thistle control. ➤ Maintain current conditions in riparian areas. ➤ Clean and monitor wood duck boxes previously installed.
<p>DESERET FARMS- WILSON UNIT</p> <p>DEER ZONE C4</p> <p>BUTTE</p> <p>7,989 ACRES</p>	<p>Authorized Harvest: 6 buck deer forked horn or better and 15 antlerless deer</p> <ul style="list-style-type: none"> • Issue 6 buck deer tags and 15 antlerless tags for the period of November 1, 2018 through December 31, 2018. One of the antlerless tags must be a junior tag. 	<ul style="list-style-type: none"> ➤ Plant 15 willows, 15 valley oaks, 15 California sycamores, 15 cottonwoods, 20 wild roses and 20 coyote bushes in Gianella south holding pond areas. Replace any that die for 100% survivability. ➤ Place 2 logs in Gianella Pond for western pond turtle basking. ➤ Maintain current conditions in riparian areas. ➤ Continue feral pig eradication. ➤ Clean and monitor wood duck boxes previously installed.
<p>LLANO SECO RANCHO</p> <p>DEER ZONE C4</p> <p>BUTTE</p> <p>14,500 ACRES</p>	<p>Authorized Harvest: 25 buck deer forked horn or better</p> <ul style="list-style-type: none"> • Issue 25 buck deer tags for the period of September 1, 2018 through November 30, 2018. 	<ul style="list-style-type: none"> ➤ Treat 100 acres of yellow star and bull thistle. ➤ Plant 100 acres of vetch, rye grass, and oats. ➤ Grow 600 acres of dry land or irrigated wheat, and 275 acres of irrigated barley. ➤ Install and maintain 4 new western pond turtle basking structures. ➤ Maintain or replace existing 50 barn owl and wood duck nest boxes. ➤ Coordinate with CDFW on deer surveys and captures for CDFW Sacramento River Herd Study.

PLM AREA LICENSE
ANNUAL RENEWALS, 2018/2019
PROPOSED SEASONS, HARVESTS, AND HABITAT IMPROVEMENTS

PLM Area	Proposed Season and Harvest	Habitat Improvement Program
ORDWAY RANCH DEER ZONE D5 CALAVERAS 850 ACRES	<p>Authorized Harvest: 6 buck deer forked horn or better</p> <ul style="list-style-type: none"> • Issue 6 buck deer tags for the period of September 22, 2018 through November 30, 2018. 	<ul style="list-style-type: none"> ➤ No cattle grazing in Pasture A. ➤ Maintain 3 water sources for wildlife (including 3 solar-powered wells). ➤ Maintain 50 acres of fencing around 2 natural springs and creek to exclude cattle. ➤ Continue control of invasive weeds. ➤ Develop new wildlife brush piles and enhance existing brush piles.
ROCK CREEK DEER ZONE C4 BUTTE/TEHAMA 9,945 ACRES	<p>Authorized Harvest: 30 buck deer forked horn or better</p> <ul style="list-style-type: none"> • Issue 34 deer tags for the period of August 18, 2018 through November 30, 2018. 	<ul style="list-style-type: none"> ➤ Replace 1 mile of wildlife-friendly cross fencing on the Rose Ranch in the vicinity of Barbara Flats. ➤ Cat Trail Spring Project (clean out old spring, install tanks and water trough, fence spring area). ➤ Continue to graze at a sustainable level. Cattle levels and duration will be adjusted for drought. ➤ Continue maintenance on all ponds, springs, wells, troughs, and fencing.
SOPER-WHEELER DEER ZONE D3 BUTTE 5,250 ACRES	<p>Authorized Harvest: 18 buck deer forked horn or better, 26 turkey, 200 quail, and 8 bear</p> <ul style="list-style-type: none"> • Issue 18 buck tags for the period of August 18, 2018 through November 30, 2018. One to 3 tags to be donated to California Deer Association for auction with the season extended to December 10, 2018 for any donated tags. • Issue 26 turkey tags for the periods of October 13, 2018 through November 30, 2018 (fall season, either-sex harvest) and March 16, 2019 through May 12, 2019 (spring season, bearded turkey only harvest). Two tags to be donated to the Hunter Education Instructor Tag Incentive Program (HEI). 	<ul style="list-style-type: none"> ➤ Develop 5 more brush piles in burn area. ➤ Maintain and provide maintenance on all 11 wells, 5 water sources, and 7 guzzlers. ➤ Maintain restrictions on grazing. ➤ Plant 5 native Elderberry plants. If they do not survive replace with another elderberry plant or native fruit bearing plant.

PLM AREA LICENSE
ANNUAL RENEWALS, 2018/2019
PROPOSED SEASONS, HARVESTS, AND HABITAT IMPROVEMENTS

PLM Area	Proposed Season and Harvest	Habitat Improvement Program
SOPER-WHEELER CONT.	<ul style="list-style-type: none"> • Issue 200 quail tags for the periods of September 29, 2018 through February 28, 2019. • 16 bear tags to take up to 8 bears with either archery or rifle. The season will run August 18, 2018 through December 31, 2018 or until 1,700 bears have been taken statewide. 	
SPURLOCK RANCH DEER ZONE B3 GLENN 2,630 ACRES	<p>Authorized Harvest: 10 buck deer forked horn or better</p> <ul style="list-style-type: none"> • Issue 10 deer tags for the period of September 15, 2018 through November 30, 2018. 	<ul style="list-style-type: none"> ➤ Cattle numbers at or below 200 cow/calf pairs. ➤ Cattle grazing season October 25, 2018 to May 15, 2018; post-season grazing standard of 1,200 pounds per acre RDM. ➤ Treat approximately 20 to 25 acres of yellow star thistle and/or bull thistle with herbicide. ➤ Finish 0.25 mile of wildlife-friendly cattle exclusion fence on both sides of creek in Vanderford Valley ➤ Fence reservoir and riparian area in Johnson Valley.
CENTRAL REGION		
BARDIN RANCH MONTEREY 8,000ACRES	<p>Authorized Harvest: 2 bull elk and 4 antlerless elk</p> <ul style="list-style-type: none"> • Issue 2 bull elk tags for the period October 1, 2018 through December 31, 2018. • Issue 4 antlerless elk tags for the period October 1, 2018 through December 31, 2018. 	<ul style="list-style-type: none"> ➤ Maintain existing springs, pipelines and troughs to provide water for wildlife. ➤ Plant 30 acres of forage grass for use by wildlife. ➤ Maintain rotational grazing system and allow cattle access to the upper hills only from November through June. ➤ Recondition East Sycamore stock pond for wildlife. ➤ Mechanically remove & stack brush to enhance bird and small game habitat.

PLM AREA LICENSE
ANNUAL RENEWALS, 2018/2019
PROPOSED SEASONS, HARVESTS, AND HABITAT IMPROVEMENTS

PLM Area	Proposed Season and Harvest	Habitat Improvement Program
SKY ROSE RANCH, LLC DEER ZONE A MONTEREY 14,039 ACRES	<p>Authorized Harvest: 4 buck deer forked-horn or better and 2 antlerless deer</p> <ul style="list-style-type: none"> • Issue 4 buck deer tags for the period of July 1, 2018 through November 30, 2018. • Issue 2 antlerless deer tags for the period of July 1, 2018 through November 30, 2018. 	<ul style="list-style-type: none"> ➤ Install 5 new wildlife watering sources in the southwestern portion of the ranch. ➤ Replant 80 acres of barley in the northern section of the ranch for feed and cover for game and nongame species in the area. ➤ Install any combination of blue bird nesting boxes or bat roosting boxes totaling 10 units at locations to be determined on the ranch. ➤ Identify, remove, and dispose of mature tree of heaven; seed with site-appropriate native seed mix. ➤ Continue control of puncture vine and tocalote at sites identified during Year 1; seed with site-appropriate native seed mix.
TEJON RANCH DEER ZONE D-10 KERN & LOS ANGELES 270,000 ACRES	<p>Authorized Harvest: 30 either-sex deer, 5 antlerless deer, 12 bull elk, 3 antlerless elk, 10 bearded turkeys, and 0 pronghorn tags</p> <ul style="list-style-type: none"> • Issue 15 either-sex deer tags for the period of September 22, 2018 through November 5, 2018 (early season). • Issue 15 either-sex deer tags for the period of November 6, 2018 through December 31, 2018 (late season). • Issue 5 antlerless deer tags for the period of September 22, 2018 through December 31, 2018. • Issue 12 bull elk tags and 3 antlerless elk tags for the period of September 1, 2018 through December 31, 2018. • No person shall take more than 1 buck deer, 1 bull elk, and 1 antlerless elk. • Issue 10 turkey tags for the period of March 16, 2019 through May 19, 2019. 	<ul style="list-style-type: none"> ➤ Maintain at least 200 water troughs and wildlife guzzlers. ➤ Maintenance of wildlife escape ramps in livestock water troughs. ➤ Maintenance of netting covering open water tanks and large spring containments. ➤ Maintenance of 11 mile water pipeline system. ➤ Maintenance of fencing to exclude cattle; RDM monitoring of cattle grazing locations to protect riparian habitat. ➤ Maintenance of smooth wire pasture fences modified for pronghorn movement. ➤ Monitor riparian zones using Best Management Practices for Wildlife management and cattle grazing. ➤ Harvest of feral pigs to reduce damage to riparian habitat and native wildlife. ➤ Conduct annual composition counts (ground survey) of Rocky Mountain elk and mule deer populations to monitor population trends to better inform management planning activities.

***PLM AREA LICENSE
ANNUAL RENEWALS, 2018/2019
PROPOSED SEASONS, HARVESTS, AND HABITAT IMPROVEMENTS***

PLM Area	Proposed Season and Harvest	Habitat Improvement Program
TEJON RANCH CONT.		<ul style="list-style-type: none">➤ Conduct Quality Deer Management (QDM) program, hunter education and harvest methods, to better manage wild populations.➤ Utilize guided only hunts to better manage the Rocky Mountain elk and mule deer populations.

California Fish and Game Commission
Alphabetical Listing of PLM Properties for Annual Licenses and
Area Plans for June 20-21, 2018 Meeting

Approve annual 2018-2019 PLM area plans for:

- (A) Ackerman - South Daugherty WMA (Mendocino County)
- (B) Ash Valley Ranch (Lassen County)
- (C) Bardin Ranch (Monterey County)
- (D) Big Bluff Ranch (Tehama County)
- (E) Bird Haven Ranch (Glenn County)
- (F) Capistran Ranch (Mendocino County)
- (G) Clarks Valley Ranch (Lassen County)
- (H) Clover Creek Ranch PLM (Shasta County)
- (I) Corning Land and Cattle Company (Tehama County)
- (J) Deseret Farms - Ballard Unit (Butte County)
- (K) Deseret Farms - Wilson Unit (Butte County)
- (L) Dixie Valley Ranch (Lassen County)
- (M) El Rancho Rio Frio (Tehama County)
- (N) Five Dot Ranch - Avila (Lassen County)
- (O) Five Dot Ranch - Horse Lake (Lassen County)
- (P) Five Dot Ranch - School Section (Lassen County)
- (Q) Five Dot Ranch - Tunnel Springs (Lassen County)
- (R) Five Dot Ranch - Willow Creek (Lassen County)
- (S) JS Ranch (Shasta County)
- (T) Kramer Ranch PLM (Lassen County)
- (U) Little Dry Creek Ranch (Tehama County)
- (V) Llano Seco Rancho (Butte County)
- (W) Long Prairie Farms (Siskiyou County)
- (X) Lookout Ranch (Modoc County)
- (Y) Mendiboure Cold Springs Ranch (Lassen County)
- (Z) Mendiboure Ranch (Lassen County)
- (AA) Ordway Ranch (Calaveras County)
- (BB) Pondosa (Siskiyou County)
- (CC) Red Rock Ranch (Lassen County)

- (DD) Red Rock Valley Farms (Siskiyou County)
- (EE) Rickert Ranch (Shasta County)
- (FF) Rock Creek (Butte County/Tehama County)
- (GG) R-R Ranch (Mendocino County)
- (HH) Salt Creek Ranch (Tehama County)
- (II) Schneider Ranch (Mendocino County)
- (JJ) Sky Rose Ranch, LLC (Monterey County)
- (KK) Soper-Wheeler (Butte County)
- (LL) Spurlock Ranch (Glenn County)
- (MM) Tejon Ranch (Kern County/Los Angeles County)
- (NN) Triple B Ranch (Shasta County)
- (OO) Walton Homestead Family, LLC (Lassen County)

2018 MAY 22 AM 8:30

Memorandum

Date: May 21, 2018

To: Valerie Termini
Executive Director
Fish and Game Commission

From: Charlton H. Bonham
Director



Subject: **Request for 6 Month Extension, Foothill Yellow-legged Frog Status Review**

Per Section 2074.6 of the Fish and Game Code, the California Department of Fish and Wildlife (Department) requests an extension of time, by 6 months, to further analyze and evaluate available science, to undergo the peer review process, and to complete the Foothill Yellow-legged Frog status review. Such an extension would change the due date of the Department's report to January 7, 2019, which is 18 months from the date the candidacy findings were published (July 7, 2017).

If you have any questions or need additional information, please contact Kari Lewis, Wildlife Branch Chief at (916) 445-3789.

ec: Stafford Lehr
Deputy Director
Wildlife and Fisheries Division
Stafford.Lehr@wildlife.ca.gov

California Fish and Game Commission
Wildlife Resources Committee (WRC) 2018 Work Plan: Scheduled
Topics and Timeline for Items Referred to WRC

Updated for June 20-21, 2018 Commission meeting

Topic		2018		2019
	Type of Topic	May Los Alamitos (<i>CANCELED</i>)	September Sacramento	January TBD
Annual Regulations				
Upland Game Birds	Annual		X	X / R
Sport Fish	Annual	X / R		X
Mammals	Annual	X	X / R	
Waterfowl	Annual	X	X / R	
Central Valley Salmon	Annual	X	X / R	
Klamath River Sport Fish	Annual	X	X / R	
Regulations & Legislative Mandates				
Falconry	Referral for review	X	X	
Coastal Streams Low-Flow regulations	Referral for review		X / R	
Emerging Management Issues				
Lead Ban Implementation	DFW project	X		
Bullfrogs and Non-native Turtles	Referral for review		X	X

Key: **X** = Discussion scheduled **R** = Recommendation developed and moved to FGC

STATE OF CALIFORNIA
FISH AND GAME COMMISSION
INITIAL STATEMENT OF REASONS FOR REGULATORY ACTION
(Pre-publication of Notice Statement)

Amend subsections 300(a)(1)(D)5 and 6; 300(a)(2)(D)3; and 300(a)(3)(F)3
Add Section 716
Title 14, California Code of Regulations
Re: Sage Grouse Preferential Points and Draw

I. Date of Initial Statement of Reasons: March 26, 2018

II. Dates and Locations of Scheduled Hearings:

- | | | | |
|-----|---------------------|-----------|-----------------|
| (a) | Notice Hearing: | Date: | April 19, 2018 |
| | | Location: | Ventura, CA |
| (b) | Discussion Hearing: | Date: | June 21, 2018 |
| | | Location: | Sacramento, CA |
| (c) | Adoption Hearing: | Date: | August 23, 2018 |
| | | Location: | Fortuna, CA |

III. Description of Regulatory Action:

- (a) Statement of Specific Purpose of Regulation Change and Factual Basis for Determining that Regulation Change is Reasonably Necessary:

The Department of Fish and Wildlife (Department) proposes to establish an electronic random drawing for sage grouse permits that will include a preference point system similar to the Big Game Preference Point process. Due to the very limited number of sage grouse hunting permits made available annually, the chances of being successfully drawn have been and continue to be very low in a purely random draw. A petition was filed with the Commission (Petition 2016-010) requesting establishment of a preference point component to increase the probability of drawing success for hunters who have previously (often over many years) applied but not been successfully drawn. The addition of preference points for past participants is necessary to fairly credit prior effort and to encourage continued drawing participation for this unique hunting experience. This new process will be conducted through the Automated License Data System (ALDS).

Proposed Regulations

Amend Section 300:

The current process for obtaining a sage grouse hunting permit will be deleted from subsection 300(a)(1)(D)5 and a reference will be made to the provisions of the new Section 716 Sage Grouse Permit Application and Drawing Process.

The provisions in subsection 300(a)(1)(D)6 Falconry Only Permits, are deleted and moved to the new Section 716, subsection (b)(6).

Portions of subsections 300(a)(2)(D)3 and (a)(3)(F)3 are amended by deleting the word “free”: “... Hunting by ~~free~~ permit only...” this change provides consistency with other special hunts where the department does not specify that the permit is free but also clarifies that a permit is required to hunt sage grouse in addition to the existing Upland Game Bird Validation requirement. While the permit to hunt is free, it is only available to a successful draw applicant via a special drawing through the ALDS. Participating in the drawing (as provided in the new Section 716) will have a small application fee as currently set forth in subsection 702(c)(1)(X).

Portions of subsections 300(a)(2)(D)3 and (a)(3)(F)3 are amended by deleting the reference to the permit process in subsection 300(a)(1)(D)3 and referencing the permit process proposed in the new Section 716.

Add a new Section 716 as follows:

(1) A drawing shall be held annually for available sage grouse hunting permits.

(2) Establishes the ALDS application procedure:

- Applicants select their hunt zone choice,
- Applicants may apply as an individual, a party leader, or as a party member,
- ALDS assigns a Party Identification Number (PIN),
- Includes a procedure for falconry applications, and
- Accepts payment of the application fee.

(3) Establishes the drawing procedure. As with all other drawings in ALDS, each applicant PIN is assigned a computer generated random number and the applicants are then ranked in order from lowest to highest.

- Fifty percent (50%) of an individual zone permit quota shall be

awarded using a preference point drawing. Accumulating points encourages applicants to continue to participate.

- Each year, unsuccessful applicants will be awarded a preference point for the following year's draw,
 - A point is accrued each year the applicant is unsuccessful in the draw, and
 - Applications are sorted by preference point value (highest to lowest) and then sorted by random number (lowest to highest). Permits are awarded in the order (highest preference point with lowest random number) until the preference quota permits are exhausted.
- Fifty percent (50%) of the individual zone permit quota shall be awarded using a random drawing. Continuing to have a random draw allows all applicants (with or without points) a chance to be successful in the draw; in addition, this encourages the participation of new applicants.
 - In the random draw the first choice goes to the lowest number, and so forth.
- Successful applicants are notified and provided information related to their hunt,
- Successful applicants will have their preference points reduced to zero for the following year's draw,
- Customers (identified by their PIN) may view their current preference point values and application results on the Department's website, www.wildlife.ca.gov.

The Department will maintain records of preference points earned by individual applicants based on the Get Outdoors ID (GO ID) customer identification assigned by the ALDS.

The ALDS was implemented to centralize all data relating to recreational hunting and fishing, commercial fishing, other licenses, and permits (including drawings), and to collect the fees associated with each. The ALDS application has operations that allow for many combinations of drawing types, is flexible and programmed for all contingencies, such as zone closures (fire and other natural causes), date changes, etc.

Adding the preference point component to the sage grouse permit draw will provide the public with an established method to apply for, and acquire, preference points for sage grouse hunting permits. The ALDS drawing process:

- Provides great flexibility,
- Reduces error,

- Quickly and accurately determines the successful applicants,
- Awards preference points to non-successful applicants, and
- Accepts and processes the payment of the nonrefundable application fee set forth in amended Section 702.

When permits are available, the Department will make applications available by July 10th. The deadline for application will be August 10th of each year, and the drawing will be conducted within 10 days following the deadline. The general season opens on the second Saturday of September and runs for two consecutive days.

(b) Authority and Reference from Fish and Game Code for Regulation:

Section 300:

Authority: Sections 200, 203, 265 and 355, Fish and Game Code.

Reference: Sections 200, 203, 203.1, 265, 270, 355 and 356, Fish and Game Code.

Section 716:

Authority: Sections 200, 203 and 1050, Fish and Game Code. Reference: Sections 702, 1050, 1055.1, 3500, 3682.1, and 3683, Fish and Game Code.

(c) Specific Technology or Equipment Required by Regulatory Change: None.

(d) Identification of Reports or Documents Supporting Regulation Change: None

(e) Public Discussions of Proposed Regulations Prior to Notice Publication:

The preference point proposal was discussed at the January 11, 2018 Wildlife Resources Committee meeting in Santa Rosa. It was explained that this potential change is consistent with the change requested in Petition 2016-20 which was approved by the at the commission at its December 2016 meeting. Given that the Department was also proposing changes to sage grouse permit quotas for the season beginning in September 2018 and this item would not be in place until the 2019 season, it was recommended that this proposal be a separate rulemaking package from the permit quota package that was noticed at the February 2018 Commission meeting. There were no public comments received on this proposal.

IV. Description of Reasonable Alternatives to Regulatory Action:

(a) Alternatives to Regulation Change:

No alternatives identified.

(b) No Change Alternative:

The Department would continue to conduct the drawings using the ALDS, but without a preference point system. This alternative would not address the petition request for a preference point accounting, and applicants would not increase their chance of being drawn after unsuccessful years of applying. Additionally, the application and drawing would still be free and the Department would not recover administrative fees for use of the ALDS as required by law.

(c) Consideration of Alternatives:

In view of information currently possessed, no reasonable alternative considered would be more effective in carrying out the purpose for which the regulation is proposed, would be as effective and less burdensome to affected private persons than the proposed regulation, or would be more cost effective to affected private persons and equally effective in implementing the statutory policy or other provision of law.

V. Mitigation Measures Required by Regulatory Action:

The proposed regulatory action will have no negative impact on the environment; therefore, no mitigation measures are needed.

VI. Impact of Regulatory Action:

The potential for significant statewide adverse economic impacts that might result from the proposed regulatory action has been assessed, and the following initial determinations relative to the required statutory categories have been made:

(a) Significant Statewide Adverse Economic Impact Directly Affecting Businesses, Including the Ability of California Businesses to Compete with Businesses in Other States:

The proposed action will not have a significant statewide adverse economic impact directly affecting businesses, including the ability of California businesses to compete with businesses in other states. The proposed action incorporates the sage grouse permit draw into the existing special hunt drawing process that includes preference points through the use of the ALDS. The proposed action will not impose costs on businesses and is not anticipated to change the number of hunting trips or expenditures thus it will be economically neutral to business.

- b) Impact on the Creation or Elimination of Jobs Within the State, the Creation of New Businesses or the Elimination of Existing Businesses, or the Expansion of Businesses in California; Benefits of the Regulation to the Health and Welfare of California Residents, Worker Safety, and the State's Environment:

The Commission anticipates benefits to the health and welfare of California residents. Adding the preference point component to the existing sage grouse permit drawing in the ALDS will provide the benefits of fairness and flexibility as well as important information necessary to properly manage sage grouse permits.

The Commission does not anticipate any impacts on the creation or elimination of jobs, the creation of new business, the elimination of existing businesses, or the expansion of businesses in California since the proposed action will not impact costs or revenues to businesses. The Commission does not anticipate any benefits to worker safety since the proposed action will not affect working conditions.

- (c) Cost Impacts on a Representative Private Person or Business:

Upland game bird hunters who choose to participate in the sage grouse hunt draw will pay a nonrefundable \$2.25 application fee, as currently set forth in subsection 702(c)(1)(X). The application fee was established per statute to recover all reasonable administrative costs of developing and implementing a draw with preference points for upland game bird hunts. The Commission is not aware of any cost impacts that a business would necessarily incur in reasonable compliance with the proposed action.

- (d) Costs or Savings to State Agencies or Costs/Savings in Federal Funding to the State:

The proposed action will not induce changes in costs or savings to state agencies or in federal funding to the state. The anticipated sale of 500 to 1,000 items at \$2.25 each may result in an average increase in annual revenue of approximately \$1,688 for the first year and in the following two years. The projected fee revenue is set to recover all reasonable administrative costs to the Department to administer the sage grouse permit draw within the upland game bird system.

- (e) Nondiscretionary Costs/Savings to Local Agencies: None.

- (f) Programs Mandated on Local Agencies or School Districts: None.

- (g) Costs Imposed on Any Local Agency or School District that is Required to be Reimbursed Under Part 7 (commencing with Section 17500) of

Division 4, Government Code: None.

(h) Effect on Housing Costs: None.

VII. Economic Impact Assessment:

The proposed regulatory action has been evaluated and it has been determined that the proposed action will not have a significant statewide adverse economic impact on individuals, businesses, or the state economy.

The proposed action incorporates the sage grouse permit draw into the existing special hunt drawing process that includes preference points through the use of the ALDS. The proposed action will not impose costs on businesses and is not anticipated to change the number of hunting trips or expenditures thus it will be economically neutral to businesses.

Upland game bird hunters who choose to participate in the seasonal draw for sage grouse with a preference point system will pay a nonrefundable \$2.25 application fee. Approximately 500 to 1,000 hunters are anticipated to participate in the sage grouse draw with preference points.

Payment of an application fee is required, as set forth in subsection 716(b)(4), in the amount listed in subsection 702(c)(1)(X), Upland Game Bird Special Hunt Drawing Application Fee of \$2.25. The fee recovers the reasonable administrative costs for the provision of drawing programs in accordance with Section 1050, FGC.

- (a) Effects of the Regulation on the Creation or Elimination of Jobs Within the State: The Commission does not anticipate any impacts to the creation or elimination of jobs within the state, because the proposed program will not reduce the number of hunters or hunting visits to areas of the state.
- (b) Effects of the Regulation on the Creation of New Businesses or the Elimination of Existing Businesses within the State: The Commission does not anticipate any adverse impacts on the creation of new businesses or the elimination of existing businesses within the state, because the proposed drawing process will not reduce the number of hunters or hunting visits to areas of the state.
- (c) Effects of the Regulation on the Expansion of Businesses Currently Doing Business within the State: The Commission does not anticipate any adverse impacts on the expansion of businesses currently doing business within the state, because the proposed drawing process will not reduce the number of hunters or hunting visits to areas of the state.

- (d) Benefits of the Regulation to the Health and Welfare of California Residents: The Commission anticipates benefits to the health and welfare of California residents. Adding the preference point component to the existing sage grouse permit drawing in the ALDS will provide fairness for applicants and more information to equitably manage sage grouse permits.
- (e) Benefits of the Regulation to Worker Safety: The Commission does not anticipate any benefits to worker safety because the proposed action will not have any impacts on working conditions.
- (f) Benefits of the Regulation to the State's Environment: The Commission anticipates benefits to the State's environment in the sustainable management of natural resources. Adoption of regulations to increase sustainable hunting opportunity provides for the maintenance of sufficient populations of game birds to ensure their continued existence.
- (g) Other Benefits of the Regulation: None.

Informative Digest/Policy Statement Overview

The Department of Fish and Wildlife (Department) proposes to establish an electronic random drawing for sage grouse permits that will include a preference point system similar to the Big Game Preference Point process. Due to the very limited number of sage grouse hunting permits made available annually, the chances of being successfully drawn have been and continue to be very low in a purely random draw. A petition was filed with the Commission (Petition 2016-010) requesting establishment of a preference point component to increase the probability of drawing success for hunters who have previously (often over many years) applied but not been successfully drawn. The addition of preference points for past participants is necessary to fairly credit prior effort and to encourage continued drawing participation for this unique hunting experience. This new process will be conducted through the Automated License Data System (ALDS).

- Section 300 will be amended, deleting the current draw described in subsection 300(a)(1)(D)5 and a reference will be made to the provisions of the new Section 716 Sage Grouse Permit Application and Drawing Process
- Subsection 300(a)(2)(D)6 Falconry Only Permits is deleted and moved to the new Section 716(b)(6).
- Section 716 will be added, setting forth the draw requirements and the addition of preference points for past participants. This new process will be conducted through the Automated License Data System (ALDS).
 - Fifty percent (50%) of the individual zone permit quota shall be awarded using a preference point drawing. This fairly credits prior effort and encourages continued drawing participation for this unique hunting experience.
 - Fifty percent (50%) of the individual zone permit quota shall be awarded using a random drawing. Continuing to have a random draw allows all applicants (with or without points) a chance to be successful in the draw; this encourages the participation of new applicants.

Benefits of the regulations

The Commission anticipates benefits to the health and welfare of California residents. The ALDS provides a single location for the public to apply for all department hunts including big game, upland game special hunts and waterfowl hunting opportunities. Data collected and compiled through the ALDS will be accessible in a consistent format for the Department's use. Adding the sage grouse drawing with preference points to the ALDS will provide the same benefits of fairness and flexibility as well as important information necessary to properly manage upland game bird populations.

The Commission anticipates benefits to the State's environment in the sustainable management of natural resources. Adoption of regulations to increase sustainable hunting opportunity provides for the maintenance of sufficient populations of game birds to ensure their continued existence.

Consistency with State or Federal Regulations

The Fish and Game Commission, pursuant to Fish and Game Code Sections 200 and 203, has the sole authority to regulate hunting in California. Commission staff has searched the California Code of Regulations and has found the proposed changes pertaining to preference points for wild sage grouse hunting opportunities through the ALDS to be consistent with the provisions of Title 14. Therefore the Commission has determined that the proposed amendments are neither inconsistent nor incompatible with existing state regulations.

PROPOSED REGULATORY LANGUAGE

Subsections 300(a)(1)(D)5 and 6; 300(a)(2)(D)3; and, 300(a)(3)(F)3, Title 14, California Code of Regulations are amended to read as follows:

§ 300. Upland Game Birds.

(a) Resident Upland Game Birds

(1) General Seasons: Shotgun; Crossbow; and Pistol/Revolver for Sooty/Ruffed Grouse Only; Bag and Possession Limits and Open Areas

(see Authorized Methods of Take, Section 311)

. . . *[No changes to subsections (a)(1)(A) through (a)(1)(D)4.d.]*

5. Permit Process: Sage grouse permits shall be issued pursuant to Section 716 Sage Grouse Permit Application and Drawing Process.

~~The free sage grouse hunting permits shall be issued by random drawing. Applicants must have a valid California hunting license and shall submit only one drawing application for either the East Lassen Zone, Central Lassen Zone, North Mono Zone, or the South Mono Zone. Up to four hunters may apply as a party. Applications must be submitted through the Automated License Data System by August 10. Each application will be issued a computer-generated random number and permits shall be issued by random number (from lowest to highest). Party applications shall receive a single random number and parties shall not be split to meet the number of permits available. Successful applicants will be notified by mail prior to the opening date of the season. Permits are nontransferable.~~

6. ~~Falconry Only Permits:~~

~~Applicants desiring to use a sage grouse permit during the falconry-only season must declare upon the application that the permit is for falconry only.~~

. . . *[No changes to subsections (a)(1)(E) through (a)(1)(I)3.]*

(2) Archery Seasons, Bag and Possession Limits and Open Areas
(see Authorized Methods of Take, sections 311 and 354)

. . . [No changes to subsections (a)(2)(A) through (a)(2)(C)3.]

<i>Species</i>	<i>1. Seasons</i>	<i>2. Daily Bag and Possession Limits</i>
(D) Sage Grouse	The second Saturday in September extending for 2 consecutive days	<p>See area open zone descriptions in subsection 300(a)(1)(D)3.</p> <p>East and Central Lassen zones: Bag Limit: 2 sage grouse per day, 2 per season</p> <p>Possession Limit: 2 sage grouse per season</p> <p>North Mono and South Mono zones: Bag Limit: 1 sage grouse per day, 1 per season</p> <p>Possession Limit: 1 sage grouse per season</p>

3. Area: Open Zone: see open zone descriptions in subsection 300(a)(1)(D)3., which include portions of Lassen, Mono, and Inyo counties. Hunting by ~~free~~-permit only; see permit process in ~~subsection 300(a)(1)(D)5.~~ Section 716 for details.

. . . [No changes to subsections (a)(2)(E) through (a)(2)(H)3.]

*(3) Falconry Seasons, Bag and Possession Limits and Open Areas
(see Authorized Methods of Take, Section 311)*

. . . [No changes to subsections (a)(3)(A) through (a)(3)(E)3.]

<i>Species</i>	<i>1. Seasons</i>	<i>2. Daily Bag and Possession Limits and Hawking Hours</i>
(F) Sage Grouse	The first Saturday in November extending for 60 consecutive days, and during the general season	See area open zone descriptions in subsection 300(a)(1)(D)3. East and Central Lassen zones: Bag Limit: 2 sage grouse per day, 2 per season Possession Limit: 2 sage grouse per season North Mono and South Mono zones: Bag Limit: 1 sage grouse per day, 1 per season Possession Limit: 1 sage grouse per season Hawking hours are sunrise to sunset.

3. Area: See open zone descriptions in subsection 300(a)(1)(D)3. Hunting by ~~free~~ permit only; see permit process in ~~section 300(a)(1)(D)5.~~ Section 716 for details.

...[No changes to subsections (a)(2)(G) through (b)(1)(C)3.]

Note: Authority cited: Sections 200, 203, 265 and, 355, Fish and Game Code.
Reference: Sections 200, 203, 203.1, 265, 270, 355 and 356, Fish and Game Code.

PROPOSED REGULATORY LANGUAGE

Section 716 is added to Title 14, CCR, to read as follows:

§ 716 Sage Grouse Permit Application and Drawing Process.

(a) A drawing shall be held annually for available sage grouse hunting permits.

(1) It shall be unlawful to hunt sage grouse without a valid sage grouse permit issued for a zone defined in Section 300, subsection (a)(1)(D)3.

(b) Application Process:

(1) Applications for the number of permits specified in Section 300, subsection 300(a)(1)(D)4, shall be made available each year by July 10 through the department's Automated License Data System at department license sales offices, the department's internet sales site and at license agents

(2) Applicants shall apply by August 10 of each year.

(3) All applicants shall possess a current hunting license validation and adult applicants shall possess an upland game bird stamp validation.

(4) Applicants shall submit a nonrefundable Upland Game Bird Special Hunt Drawing Application Fee in the amount specified in Section 702.

(5) Applicants shall not submit more than one drawing application for the same license year.

(6) Applicants desiring to use a sage grouse permit during the falconry-only season must declare upon the application that the permit is for falconry only.

(7) Applicants for sage grouse hunting permits may be residents or nonresidents.

(8) Party Applications

(A) No more than four persons shall apply together as a party.

(B) Applicants shall specify if applying as an individual, a party leader or joining an existing party.

(C) Applicants applying as an individual or as a party leader shall be assigned a Party Identification Number (PIN), which will be printed on their drawing receipt.

(D) To apply as a party, the party leader shall apply first and then provide his/her assigned party identification number to the other party members.

(E) Applicants joining an existing party shall provide the Party Identification Number (PIN) of the party leader to join the party.

(F) Applicants joining a party shall be assigned the same zone choice as the party leader.

(G) When drawn, all party members shall be awarded permits for the zone choice selected by the party leader.

(c) Drawings for Permits

(1) The department shall award available permits using a modified-preference point drawing system.

(2) The modified-preference point drawing system shall award proportions of permit quotas using the following drawing methods:

(A) Preference Point Drawing: Permits in the preference quota are awarded based on the following order of priority: accumulated point totals (highest to lowest), and computer-generated random numbers (lowest to highest).

(B) Random Drawing: Permits in the random quota are awarded according to computer-generated random numbers (lowest to highest), without consideration of accumulated points.

(3) The available permit quantity for each zone shall be split into separate quotas as follows:

(A) Fifty percent (50%) of the individual zone permit quota shall be awarded using a preference point drawing. Permit quota splits resulting in decimal fractions shall be rounded to the next higher whole number.

(B) Fifty percent (50%) of the individual zone permit quota shall be awarded using a random drawing. Permit quota splits resulting in decimal fractions shall be rounded to the next lower whole number.

(C) For zones with quotas of one (1) permit, that permit shall be awarded using a random drawing.

(4) For party applications, the department shall use the average preference point value of all party members (total preference points for the party divided by number of party members) as the basis for consideration in the drawing. Point averages shall not be rounded.

(5) The department shall not exceed the sage grouse permit quotas established in subsection (a)(1)(D)4 of Section 300. When a party application is processed in the drawing and the available permit quota is less than the total number of party members, the application shall be unsuccessful.

(6) Successful applicants shall be determined by drawing within 10 business days following the application deadline date. If the drawing is delayed due to circumstances beyond the department's control, the department shall conduct the drawing at the earliest date possible.

(7) Notification to successful applicants will be made within 10 business days of drawing completion.

(8) Unsuccessful applicants shall earn one (1) preference point annually for participating in the sage grouse permit drawing.

(9) Successful applicants issued a sage grouse permit shall have their sage grouse drawing preference point value reduced to zero.

(10) Preference points shall not be transferred to another person.

(11) The department shall maintain records of preference points earned by individual applicants based on their Get Outdoors ID (GO ID) customer identification number assigned by the department's Automated License Data System.

(A) The GO ID number shall be printed on each drawing receipt issued by the Automated License Data System.

(B) Applicants shall notify the department's License and Revenue Branch in Sacramento of any changes or corrections to information required by Sections 700.3 and 700.4.

(12) Any person not applying in the sage grouse permit drawings for ten (10) consecutive years shall have their preference points for the sage grouse drawing reduced to zero (0).

(13) For the purposes of this section, any person whose application is disqualified from the drawing shall be considered the same as a person not applying.

Authority: Sections 200, 203 and 1050, Fish and Game Code.

Reference: Sections 702, 1050, 1055.1, 3500, 3682.1, and 3683, Fish and Game Code.

Memorandum

2018 APR -6 AM 11:02

Date: March 28, 2018

To: Valerie Termini
Executive Director
Fish and Game Commission

From: Charlton H. Bonham
Director



Subject: **Agenda Item for the April 18-19, 2018, Fish and Game Commission Meeting**
Re: Request to Publish Notice of the Commission's Intent to Amend Section 300, Upland Game Birds; and add Section 716, Sage Grouse Preferential Points and Draw, Title 14, California Code of Regulations (CCR)

The Department of Fish and Wildlife (Department) requests the Fish and Game Commission (Commission) to authorize publication of notice of its intent to amend subsections 300(a)(1)(D)5 and 6, 300(a)(2)(D)3, and 300(a)(3)(F)3; and add Section 716, establishing a new Sage Grouse Preferential Points and Draw.

If you have any questions regarding this item, please contact Kari Lewis, Wildlife Branch Chief, at (916) 445-3789. The public notice should identify Karen Fothergill, Senior Environmental Scientist, as the point of contact at (916) 716-1461 or Karen.Fothergill@wildlife.ca.gov.

Attachment

cc: Stafford Lehr, Deputy Director
Wildlife and Fisheries Division
Stafford.Lehr@wildlife.ca.gov

Kari Lewis, Chief
Wildlife Branch
Kari.Lewis@wildlife.ca.gov

Brad Burkholder, Wildlife Branch
Game Program Manager
Brad.Burkholder@wildlife.ca.gov

Scott Gardner, Wildlife Branch
Senior Environmental Scientist (Supervisor)
Scott.Gardner@wildlife.ca.gov

Valerie Termini, Executive Director
Fish and Game Commission
March 28, 2018
Page 2

David Bess, Chief
Law Enforcement Division
David.Bess@wildlife.ca.gov

Patrick Foy, Captain
Law Enforcement Division
Patrick.Foy@wildlife.ca.gov

Wendy Bogdan, Chief Counsel
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Wendy.Bogdan@wildlife.ca.gov

Richard Reyes, Chief
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**ECONOMIC AND FISCAL IMPACT STATEMENT
(REGULATIONS AND ORDERS)**

STD. 399 (REV. 12/2013)

ECONOMIC IMPACT STATEMENT

DEPARTMENT NAME Fish and Game Commission	CONTACT PERSON Margaret Duncan	EMAIL ADDRESS margaret.duncan@wildlife.ca.gov	TELEPHONE NUMBER 916-653-4676
DESCRIPTIVE TITLE FROM NOTICE REGISTER OR FORM 400 Sage Grouse Preference Points and Draw, amending Section 300 and add Section 716, Title 14, CCR			NOTICE FILE NUMBER Z

A. ESTIMATED PRIVATE SECTOR COST IMPACTS *Include calculations and assumptions in the rulemaking record.*

1. Check the appropriate box(es) below to indicate whether this regulation:

- | | |
|--|---|
| <input type="checkbox"/> a. Impacts business and/or employees | <input type="checkbox"/> e. Imposes reporting requirements |
| <input type="checkbox"/> b. Impacts small businesses | <input type="checkbox"/> f. Imposes prescriptive instead of performance |
| <input type="checkbox"/> c. Impacts jobs or occupations | <input checked="" type="checkbox"/> g. Impacts individuals |
| <input type="checkbox"/> d. Impacts California competitiveness | <input type="checkbox"/> h. None of the above (Explain below): |

*If any box in Items 1 a through g is checked, complete this Economic Impact Statement.**If box in Item 1.h. is checked, complete the Fiscal Impact Statement as appropriate.*

2. The Fish and Game Commission estimates that the economic impact of this regulation (which includes the fiscal impact) is:
(Agency/Department)

- ☒ Below \$10 million
☐ Between \$10 and \$25 million
☐ Between \$25 and \$50 million
☐ Over \$50 million *[If the economic impact is over \$50 million, agencies are required to submit a Standardized Regulatory Impact Assessment as specified in Government Code Section 11346.3(c)]*

3. Enter the total number of businesses impacted: 0

Describe the types of businesses (Include nonprofits): _____

Enter the number or percentage of total
businesses impacted that are small businesses: _____4. Enter the number of businesses that will be created: 0 eliminated: 0Explain: The proposed regulation will not impact businesses directly nor indirectly by any change in hunter expenditures5. Indicate the geographic extent of impacts: ☒ Statewide☐ Local or regional (List areas): _____6. Enter the number of jobs created: 0 and eliminated: 0

Describe the types of jobs or occupations impacted: _____

7. Will the regulation affect the ability of California businesses to compete with
other states by making it more costly to produce goods or services here?☐ YES☒ NO

If YES, explain briefly: _____

**ECONOMIC AND FISCAL IMPACT STATEMENT
(REGULATIONS AND ORDERS)**

STD. 399 (REV. 12/2013)

ECONOMIC IMPACT STATEMENT (CONTINUED)**B. ESTIMATED COSTS** *Include calculations and assumptions in the rulemaking record.*1. What are the total statewide dollar costs that businesses and individuals may incur to comply with this regulation over its lifetime? \$ \$8,438a. Initial costs for a small business: \$ N/A Annual ongoing costs: \$ N/A Years: b. Initial costs for a typical business: \$ N/A Annual ongoing costs: \$ N/A Years: c. Initial costs for an individual: \$ 2.25 Annual ongoing costs: \$ 2.25 Years: 5d. Describe other economic costs that may occur: \$2.25 x 750 items x 5 years life of regulations = \$8,4382. If multiple industries are impacted, enter the share of total costs for each industry: N/A3. If the regulation imposes reporting requirements, enter the annual costs a typical business may incur to comply with these requirements.
Include the dollar costs to do programming, record keeping, reporting, and other paperwork, whether or not the paperwork must be submitted. \$ N/A4. Will this regulation directly impact housing costs? ☐ YES ☒ NOIf YES, enter the annual dollar cost per housing unit: \$ Number of units: 5. Are there comparable Federal regulations? ☐ YES ☒ NOExplain the need for State regulation given the existence or absence of Federal regulations: See FGC Code section 203 RE: Commission MandateEnter any additional costs to businesses and/or individuals that may be due to State - Federal differences: \$ N/A**C. ESTIMATED BENEFITS** *Estimation of the dollar value of benefits is not specifically required by rulemaking law, but encouraged.*1. Briefly summarize the benefits of the regulation, which may include among others, the health and welfare of California residents, worker safety and the State's environment: Welfare benefits gains in equity for limited opportunity.
All hunt data analysis benefits the environment with more consistent format for statistical and resource management issues. No impact on worker safety.2. Are the benefits the result of: ☐ specific statutory requirements, or ☒ goals developed by the agency based on broad statutory authority?Explain: Fish and Game Code section 2033. What are the total statewide benefits from this regulation over its lifetime? \$ unknown4. Briefly describe any expansion of businesses currently doing business within the State of California that would result from this regulation: N/A**D. ALTERNATIVES TO THE REGULATION** *Include calculations and assumptions in the rulemaking record. Estimation of the dollar value of benefits is not specifically required by rulemaking law, but encouraged.*1. List alternatives considered and describe them below. If no alternatives were considered, explain why not: 1) No change: rejected does not fulfill the public request. 2) no reasonable alternative considered would be more effective in carrying out the purpose for which the regulations is proposed.

ECONOMIC AND FISCAL IMPACT STATEMENT**(REGULATIONS AND ORDERS)**

STD. 399 (REV. 12/2013)

ECONOMIC IMPACT STATEMENT (CONTINUED)

2. Summarize the total statewide costs and benefits from this regulation and each alternative considered:

Regulation: Benefit: \$ equity & data Cost: \$ 1,688/yearAlternative 1: Benefit: \$ no change Cost: \$ less equityAlternative 2: Benefit: \$ N/A Cost: \$ _____

3. Briefly discuss any quantification issues that are relevant to a comparison of estimated costs and benefits for this regulation or alternatives:

Public requested a preference point system for sage grouse so that applicants could increase their odds of being selected after failing to be drawn in prior years.

4. Rulemaking law requires agencies to consider performance standards as an alternative, if a regulation mandates the use of specific technologies or equipment, or prescribes specific actions or procedures. Were performance standards considered to lower compliance costs?

☐ YES☒ NOExplain: N/A**E. MAJOR REGULATIONS** *Include calculations and assumptions in the rulemaking record.**California Environmental Protection Agency (Cal/EPA) boards, offices and departments are required to submit the following (per Health and Safety Code section 57005). Otherwise, skip to E4.*1. Will the estimated costs of this regulation to California business enterprises exceed \$10 million? ☐ YES ☐ NO*If YES, complete E2. and E3**If NO, skip to E4*

2. Briefly describe each alternative, or combination of alternatives, for which a cost-effectiveness analysis was performed:

Alternative 1: _____

Alternative 2: _____

(Attach additional pages for other alternatives)

3. For the regulation, and each alternative just described, enter the estimated total cost and overall cost-effectiveness ratio:

Regulation: Total Cost \$ _____ Cost-effectiveness ratio: \$ _____

Alternative 1: Total Cost \$ _____ Cost-effectiveness ratio: \$ _____

Alternative 2: Total Cost \$ _____ Cost-effectiveness ratio: \$ _____

4. Will the regulation subject to OAL review have an estimated economic impact to business enterprises and individuals located in or doing business in California exceeding \$50 million in any 12-month period between the date the major regulation is estimated to be filed with the Secretary of State through 12 months after the major regulation is estimated to be fully implemented?

☐ YES☒ NO*If YES, agencies are required to submit a Standardized Regulatory Impact Assessment (SRIA) as specified in Government Code Section 11346.3(c) and to include the SRIA in the Initial Statement of Reasons.*

5. Briefly describe the following:

The increase or decrease of investment in the State: N/AThe incentive for innovation in products, materials or processes: N/AThe benefits of the regulations, including, but not limited to, benefits to the health, safety, and welfare of California residents, worker safety, and the state's environment and quality of life, among any other benefits identified by the agency: N/A

**ECONOMIC AND FISCAL IMPACT STATEMENT
(REGULATIONS AND ORDERS)**

STD. 399 (REV. 12/2013)

FISCAL IMPACT STATEMENT**A. FISCAL EFFECT ON LOCAL GOVERNMENT** *Indicate appropriate boxes 1 through 6 and attach calculations and assumptions of fiscal impact for the current year and two subsequent Fiscal Years.*

- ☐ 1. Additional expenditures in the current State Fiscal Year which are reimbursable by the State. (Approximate)
(Pursuant to Section 6 of Article XIII B of the California Constitution and Sections 17500 et seq. of the Government Code).

\$ _____

- ☐ a. Funding provided in _____
Budget Act of _____ or Chapter _____, Statutes of _____

- ☐ b. Funding will be requested in the Governor's Budget Act of _____
Fiscal Year: _____

- ☐ 2. Additional expenditures in the current State Fiscal Year which are NOT reimbursable by the State. (Approximate)
(Pursuant to Section 6 of Article XIII B of the California Constitution and Sections 17500 et seq. of the Government Code).

\$ _____

Check reason(s) this regulation is not reimbursable and provide the appropriate information:

- ☐ a. Implements the Federal mandate contained in _____
- ☐ b. Implements the court mandate set forth by the _____ Court.

Case of: _____ vs. _____

- ☐ c. Implements a mandate of the people of this State expressed in their approval of Proposition No. _____

Date of Election: _____

- ☐ d. Issued only in response to a specific request from affected local entity(s).

Local entity(s) affected: _____

- ☐ e. Will be fully financed from the fees, revenue, etc. from: _____

Authorized by Section: _____ of the _____ Code;

- ☐ f. Provides for savings to each affected unit of local government which will, at a minimum, offset any additional costs to each;

- ☐ g. Creates, eliminates, or changes the penalty for a new crime or infraction contained in _____

- ☐ 3. Annual Savings. (approximate)

\$ _____

- ☐ 4. No additional costs or savings. This regulation makes only technical, non-substantive or clarifying changes to current law regulations.

- ☒ 5. No fiscal impact exists. This regulation does not affect any local entity or program.

- ☐ 6. Other. Explain _____

**ECONOMIC AND FISCAL IMPACT STATEMENT
(REGULATIONS AND ORDERS)**

STD. 399 (REV. 12/2013)

FISCAL IMPACT STATEMENT (CONTINUED)**B. FISCAL EFFECT ON STATE GOVERNMENT** *Indicate appropriate boxes 1 through 4 and attach calculations and assumptions of fiscal impact for the current year and two subsequent Fiscal Years.*☐ 1. Additional expenditures in the current State Fiscal Year. (Approximate)

\$ _____

It is anticipated that State agencies will:☐ a. Absorb these additional costs within their existing budgets and resources.☐ b. Increase the currently authorized budget level for the _____ Fiscal Year☐ 2. Savings in the current State Fiscal Year. (Approximate)

\$ _____

☒ 3. No fiscal impact exists. This regulation does not affect any State agency or program.☐ 4. Other. Explain _____**C. FISCAL EFFECT ON FEDERAL FUNDING OF STATE PROGRAMS** *Indicate appropriate boxes 1 through 4 and attach calculations and assumptions of fiscal impact for the current year and two subsequent Fiscal Years.*☐ 1. Additional expenditures in the current State Fiscal Year. (Approximate)

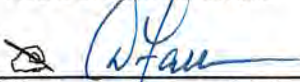
\$ _____

☐ 2. Savings in the current State Fiscal Year. (Approximate)

\$ _____

☒ 3. No fiscal impact exists. This regulation does not affect any federally funded State agency or program.☐ 4. Other. Explain _____

FISCAL OFFICER SIGNATURE

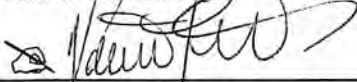


DATE

3/29/18

The signature attests that the agency has completed the STD. 399 according to the instructions in SAM sections 6601-6616, and understands the impacts of the proposed rulemaking. State boards, offices, or departments not under an Agency Secretary must have the form signed by the highest ranking official in the organization.

AGENCY SECRETARY



DATE

4/26/18

Finance approval and signature is required when SAM sections 6601-6616 require completion of Fiscal Impact Statement in the STD. 399.

DEPARTMENT OF FINANCE PROGRAM BUDGET MANAGER



DATE

STATE OF CALIFORNIA
FISH AND GAME COMMISSION
STATEMENT OF REASONS FOR REGULATORY ACTION
(Pre-adoption Statement of Reasons)

Amend subsection (a)(1)(D)4. of Section 300
Title 14, California Code of Regulations
Re: Resident Upland Game Bird Hunting Regulations

Re: Upland Game Birds

- I. Date of Initial Statement of Reasons: December 28, 2017
- II. Date of Pre-adoption Statement of Reasons: June 4, 2018
- III. Dates and Locations of Scheduled Hearings:

- (a) Notice Hearing: Date: February 8, 2018
 Location: Sacramento, CA
- (b) Discussion Hearing: Date: April 19, 2018
 Location: Ventura, CA
- (c) Adoption Hearing: Date: June 21, 2018
 Location: Sacramento, CA

- IV. Description of Modification of Originally Proposed Language of Initial Statement of Reasons:

Based on the results of spring lek counts and population projections for the fall of 2018, the Department recommends no change to current regulations, maintaining that 0 (zero) permits be issued for any of the sage grouse hunting zones in 2018-2019 season.

The permits under subsection 300 (a)(1)(D)4. will remain:

East Lassen:	0 (2-bird) permits
Central Lassen:	0 (2-bird) permits
North Mono:	0 (1-bird) permits
South Mono:	0 (1-bird) permits

- V. Reasons for Modification of Originally Proposed Language of Initial Statement of Reasons:

In the spring of 2018, the Department conducted lek counts in all four hunt zones (Table 1). Table 1 contains the 2018 lek counts with comparison to 2017 and 2012, which was at the onset of the drought and following the Rush Fire, both of which had a large impact to sage grouse habitats. Additionally, a projected low fall population range is provided based on modeling of lek counts, which

represents the predicted size of the population during the hunting season.

Spring lek counts declined in East Lassen and remained about the same in Central Lassen and South Mono. Each of these 3 zones remain significantly down since 2012 following prolonged drought conditions and a severe winter in 2016-2017. No permits have been issued in either Lassen zone since the Rush Fire in 2012, with populations 55-60% below pre-fire levels. Additionally, no permits have been issued in the South Mono Hunt Zone since 2013, which has declined an estimated 64% since 2012. The Department is recommending 0 permits for these three zones again in 2018 (Table 1).

While counts in the North Mono zone increased from 2017 to 2018, access was compromised by the winter conditions that persisted into the lek count season of 2017 which could have resulted in underestimates for that year. Access to North Mono, and the resulting count, was good in 2018, showing this population may be doing a little better than anticipated after the 2017 lek counts. Regardless, overall lek counts remain 39% below 2012 numbers and the Department is again recommending 0 permits for the North Mono Zone in 2018 (Table 1).

Table 1. 2018 Sage grouse lek counts, percent change from 2012, projected fall population size, and proposed permit allocations.

Hunt Zone	2012 Males	2017 Males	2018 Males	Change From 2012	Projected Low Fall Population 2018	2017 Permits	2018 Proposed Permits
East Lassen	393	195	157	-60%	294	0	0
Central Lassen	199	92	90	-55%	168	0	0
North Mono	510	271	312	-39%	597	0	0
South Mono	418	159	152	-64%	284	0	0

Update: Recent court finding regarding Bi-State Distinct Population Segment

In 2013, the U.S. Fish and Wildlife Service (USFWS) proposed to list the greater sage-grouse Bi-State Distinct Population Segment (DPS), which includes the two Mono zones, as threatened under the Endangered Species Act (ESA). In 2015, the USFWS further determined that conservation efforts established in the Bi-State DPS were effective in reducing the threats to the species and that listing was no longer warranted.

A lawsuit filed by the Center for Biological Diversity, WildEarth Guardians, and Western Watersheds in a federal court challenged the USFWS' decision not to list the DPS. On May 15, 2018, the court issued an order invalidating the Service's 2015 decision to withdraw the proposed listing of the DPS and ordered the parties to develop a schedule to provide a briefing addressing an appropriate remedy. Thus, pursuant to the order, and assuming no party appeals, the USFWS will be reconsidering its decision to withdraw the proposed listing and in the future, might list the DPS as threatened pursuant to the ESA. Such a listing could limit the Commission's ability to authorize sage grouse hunting.

Continuing Conservation Efforts: Translocation Activities

As part of the conservation efforts established in the Bi-State DPS, the Department received a Section 6 ESA grant, to conduct a translocation of sage-grouse to the Parker Bench sub-population which is outside of either hunt zone. As part of the large conservation strategy developed by the Technical Advisory Committee for the Bi-State DPS, sage grouse from the North Mono Zone are being actively translocated to supplement this population which is at risk of extirpation. The ongoing efforts to translocate grouse from North Mono to the Parker subpopulation in an effort to increase sage grouse across the landscape are an additional consideration in recommending 0 permits for the North Mono Hunt Zone.

Updated Informative Digest/Policy Statement Overview

Current regulations in Section 300, Title 14, California Code of Regulations (CCR), provide general hunting seasons for taking resident and migratory upland game birds, including sage grouse. A limited number of hunting permits are issued for greater sage grouse, and that number is based on annual population surveys. For the 2018-2019 season, the Department of Fish and Wildlife (Department) will present the Commission a final recommendation for permits based on the spring 2018 lek counts, which means the Commission will notice a possible range, and adopt final permit numbers based on the final lek counts.

The Department is recommending the following regulation changes:

Amend subsection 300(a)(1)(D)4. to adjust the annual number of General Season greater sage grouse hunting permits by zone for the 2018-2019 season.

Benefits of the Proposed Regulations

Adoption of sustainable upland game seasons, bag and possession limits, and authorized methods of take provides for the maintenance of sufficient populations of upland game birds to ensure their continued existence.

Non-monetary Benefits to the Public

The Commission anticipates benefits to the health and welfare of California residents through the sustainable management of sage grouse populations. The Commission does not anticipate non-monetary benefits to worker safety, the prevention of discrimination, the promotion of fairness or social equity and the increase in openness and transparency in business and government.

Consistency and Compatibility with Existing Regulations

The Commission has reviewed its regulations in Title 14, CCR, and conducted a search of other regulations on this topic and has concluded that the proposed amendments to Section 300 are neither inconsistent nor incompatible with existing State regulations. No other State agency has the authority to promulgate hunting regulations.

Update:

Based on the results of spring lek counts and population projections for the fall of 2018, the Department is recommending no change to current regulations, maintaining that 0 (zero) permits be issued for all four of the sage grouse hunting zones in 2018-2019 season.

§ 712. Restriction of Importation of Hunter-Harvested Deer and Elk Carcasses.

14 CA ADC § 712 BARCLAYS OFFICIAL CALIFORNIA CODE OF REGULATIONS

Barclays Official California Code of Regulations

Title 14. Natural Resources

Division 1. Fish and Game Commission-Department of Fish and Game

Subdivision 3. General Regulations

Chapter 3. Miscellaneous (Refs & Annos)

14 CCR § 712

§ 712. Restriction of Importation of Hunter-Harvested Deer and Elk Carcasses.

It is unlawful to import, or possess any hunter harvested deer or elk (cervid) carcass or parts of any cervid carcass imported into the State, except for the following body parts:

- (a) portions of meat with no part of the spinal column, brain or head attached (other bones, such as legs and shoulders, may be attached).
- (b) hides and capes (no spinal column, brain tissue or head may be attached).
- (c) clean skull plates (no brain tissue may be present) with antlers attached.
- (d) antlers with no meat or tissue attached, except legally harvested and possessed antlers in the velvet stage are allowed, if no meat, brain or other tissue is attached.
- (e) finished taxidermy mounts with no meat or tissue attached (antlers in the velvet stage are allowed if no meat, brain or other tissue is attached).
- (f) upper canine teeth (buglers, whistlers, ivories).

Note: Authority cited: Sections 200, 203, 240 and 2355, Fish and Game Code. Reference: Sections 200, 203 and 2355, Fish and Game Code.

HISTORY

1. New section filed 9-9-2002 as an emergency; operative 9-9-2002 (Register 2002, No. 37). A Certificate of Compliance must be transmitted to OAL by 1-7-2003 or emergency language will be repealed by operation of law on the following day.
2. Repealed by operation of Government Code section 11346.1(g) (Register 2003, No. 23).
3. New section filed 6-5-2003; operative 6-5-2003 pursuant to Government Code section 11343.4 (Register 2003, No. 23).
4. Amendment filed 6-20-2008; operative 6-20-2008 pursuant to Government Code section 11343.4 (Register 2008, No. 25).

This database is current through 5/25/18 Register 2018, No. 21

14 CCR § 712, 14 CA ADC § 712



Chronic Wasting Disease



Photo: Wrdh. Michael Hopper, Kansas Dept. of Wildlife, Parks & Tourism

Fish and Game Commission Meeting

June 21, 2018

Brandon Munk, MS, DVM

Wildlife Branch' s Wildlife Investigations Laboratory

Presentation Overview

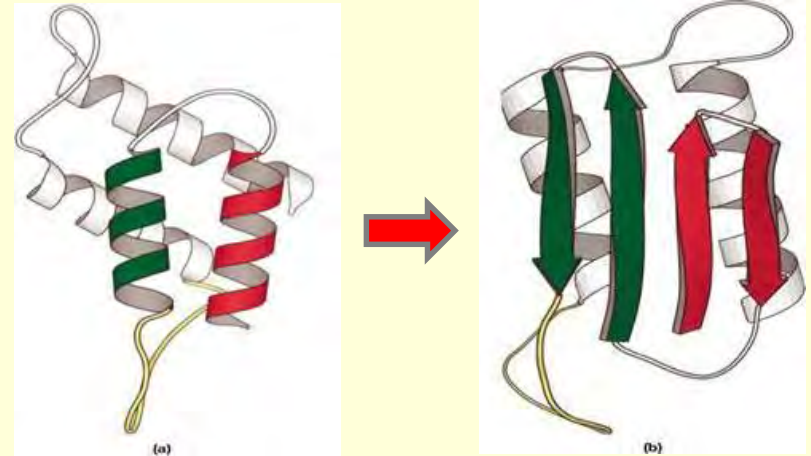
- Update on chronic wasting disease and California's preparations, specifically:
 - What is CWD and where is it currently
 - Why we should be concerned
 - What has California done
 - What are we doing

CWD is a Prion Disease

PRION = PRotein + infectION

Animal Examples

- Bovine Spongiform Encephalopathy
- Scrapie
- Chronic Wasting Disease (CWD)



Human Examples

- CJD and vCJD
- Kuru



<http://stylemagazine.com/>



<https://microbewiki.kenyon.edu/>

Clinical Presentation

- Wasted, emaciated
- Uncoordinated
- Head, ears lowered
- Excess salivation
- Abnormal behavior



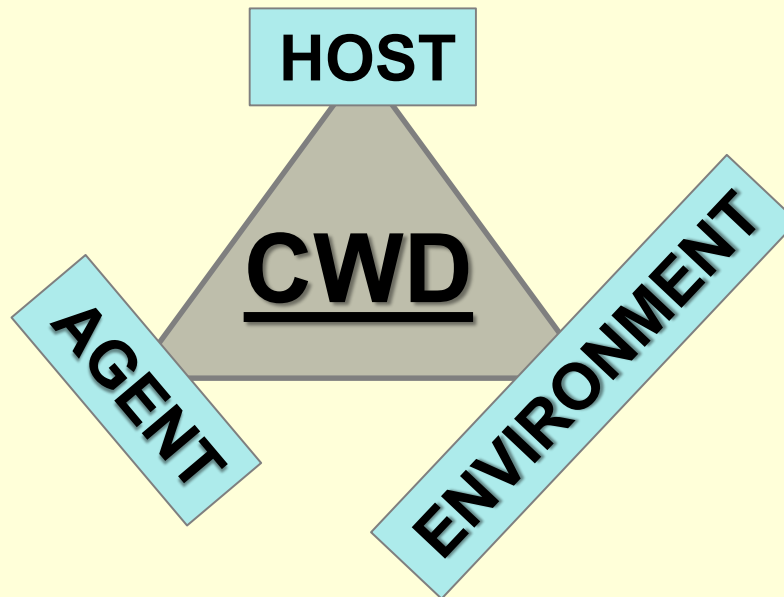
Photos: Dr. Terry Kreeger, Wyoming Game and Fish



Photo: Wisconsin Department of Natural Resources

Management Challenges

Extended incubation
Pre-clinical shedding
Behavior
Age
Genetics?



Robust
Persistent
Diff. strains
Vaccine?
Species
Barriers?



Congregation
Scavengers
Plant uptake?
Soil composition
Drought?

Current Map of CWD in North America



National Wildlife Health Center
Madison, Wisconsin
Updated April, 2018

Distribution of Chronic Wasting Disease in North America

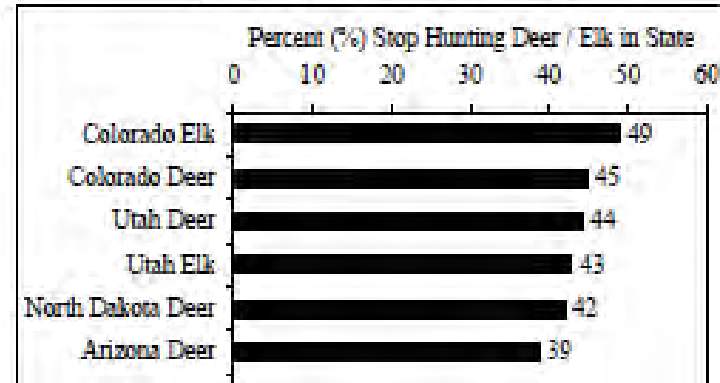
- CWD in free-ranging populations
- Known distribution prior to 2000 (free-ranging)
- CWD in captive facilities (depopulated)
- CWD in captive facilities (current)

All locations are approximations based on best-available information

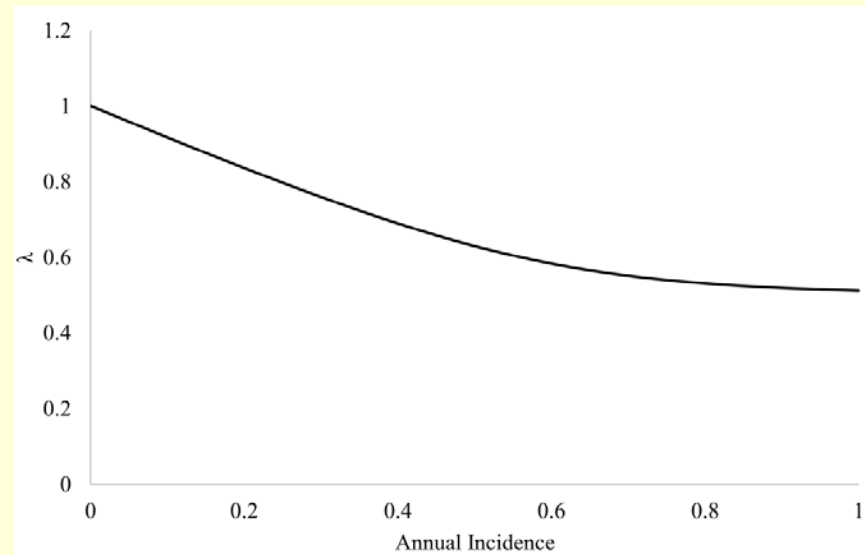
We should be concerned

- Continued spread
- No cure, no vaccine
- Management and surveillance challenge
- Decreased hunter participation
- Negative affects to native cervids
- Uncertain human health risk

Figure 4.1.1d. Percent of hunters that would stop hunting deer / elk in the state for Situation 4 (50% across the entire state)



WAFWA 2005. HDNRU Report No. 56



DeVivo et al 2017. *PLoS ONE* 12(10):1-17.

What California has done

Regulatory Measures

- Ban on native captive cervid farming
- Strict live cervid and hunter-harvest import regulations
- Ban on feeding big game mammals

Surveillance Activities

- Active surveillance 1999-2012
- Opportunistic surveillance 2012-2016
- Active surveillance re-boot 2017
- ~4,600 cervids tested since 1999
- **NO PRION DETECTED**

What we are doing

- CWD Task Force established
 - Current members - CDFW, FGC, and CDFA
 - Finalize an adaptive surveillance plan
 - Expand surveillance efforts
 - Draft CWD Response, Management, and Communication plans
 - Identify additional regulatory actions

Presentation Summary

- CWD continues to spread and is a significant threat to our native cervids
- Management is difficult and eradication may be impossible if established
- CA has test ~4,600 cervids since 1999, and NO CWD DETECTED
- CWD Task Force created to build surveillance capacity and produce CWD Response and Management plan

Questions

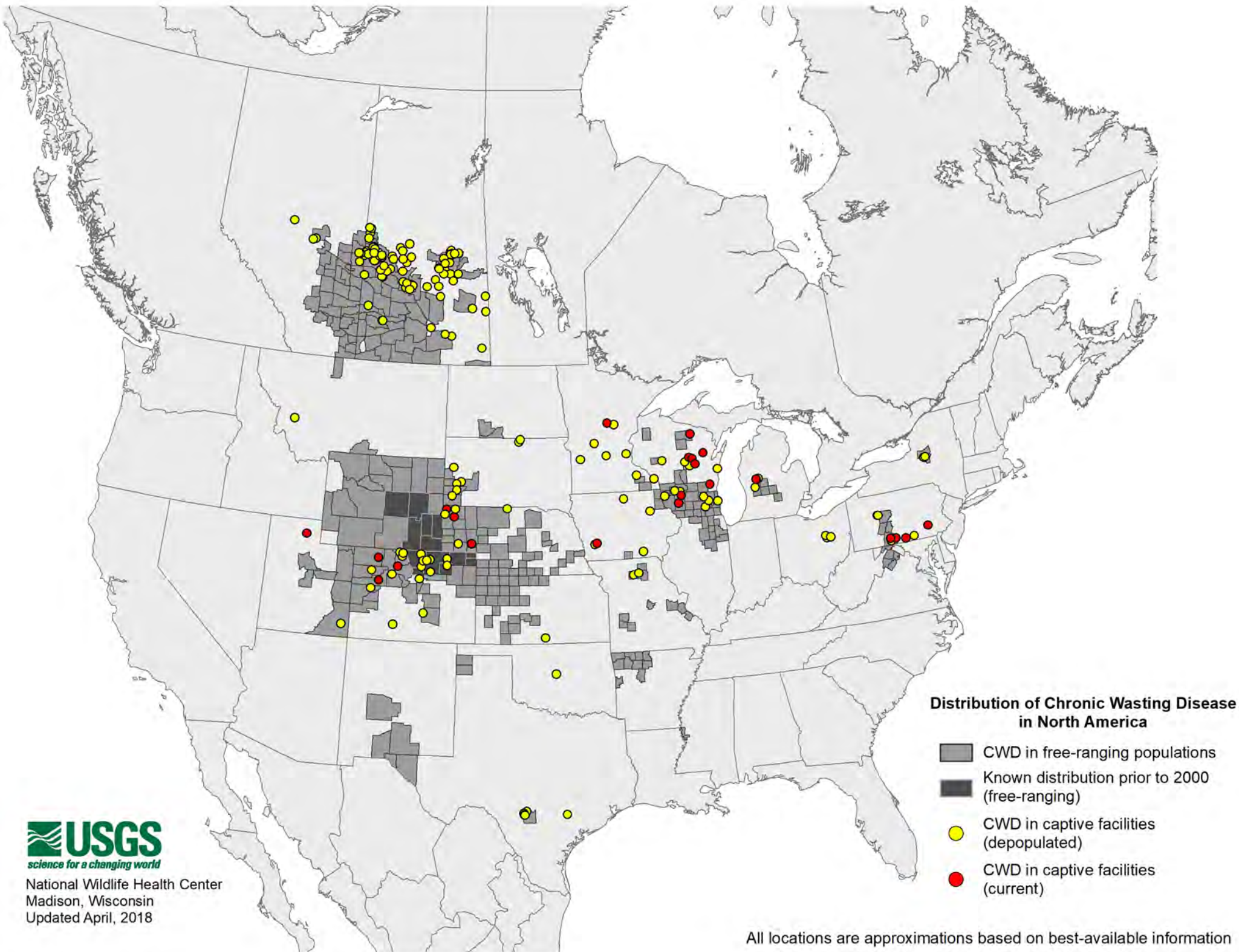


Thank You



Brandon Munk
Veterinarian (General)
916-358-1194

Brandon.Munk@wildlife.ca.gov



National Wildlife Health Center
Madison, Wisconsin
Updated April, 2018

Distribution of Chronic Wasting Disease in North America

- CWD in free-ranging populations
- Known distribution prior to 2000 (free-ranging)
- CWD in captive facilities (depopulated)
- CWD in captive facilities (current)

All locations are approximations based on best-available information

CALIFORNIA FISH AND GAME COMMISSION
DECISION LIST FOR WILDLIFE PETITIONS FOR REGULATION CHANGE RECEIVED THROUGH APRIL 18, 2018
Revised 06-07-2018

FGC - California Fish and Game Commission **DFW** - California Department of Fish and Wildlife **WRC** - Wildlife Resources Committee **MRC** - Marine Resources Committee

Grant: FGC is *willing to consider* the petition through a process **Deny:** FGC is *not willing to consider* the petition **Refer:** FGC *needs more information* before deciding whether to grant or deny the petition

Tracking No.	Date Received	Accept or Reject	Name of Petitioner	Subject of Request	Code or Title 14 Section Number	Short Description	FGC Decision	Staff Recommendation
2018-002	2/7/2018	A	Rick Travis	Elk gender points	364 and 708.14	Require DFW to use preference points on elk type, eliminate "either-sex" designation, and require tags based on gender.	Receipt: 4/18-19/2018 Action scheduled: 6/20-21/2018	6/20-21/2018: Deny; an elk management plan is currently being finalized by DFW. DFW will consider multiple options, including tag allocations, during outreach efforts for and development of an "R3" (hunter and angler recruitment, retention and reactivation) program.
2018-003	3/6/2018 Amended 5/31/18	A	Mitch Prowse	Allow dog training at Big Sandy Wildlife Area	551, T14	Include Big Sandy Wildlife Area as an area for training hunting dogs.	Receipt: 4/18-19/2018 Action scheduled: 6/20-21/2018	6/20-21/2018: Grant; consider in the next DFW lands rulemaking.



2018-002
Tracking Number: (Click here to enter text.)

To request a change to regulations under the authority of the California Fish and Game Commission (Commission), you are required to submit this completed form to: California Fish and Game Commission, 1416 Ninth Street, Suite 1320, Sacramento, CA 95814 or via email to FGC@fgc.ca.gov. Note: This form is not intended for listing petitions for threatened or endangered species (see Section 670.1 of Title 14).

Incomplete forms will not be accepted. A petition is incomplete if it is not submitted on this form or fails to contain necessary information in each of the required categories listed on this form (Section I). A petition will be rejected if it does not pertain to issues under the Commission's authority. A petition may be denied if any petition requesting a functionally equivalent regulation change was considered within the previous 12 months and no information or data is being submitted beyond what was previously submitted. If you need help with this form, please contact Commission staff at (916) 653-4899 or FGC@fgc.ca.gov.

SECTION I: Required Information.

Please be succinct. Responses for Section I should not exceed five pages

1. Person or organization requesting the change (Required)

Name of primary contact person: Rick Travis

Address:

Telephone number:

Email address:

2. Rulemaking Authority (Required) - Reference to the statutory or constitutional authority of the Commission to take the action requested: Fish and Game Code Sections 200, 203, 205, and 332

3. Overview (Required) - Summarize the proposed changes to regulations: Current regulations do not provide for the accumulation of gender-specific points when applying for elk hunts in the annual big-game draw. The proposal is to modify Section 708.14, T14, CCR to include the accumulation and use of preference points based on the type (bull or antlerless) of elk hunt chosen. Implementation of the proposal will require additional modifications to Section 364, T14, CCR to require the department to eliminate the "either-sex" designation for hunts and require the available tags to be apportioned based on gender.

4. Rationale (Required) - Describe the problem and the reason for the proposed change: Approximately 38,000 California hunters applied for the 325 elk tags (149 bull tags, 33 either-sex tags, 143 antlerless tags) available in the 2017 Big Game Drawing. Although it may be true the majority of applicants were seeking the opportunity to harvest a bull, others are seeking to participate in the standard management practice of harvesting female animals. The fact that a hunter loses all accumulated elk preference points when drawing an elk hunt (regardless of the type of elk hunt) are undoubtedly preventing a portion of hunters from applying for cow hunts. Implementation of the proposal would require modification to the ALDS software to distinguish between and track the accumulation and use of bull and antlerless elk preference points, but no changes to fees (application or tag) are proposed.



SECTION II: Optional Information

5. **Date of Petition: February 7, 2018**
6. **Category of Proposed Change**
☐ Sport Fishing
☐ Commercial Fishing
☒ Hunting
☐ Other, please specify: [Click here to enter text.](#)
7. **The proposal is to:** *(To determine section number(s), see current year regulation booklet or <https://govt.westlaw.com/calregs>)*
☒ Amend Title 14 Section(s): 364 and 708.14
☐ Add New Title 14 Section(s): [Click here to enter text.](#)
☐ Repeal Title 14 Section(s): [Click here to enter text.](#)
8. **If the proposal is related to a previously submitted petition that was rejected, specify the tracking number of the previously submitted petition** [Click here to enter text.](#)
Or ☒ Not applicable.
9. **Effective date:** If applicable, identify the desired effective date of the regulation.
If the proposed change requires immediate implementation, explain the nature of the emergency: July 1, 2019
10. **Supporting documentation:** Identify and attach to the petition any information supporting the proposal including data, reports and other documents: Department of Fish and Wildlife, License Agent Sales Statistics
11. **Economic or Fiscal Impacts:** Identify any known impacts of the proposed regulation change on revenues to the California Department of Fish and Wildlife, individuals, businesses, jobs, other state agencies, local agencies, schools, or housing: The proposal may result in an increase in elk tag applications (hunters could now apply for two types of hunts but would still be restricted to one elk tag per year), otherwise the proposal is economically/fiscally neutral.
12. **Forms:** If applicable, list any forms to be created, amended or repealed:
Web based elk hunt application form would need to be amended to include the different types of elk hunts available for application.

SECTION 3: FGC Staff Only

Date received: [Click here to enter text.](#)

FGC staff action:

- ☐ Accept - complete
☐ Reject - incomplete
☐ Reject - outside scope of FGC authority

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FISH AND GAME
COMMISSION

2018 FEB -7 AM 10:33

Tracking Number



Date petitioner was notified of receipt of petition and pending action: _____

Meeting date for FGC consideration: _____

FGC action:

- ☐ Denied by FGC
- ☐ Denied - same as petition _____
Tracking Number
- ☐ Granted for consideration of regulation change



Tracking Number: **2018-003**
(Click here to enter text.)

To request a change to regulations under the authority of the California Fish and Game Commission (Commission), you are required to submit this completed form to: California Fish and Game Commission, 1416 Ninth Street, Suite 1320, Sacramento, CA 95814 or via email to FGC@fgc.ca.gov. Note: This form is not intended for listing petitions for threatened or endangered species (see Section 670.1 of Title 14).

Incomplete forms will not be accepted. A petition is incomplete if it is not submitted on this form or fails to contain necessary information in each of the required categories listed on this form (Section I). A petition will be rejected if it does not pertain to issues under the Commission's authority. A petition may be denied if any petition requesting a functionally equivalent regulation change was considered within the previous 12 months and no information or data is being submitted beyond what was previously submitted. If you need help with this form, please contact Commission staff at (916) 653-4899 or FGC@fgc.ca.gov.

SECTION I: Required Information.

Please be succinct. Responses for Section I should not exceed five pages

- 1. Person or organization requesting the change (Required)**
Name of primary contact person: Mitch Prowse
Address:
Telephone number:
Email address:
- 2. Rulemaking Authority (Required) -** Reference to the statutory or constitutional authority of the Commission to take the action requested: Fish and Game Commission See attached email 5/31/18
- 3. Overview (Required) -** Summarize the proposed changes to regulations: Include Big Sandy Wildlife Area as an area open for Dog Training
- 4. Rationale (Required) -** Describe the problem and the reason for the proposed change: There are many of us who utilize Big Sandy Wildlife Area as a place where we can train our dogs. This is a wide open area and distant from homesteads. As a result, it allows extreme convenience in being able to fire blanks at homing pigeons without disturbing residents. Big Sandy offers other benefits such as when I use my blanking handgun, which looks like real guns, it won't scare people at Big Sandy like it does when I try to train my dogs in other parks in town. Big Sandy also offers excellent structure to hide homing pigeons in. We're able to hunt here during the upland season, so it doesn't really make sense to me why we can't train dogs there as well. I've tried to find other places I can adequately train and they're just not out there which is amazing for a place like the central coast. Your help in opening this back up to the public is greatly appreciated. This regulation for training is tied to 551(i).

SECTION II: Optional Information

- 5. Date of Petition:** 3/6/18
- 6. Category of Proposed Change**



- ☐ Sport Fishing
- ☐ Commercial Fishing
- ☐ Hunting
- ☒ Other, please specify: Dog Training

7. **The proposal is to:** *(To determine section number(s), see current year regulation booklet or <https://govt.westlaw.com/calregs>)*
 - ☐ Amend Title 14 Section(s): *Click here to enter text.*
 - ☐ Add New Title 14 Section(s): *Click here to enter text.*
 - ☐ Repeal Title 14 Section(s): *Click here to enter text.*
8. **If the proposal is related to a previously submitted petition that was rejected, specify the tracking number of the previously submitted petition** *Click here to enter text.*
Or ☐ Not applicable.
9. **Effective date:** If applicable, identify the desired effective date of the regulation.
If the proposed change requires immediate implementation, explain the nature of the emergency: ASAP – With the hunting season over, there isn't a reasonable place to keep dogs active through training. I would even be willing to pay like in the past for a training permit. In fact I would gladly pay for the use of this land.
10. **Supporting documentation:** Identify and attach to the petition any information supporting the proposal including data, reports and other documents: *Click here to enter text.*
11. **Economic or Fiscal Impacts:** Identify any known impacts of the proposed regulation change on revenues to the California Department of Fish and Wildlife, individuals, businesses, jobs, other state agencies, local agencies, schools, or housing: *Click here to enter text.*
12. **Forms:** If applicable, list any forms to be created, amended or repealed:
Click here to enter text.

SECTION 3: FGC Staff Only

Date received: *Click here to enter text.*

FGC staff action:

- ☒ Accept - complete
- ☐ Reject - incomplete
- ☐ Reject - outside scope of FGC authority

Tracking Number

Date petitioner was notified of receipt of petition and pending action: 5/31/2018

Meeting date for FGC consideration: 6/20-21/2018

FGC action:

- ☐ Denied by FGC

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COMMISSION
2018 MAR -6 PM 4:12



State of California – Fish and Game Commission

PETITION TO THE CALIFORNIA FISH AND GAME COMMISSION FOR REGULATION CHANGE

FGC 1 (NEW 10/23/14) Page 3 of 3

- ☐ Denied - same as petition _____
Tracking Number
- ☐ Granted for consideration of regulation change

From: Mitch prowse
Sent: Thursday, May 31, 2018 12:31 PM
To: FGC
Cc: Ashcraft, Susan@FGC
Subject: Tracking # 2018003 (Petition for Big Sandy)

Hello,

I was hoping you could add this Authority to my petition which is tracked under # 2018003 for allowing dog training to occur at Big Sandy again. Here is the Authority from Section 551 Title 14 - Authority cited: Sections 200, 203, 205, 265, 355, 710, 710.5, 710.7, 1050, 1530, 1583, 1745, 1764, 1765 and 10504, Fish and Game Code.

If there is anything else I can do to help, please don't hesitate to ask. My family, and friends I've made over the years there will appreciate having back access to this land to train. So again, thank you very much.

Regards,
Mitch Prowse



2015-008
Tracking Number: (Click here to enter text.)

To request a change to regulations under the authority of the California Fish and Game Commission (Commission), you are required to submit this completed form to: California Fish and Game Commission, 1416 Ninth Street, Suite 1320, Sacramento, CA 95814 or via email to FGC@fgc.ca.gov. Note: This form is not intended for listing petitions for threatened or endangered species (see Section 670.1 of Title 14).

Incomplete forms will not be accepted. A petition is incomplete if it is not submitted on this form or fails to contain necessary information in each of the required categories listed on this form (Section I). A petition will be rejected if it does not pertain to issues under the Commission's authority. A petition may be denied if any petition requesting a functionally equivalent regulation change was considered within the previous 12 months and no information or data is being submitted beyond what was previously submitted. If you need help with this form, please contact Commission staff at (916) 653-4899 or FGC@fgc.ca.gov.

SECTION I: Required Information.

Please be succinct. Responses for Section I should not exceed five pages

1. Person or organization requesting the change (Required)

Name of primary contact person: Paula Lane Action Network (PLAN), Susan Kirks, Badger Ecologist

Address:

Telephone number:

Email address: info@paulalaneactionnetwork.org; - -

2. Rulemaking Authority (Required) - Reference to the statutory or constitutional authority of the Commission to take the action requested: Mammal Hunting 2015-2016 Regulations

3. Overview (Required) - Summarize the proposed changes to regulations: Repeal allowed hunting of American Badger and Gray Fox. American Badger is a Species of Concern in California since 1987 with diminishing populations and significant fragmentation of and loss of habitat.

4. Rationale (Required) - Describe the problem and the reason for the proposed change: Special Status Animals should not be allowed to be hunted in California. In particular, the American Badger is a CA Species of Concern. Population is diminishing and habitat areas have increasingly diminished and fragmentation prevents habitat access as well as movement for mating to sustain biodiversity. The American Badger also creates benefits for other wildlife in coastal and inland ecosystems. Hunting of this fur-bearing mammal (as well as Gray Fox) should be permanently repealed. Please see attached summary.

SECTION II: Optional Information

5. Date of Petition: November 28, 2015

6. Category of Proposed Change

☐ Sport Fishing



- ☐ Commercial Fishing
☒ Hunting
☐ Other, please specify: [Click here to enter text.](#)

7. **The proposal is to:** (*To determine section number(s), see current year regulation booklet or <https://govt.westlaw.com/calregs>*)
☐ Amend Title 14 Section(s): [Click here to enter text.](#)
☐ Add New Title 14 Section(s): [Click here to enter text.](#)
☒ Repeal Title 14 Section(s): Mammal Hunting Regulations, Subdivision 2 Game, Furbearers, Nongame and Depredators (Detail Listing). Chapter 5 Furbearing Mammals. §461. Badger and Gray Fox. (a) Badger may be taken as follows: (1) Season and Area: November 16 through the last day of February, statewide. (2) Bag and Possession Limit: No limit. (b) Gray fox may be taken as follows: (1) Season and Area: November 24 through the last day of February, statewide. (2) Bag and Possession Limit: No limit. (3) Dogs may be permitted to pursue gray fox in the course of breaking, training, or practicing dogs in accordance with the provisions of Section 265 of these regulations. *Repealer and new section filed 5-13-81; designated effective 5-23-81.*
8. **If the proposal is related to a previously submitted petition that was rejected, specify the tracking number of the previously submitted petition** [Click here to enter text.](#)
Or ☒ Not applicable.
9. **Effective date:** If applicable, identify the desired effective date of the regulation.
If the proposed change requires immediate implementation, explain the nature of the emergency: Request expedient review and implementation of repeal for hunting Badger and Gray Fox immediately.
10. **Supporting documentation:** Identify and attach to the petition any information supporting the proposal including data, reports and other documents: See attached summary.
11. **Economic or Fiscal Impacts:** Identify any known impacts of the proposed regulation change on revenues to the California Department of Fish and Wildlife, individuals, businesses, jobs, other state agencies, local agencies, schools, or housing: None.
12. **Forms:** If applicable, list any forms to be created, amended or repealed:
[Click here to enter text.](#)

SECTION 3: FGC Staff Only

Date received: [Click here to enter text.](#)

FGC staff action:

- ☐ Accept - complete
☐ Reject - incomplete
☐ Reject - outside scope of FGC authority
Tracking Number

Date petitioner was notified of receipt of petition and pending action: _____

Meeting date for FGC consideration: _____

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COMMISSION
2015 DEC -2 AM 9:03



State of California – Fish and Game Commission

PETITION TO THE CALIFORNIA FISH AND GAME COMMISSION FOR REGULATION CHANGE

FGC 1 (NEW 10/23/14) Page 3 of 3

FGC action:

- ☐ Denied by FGC
- ☐ Denied - same as petition _____
Tracking Number
- ☐ Granted for consideration of regulation change

Request to Repeal Hunting of American Badger and Gray Fox

The American Badger (*Taxidea taxus*) has been a designated Special Status Animal, a CA Species of Concern, since 1987, for over 28 years. The CA Department of Fish and Wildlife defines Species of Concern as:

“A Species of Special Concern (SSC) is a species, subspecies, or distinct population of an animal* native to California that currently satisfies one or more of the following (not necessarily mutually exclusive) criteria:

- is extirpated from the State or, in the case of birds, in its primary seasonal or breeding role;
- is listed as Federally-, but not State-, threatened or endangered; meets the State definition of threatened or endangered but has not formally been listed;
- is experiencing, or formerly experienced, serious (nonscyclical) population declines or range retractions (not reversed) that, if continued or resumed, could qualify it for State threatened or endangered status;
- has naturally small populations exhibiting high susceptibility to risk from any factor(s), that if realized, could lead to declines that would qualify it for State threatened or endangered status.”

The 3rd and 4th points of this description directly relate to American Badger (*Taxidea taxus*) in California.

A Special Status animal, a CA Species of Concern, should not be on the CA Department of Fish and Wildlife’s permitted Hunting list. We respectfully request the Department repeal this regulation at your earliest convenience.

Discussion

The conservation nonprofit organization, Paula Lane Action Network (PLAN) in Sonoma County, formed in 2000 and incorporated in 2004, has for 15 years dedicated resources and time to observe and document American Badger in the San Francisco Bay area, protect identified longstanding American Badger habitat, and establish outreach in California and outside California, to better understand this reclusive mammal. The conservation effort includes documenting all available habitat, species sightings, and relating seasonal behaviors to this work. By seasonal behaviors, we mean, for example, observing burrowing and foraging patterns June through August for evidence of increased activity related to dispersal of juvenile badgers. Or from February through Summer, observing Badger activity on properties to identify and confirm preferred territories of adult female Badgers. In fact, one of the most salient factors in the potential preservation of the species in California and possibly elsewhere, is identifying preferred adult female Badger territories and ensuring non-encroachment and protection of those areas. Coupled with this is the protection of wildlife movement areas to ensure the ability of traversal by male adult Badgers and movement of all Badgers through preferred wildlife corridors, to help sustain biodiversity. Added to this is the pressing need for prey and water availability during the current drought, which has been observed to negatively impact American Badger and other wildlife species, making competition for both resources heightened.

The nonprofit, Paula Lane Action Network, has a Naturalist and Badger ecologist who has visited every available identified property and habitat, with repeat visits over seasonal time periods, in the San Francisco Bay area during these 15 years, to receive reports, discuss sightings and any questions with property owners or residents, and verify reports received of habitat and/or species sightings. The naturalist and badger ecologist has also fielded questions and responded to inquiries in California and outside California. A significant field-study-based body of knowledge about American Badger has resulted from this level of attention to the species.

In the greater San Francisco Bay Area, there are estimated to be a population of 15 adult badgers and possibly 5 remaining living juvenile Badgers from the 2015 birthing season. In Sonoma and Marin Counties, in Summer 2015, two adult Badgers were documented as killed by motor vehicle strikes and 2 juvenile Badgers were also documented as killed by motor vehicle strikes. Death by vehicle strike, especially in Summer months, from 2011 to present, as reported to PLAN and confirmed, is consistent, 2-4 Badgers annually.

American Badger relies on grassland, including agricultural areas, for habitat and foraging. Badgers succumb to mortality from ranchers who believe a badger burrow or foraged out gopher mounds on a property will result in livestock stepping in holes and breaking legs, thus a loss of potential income source for the rancher. American Badger poses no threat to ranchers or farmers. Preferred prey of American Badger of gopher, vole, mouse, and ground squirrel follow a pattern of underground prey tunnels aerating soil in grassland areas, but also partaking of available grasses and vegetation. American Badger is a natural manager of gopher, vole, mouse and ground squirrel in grassland and adjacent areas. American Badger burrow creation occurs from foraged out prey holes. The burrow is usually in a hillside and the hole itself is created on a diagonal angle with a large area of displaced soil outside the burrow opening. Unless a herd of animals is panicked and fleeing a perceived threat, thus increasing the likelihood for an accident of any kind, the possibility of a domestic large animal stepping into and then down into a Badger Burrow opening is extremely low. Direct observation of horses galloping on a hillside among 15 active Badger burrows contributes to this clarification of what is a non-threat to livestock. Foraged out gopher mounds or vole holes are also similar in size to any general small or medium hole in a grassland area and livestock have not in 15 years of multiple observations been observed to inadvertently step into such a hole. In addition, a Marin County rancher who raises cattle and sheep on a 300+ acre ranch has over time observed his bull to intentionally step into a foraged out prey hole and kick up dirt from the loosened soil onto its body to alleviate itching, and then move along its way. Direct observation over an extended period of time allows this factual clarification to offset the cultural myth of rancher and farmer dislike of American Badger on a grassland property. While American Badger generally will remain within its home range, often from necessity due to obstructed movement areas and fragmented habitat, and return to preferred areas for prey foraging, the adult female Badger selects and remains in her territory, and male adult Badgers traverse through established female Badger territories. On farms and ranches comprised of grassland, a permanent Badger in residence is unusual and any concern about a Badger burrow created on a private property could be followed by filling in the hole with dirt after an adult Badger has foraged, obtained prey, also managing the gopher, vole, mouse or ground squirrel population, and has moved on to another area in the Badger's home range. The average length of time for an adult Badger to remain in an area, foraging, is generally a week to ten days, based on direct observation.

Sonoma and Marin Counties are recorded to have a small sustaining Badger population in the coastal area and, to the degree badgers can move and range, further inland in the Occidental, Petaluma and Sonoma Valley areas in grassland with gopher/vole/mouse prey base. Petaluma in southern Sonoma County, comprised of fairly expansive grassland, has a documented American Badger presence of longstanding, over 100 years (Habitat Survey, 2003, Fitts). Nicasio in Marin County also has documented American Badger activity, with two additional reports of Badger activity in southern/mid Marin and one report in northern Marin County. In Napa County, where grassland habitat does exist, but the vineyard properties abound, there appears to be one adult female Badger and possibly one or two adult male Badgers. The East San Francisco Bay area included reports as of 2015 of one adult female Badger in the Dublin area in Summer with one to two juvenile Badgers dispersing and living, seeking water and prey, in Summer 2015. Thus, at least one adult male Badger has also been in residence in the East Bay Hills. The available land to sustain a Badger population in the East Bay is questionable.

South of the San Francisco Bay Area in Santa Clara County and Santa Cruz County are reports of one to three adult Badgers sustaining, with an unknown variant of the number of female adult Badgers in this population as of 2015.

The Central Valley area, particularly Sacramento agricultural land, has a reported small badger population via reports and questions posed to the nonprofit PLAN. The southern California area of Monterey has had documented a population of 7 adult Badgers in the mid-2000s. The current population in the Monterey area is unknown.

In Mendocino County's coastal area, reports of one juvenile badger and one adult Badger were been received in 2014 and 2015.

Negative impacts contributing to diminution in American Badger population and ability to survive include:

-First and foremost, habitat loss and habitat fragmentation. As a Species of Concern in California, habitat and assured movement areas for badger are not protected. Mitigations for development and other impacts relate to direct harm to the species and our past experience reflects the Department's lack of understanding of species needs and behaviors when regulators become involved in reviewing and approving mitigations related to loss of habitat from development or other causes requiring consideration for mitigation. Accrual of observations and data by PLAN over 15 years reflect significant loss of habitat and prey bases and a clear need to ensure habitat areas, preferred adult female Badger habitat, and the ability for American badger to range or move be identified and actively preserved.

-Additional significant negative impacts to the remaining American Badger in California include drought. Less prey available and dried-up Summer and Autumn water sources result in competition for both.

-Motor vehicle strikes killing adult and juvenile badgers especially during critical Summer months for dispersal of young.

Dr. Jessie Quinn's research and subsequent dissertation in the late 2000s documented a movement range in the Monterey area for a population of 10 badgers of approximately 10 miles. In the San Francisco Bay area, the movement range for American Badger is directly observed over 15 years for the documented small badger populations to be only 4 to 6 miles on the Sonoma Coast, 4 miles on the Marin Coast (with development in between coastal areas preventing contiguous corridor movement) and approximately 8 miles coast-inland-coast, but *only if* conditions allowing movement, not being killed by ranchers who own the agricultural lands, and sufficient prey and water are available. A more realistic inland movement area for American Badger in Sonoma County is 6 miles and in Marin County is 5 miles.

Because there do not appear to be other dedicated broad-scale efforts to discern factual information about this Species of Concern and the observation of diminished and fragmented habitat along with mortality rates, even if the American Badger were not listed as a Special Status animal, the species should be removed from the Department's Hunting list. As a Species of Concern, the American Badger should not have ever been on the Hunting list (this includes trapping as a method for killing). Of note, in addition, is the allowed Hunting season is during mating season and early birthing season for the American Badger.

It is likely the level of knowledge about American Badger is in-depth in the San Francisco Bay Area because of the nonprofit organization's (PLAN) dedicated observation and research over 15 years. This observation and research continue. While educational outreach also continues, including dispelling cultural myths and understanding the significant benefit of the remaining Badger population to coastal and inland ecosystems, serious concerns exist related to continued fragmented and diminishing habitat and negative impacts to the species described above. Without a Threatened status designation, unquestionably, the habitat areas for American Badger will continue to be negatively impacted and diminish. This, coupled with drought and intentional killing, are of severe concern.

Gray Fox

Gray Fox is also listed in the described regulation under question. Grey Fox is a native mammal to California and, while data collection and observations of the conservation nonprofit, PLAN, relate specifically to American Badger, Gray Fox is requested to also be removed from the Hunting list of the CA Department of Fish and Wildlife as a native mammal who relies on similar movement areas, similar prey, similar habitat areas as American Badger, with negative impacts from diminishing habitat and drought-related challenges.

How many Badgers remain in California? The exact quantity is unknown. In the entire San Francisco Bay Area grassland habitat areas, we estimate under 30 Badgers. Sustaining biodiversity is challenging because of fragmented habitat areas and obstructed movement corridors. The mortality rate for vehicle strike deaths annually appears to average between 2 and 4 badgers, adult and juvenile. This has been consistently observed over 12 years. Identifying preferred female adult Badger territory areas is critical to support sustenance of Badgers that remain. However, without open movement areas, sufficient prey and water, male adult Badgers are challenged to enter a female adult Badger's territory and successfully mate. Although some publicly protected lands such as a national park (Pt. Reyes National Seashore) or public open space grassland area are preserved with no possibility for development, the necessity of connection to agricultural lands and open grassland to these areas, and prevention of obstruction of wildlife corridors as well as further loss of prey base areas, make the critical nature of preserving wildlife corridors and habitat for American Badger more urgent.

It is imperative to take every action in an attempt to allow the small American Badger population of adults and juveniles in California to sustain. Unquestionably, the American Badger's official status should be Threatened.

The purpose of this request is to repeal the allowed hunting of American Badger and also of Grey Fox in California as soon as possible.

Benefits to other species from American Badger presence in grassland habitat include for Burrowing Owl (also a CA Species of Concern), California Tiger Salamander, California Red-Legged Frog, and other unlisted species such as Striped Skunk and Gray Fox. The American Badger provides immense benefits to coastal and inland ecosystems.

Submitted for Paula Lane Action Network (P.L.A.N.), PO Box 2903, Petaluma, CA 94953

Tax ID#: 73-1702426.

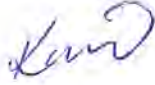
Susan Kirks, Naturalist and Badger Ecologist

Memorandum

2018 MAR 30 PM 1:40

Date: March 29, 2018

To: Valerie Termini
Executive Director
Fish and Game Commission

From: Kari Lewis 
Chief, Wildlife Branch

Subject: **Regulatory Petition #2015-008, repeal hunting of American badger and gray fox**

Summary

The Department of Fish and Wildlife (Department) has reviewed the above-referenced regulatory petition and recommends denial of the petition at this time. Hunting in California is managed to provide for use and enjoyment by the public at a level that has a less than significant impact to the population as a whole. As explained below, based on the status of these species and the level of harvest there is no indication that a complete ban on hunting of American badger or gray fox is necessary.

Background

In December 2015, a petition was filed with the Fish and Game Commission (Commission) requesting the repeal of regulations allowing the hunting of American badger based on its status as a species of special concern, diminishing populations, habitat fragmentation and loss. The petition also requested the same repeal of regulations for gray fox based on its status as native mammal that relies on similar movement areas, prey, and habitat areas as American badger and impacts from diminishing habitat and drought-related challenges. The Commission referred the petition to the Wildlife Resources Committee's Predator Policy Workgroup in April 2016 and then referred the petition to the Department for evaluation and recommendation in April 2017.

American Badger Evaluation

American badger is found statewide except in the northern coastal forests and occupies a diversity of habitats utilizing relatively open and uncultivated lands, preferring grasslands, savannahs, and mountain meadows. American badger was identified as a "Priority 3" species in the Department's 1987 Mammalian Species of Special Concern report. "Species of Special Concern" is a Department administrative designation used to provide an early warning system to identify declining species before they become threatened or endangered. "Priority 3" species are those species that do not appear to be facing extinction soon but have seriously declining populations or are highly vulnerable to human developments. Hunting of some species of special concern, such as sage grouse and Tule Greater white-fronted

goose, is currently allowed under regulations adopted by the Commission.

The American badger population has declined throughout the species range, but most notably in the Central Valley, coastal areas south of Mendocino County, and southern California. The 1987 report identified the major factors contributing to American badger population declines as depredation, habitat loss and fragmentation from agricultural and urban development, direct and indirect impacts from rodent and predator poisoning, and trapping for fur. Since the 1980's, the sale of trapping licenses for recreation or commerce in fur has declined dramatically. According to the trapping reporting data, the average harvest of American badgers declined significantly as well. In the 1980's the number of American badgers harvested for recreation or commerce in fur averaged approximately 200 animals per year. In the 1990's the average decreased to approximately 25 animals per year. Since 2000, the harvest has averaged approximately nine animals per year. Since implementation of the bobcat trapping regulations in 2015, an average of three animals were harvested statewide per year. Reporting of take by hunters is not required so data on hunting harvest is limited. However, American badger does not appear to be as popular as other hunted species and given its elusive nature, take likely occurs opportunistically.

Gray Fox Evaluation

Gray fox is found in low to middle elevations throughout most of the State, except in the northeastern portion. Gray fox is a relatively common species in California and its habitat use overlaps with American badgers but also includes shrublands, forests, and woodlands, with a preference for wooded and bushy areas. Primary threats to the species includes habitat loss and fragmentation, disease, and rodenticide use. As with American badger, the trapping harvest for recreation or commerce in fur has declined significantly since the 1980s. In the 1980's the number of gray fox harvested averaged approximately 8500 animals per year. In the 1990's the average decreased to approximately 1000 animals per year. Since 2000, the harvest has averaged approximately 525 animals per year. Since implementation of the bobcat trapping regulations in 2015, an average of approximately 200 animals per year were harvested statewide. Like with American badger, data on hunting harvest is limited but does not appear to be significant.

Given the low harvest rates and low hunting pressure, there is no indication a complete ban on hunting is necessary at this time for either species. However, the Department is reassessing the status of mammals across California as part of an effort to update the Mammalian Species of Species Concern report. American badger will be one of the species included in that assessment. Gray fox has not previously met any criteria or thresholds of concern for inclusion in the report. The Department can utilize information from this assessment to inform any potential regulatory changes deemed necessary for the conservation of American badger or gray fox.

Thank you for the opportunity to provide the Department's perspective on this petition. If you have any questions or need additional information please contact Erin Chappell at (916) 445-3685 or Erin.Chappell@wildlife.ca.gov, or me at (916) 445-3789 or Kari.Lewis@wildlife.ca.gov.

Kari Lewis
March 22, 2018
Page 3 of 3

ec: Erin Chappell, Nongame Program Manager
Wildlife Branch
Erin.Chappell@wildlife.ca.gov

Brad Burkholder, Game Program Manager
Wildlife Branch
Brad.Burkholder@wildlife.ca.gov

Stafford Lehr, Deputy Director
Wildlife and Fisheries Division
Stafford.Lehr@wildlife.ca.gov

June 7, 2018 for June 20-21, 2018 Commission Meeting

SUPPLEMENTAL COMMENT – Agenda Item 33(B)I, Repeal of Hunting American Badger, Gray - Petition 2015-008

Submitted by: Susan Kirks, Naturalist, for Paula Lane Action Network (PLAN) in Sonoma County, CA. Petitioner of 2015-008.

A review of hunting and trapping reports is insufficient to address the petition and the request. Particularly in the situation of American Badger in California, multiple factors contribute to “take” of this species, further diminishing the remaining population in the State. The Department does not have accurate or adequate inventory of the population in the State. In one county between 2015-17, over 50 badgers were recorded as killed or removed by the Wildlife Services function. This could well have accounted for the population in the county. Depredation on agricultural properties, based on the perpetuation of old myths and fears, likely also accounts for significant population losses of the species and its ability to attempt to seek grassland habitat to survive. In Summer 2017, the sole identified adult female badger in the Sonoma Valley was killed by a vehicle strike. We request the Commission consider the broader scope related to American Badger and also to Gray Fox. Many biologists in your Department believe the American Badger’s status should be changed to Threatened, in an effort to attempt to save the species, what remaining habitat exists, protect that, and preserve some areas for corridors and movement to support biodiversity.

This opinion, if you queried biologists in your Department, has existed for many years. Thus, the first step for your Commission to consider in an effective and realistic approach to saving a special status mammal, a Species of Concern, that should not be on a hunting list in the first place, and also for the native mammal, Gray Fox, is to approve removal of the species from the active mammal hunting list. This will begin to assure a regulated approach to discontinue any hunting or trapping in the State of California.

Please see the comment below submitted for your April 2018, when the request to move the agenda item so the petitioner could attend the meeting in our geographic area and comment.

Thank you.
Susan Kirks
06/07/2018.

From April 2018:

The staff recommendation falls short of an adequate analysis upon which a recommendation can be provided.

The perspective utilized is to consider how many badgers are hunted currently, compared to previously. The assessment of diminution of American Badger population in particular in the Central Valley, Monterey County and southern California is also incomplete. It is generally understood your Department has incomplete data on the population status particularly of American Badger in California.

The American Badger (*Taxidea taxus*) has been a designated California Species of Concern since 1987, for over THIRTY ONE years. The badger’s habitat has been severely fragmented, destroyed, developed, and in addition, additional factors of rodenticide/pesticide poisoning and death by vehicle strike and depredation, as well as hunting, are all factors in the continued impacts to this species.

Petition 2015-008 contained substantive field study and observation information, based on 18 years of direct work in an area of California to illustrate impacts to and existing habitat conditions of American Badger specifically.

This is information your Department would otherwise not have and we believe should be seriously considered. The Petition would not have been submitted, had a strong and perceived need in this regard not been assessed to be important.

The Predator Policy Work Group members who reviewed the petition, asked questions and heard my testimony before them, absent the special interest groups, related a level of strong concern with a desire to move the petition to the staff review and recommendation level. This included a conservation perspective expressed in the meetings I attended in Sacramento related to removing the species from the hunting list.

One of your own staff members in a phone conversation stated to me the Department made a mistake in including American Badger on a mammal hunting list in California.

While we appreciate the reference to utilizing data from Petition 2015-008 in the current review of the "Mammalian Species of Species of Concern," which we believe references the Mammalian Species of Concern report under preparation, as our provision of this information may help enlighten the process, this is not sufficient related to Petition 2015-008. We would like the opportunity to speak in public comment on this agenda item and provide more information to your Commission in your June 2018 meeting.

With the meeting location in southern California, a representative of our effort and organization is unable to travel to Ventura for your meeting in April. We requested this agenda item be moved to your June 2018 meeting in Sacramento. In addition, since we have had only 17 hours upon receipt of your staff's recommendation/report to provide a response, with the sincere effort given to providing this Petition to your Department, we request more time to contact your staff and discuss their process and recommendation prior to the Commission meeting.

We are currently formulating a research project with grant application to conduct a population inventory for American Badger and other related species in California. We believe your Department needs this information in order to be able to make informed decisions. The petition 2015-008, requesting removal of American Badger and Gray Fox from the mammal hunting list, is requested to be accepted, with action taken to remove the species from the current mammal hunting list. The rationale used of not many badgers are being hunted anyway is incomplete as a basis for a staff recommendation, added to the inadequate information statewide in order to determine population numbers for species. This does not encompass a conservation perspective, which in 2018 is necessary for wildlife decisions in California. The information provided in Petition 2015-008 should be sufficient to provide a significant view into the species, its habitat and impacts in a primary area of California, to utilize to remove a Species of Concern from the mammal hunting list. This would be a perspective that includes hunting and trapping data, the knowledge of depredation on agricultural lands with inability to quantify this data at this time, and the ongoing negative impacts to habitat areas of the species for the ability to sustain in California – and specifically remove American Badger from the statewide mammal hunting list.

We also recommend the Commission request staff review other Species of Concern allowed to be hunted in California.

With this comment for your April 2018 meeting, we again request moving this agenda item to the June 2018 meeting in Sacramento.

Submitted: 11:45 a.m., April 13, 2018

Susan Kirks

Susan Kirks

From: Keli Hendricks
Sent: Wednesday, June 06, 2018 12:46 PM
To: FGC <FGC@fgc.ca.gov>
Cc: Susan Kirks ; info@projectcoyote.org
Subject: Remove badgers and grey fox from hunting list

I am writing to support the petition to remove badgers and grey fox from the hunting list.

As a rancher, wildlife rehabilitator and advocate, I understand the important role these species play in ecosystem and ranch-lands.

As a Species or Special Concern in CA since 1987, it is especially disturbing that badgers can still be killed for sport.

According to the CA Department of Fish and Wildlife, a Species of Special Concern means, "The Department considers it potentially threatened with extinction in the State."

Yet despite increased threats to their survival from habitat loss, climate change, rodenticides and more, in the 30 years since badgers were listed they've received no protection from recreational take.

Badger digs help aerate soils and increase moisture in grasslands protecting them from drought, and their abandoned dens provide shelter for species like burrowing owls, tiger salamanders, and the red legged frog.

In addition, both foxes and badgers help control rodent populations thus slowing the spread of diseases like Hantavirus and Lyme Disease.

At the very least, we have an ethical responsibility to practice precautionary principles when managing wildlife and not allow the recreational take of a species whose presence on the landscape benefits both humans and other wild animals, especially one whose population is potentially so low that the loss of every individual makes a difference.

Thank you,

Keli Hendricks

Keli Hendricks - Project Coyote
Ranching with Wildlife Coordinator



Tracking Number: **2017-012** (Click here to enter text.)

To request a change to regulations under the authority of the California Fish and Game Commission (Commission), you are required to submit this completed form to: California Fish and Game Commission, 1416 Ninth Street, Suite 1320, Sacramento, CA 95814 or via email to FGC@fgc.ca.gov. Note: This form is not intended for listing petitions for threatened or endangered species (see Section 670.1 of Title 14).

Incomplete forms will not be accepted. A petition is incomplete if it is not submitted on this form or fails to contain necessary information in each of the required categories listed on this form (Section I). A petition will be rejected if it does not pertain to issues under the Commission's authority. A petition may be denied if any petition requesting a functionally equivalent regulation change was considered within the previous 12 months and no information or data is being submitted beyond what was previously submitted. If you need help with this form, please contact Commission staff at (916) 653-4899 or FGC@fgc.ca.gov.

SECTION I: Required Information.

Please be succinct. Responses for Section I should not exceed five pages

1. **Person or organization requesting the change (Required)**
Name of primary contact person: James L Lambert
Address: :
Telephone number:
Email address:
2. **Rulemaking Authority (Required)** - Reference to the statutory or constitutional authority of the Commission to take the action requested: CODE 200, 205, 265, 275 fish and game code.
3. **Overview (Required)** - Summarize the proposed changes to regulations: I propose to allow Striped Bass fishing daily south of Golden Gate Bridge in all California South Coast Rivers and Ocean Waters. Using the same river locations used for fishing steelhead and salmon in the winter months. No other fish may be retained in the rivers and high graders will be severely punished. I suggest size limits reduced to 12" inches to keep, with a three fish bag limit per day for Striped Bass.
4. **Rationale (Required)** - Describe the problem and the reason for the proposed change: The California Fish and wild life commission is not enforcing the Law; they are allowing the **non native Striped Bass** to propagate and destroy the California native fish species. They are not protecting the **wild** fish species; Salmon and Steelhead including hatchery fish from predation; this is a significant reason that is causing a decline in these fish. The Strip Bass are land locked; setting up residents and mating in south coast rivers. Devouring whatever they can find, **killing all wild species**.

SECTION II: Optional Information

5. **Date of Petition:** 11-1-2017
6. **Category of Proposed Change**
X Sport Fishing



- ☐ Commercial Fishing
- ☐ Hunting
- ☐ Other, please specify: [Click here to enter text.](#)

7. **The proposal is to:** *(To determine section number(s), see current year regulation booklet or <https://govt.westlaw.com/calregs>)*

- ☐ Amend Title 14 Section(s): 5.75
- ☐ Add New Title 14 Section(s): [Click here to enter text.](#)
- ☐ Repeal Title 14 Section(s): [Click here to enter text.](#)

8. **If the proposal is related to a previously submitted petition that was rejected, specify the tracking number of the previously submitted petition** [Click here to enter text.](#)
Or X Not applicable.

9. **Effective date:** If applicable, identify the desired effective date of the regulation.
If the proposed change requires immediate implementation, explain the nature of the emergency: As soon as possible: As we know the Striped Bass fish is an aggressive predator that has been invading California waterways for over one hundred and thirty years, with a population increase of tens of millions. They are voracious feeders; migrating into all waterways and are known as an Anadromous fish that have no limits. Ultimately this fish will cause total devastation to all the west coast wild fish populations (including Steelhead and Salmon) in California Rivers. It is possible they will consume all the wild fish species populations living along the coastal surf zone as they live and move on through these waters. .

10. **Supporting documentation:** Identify and attach to the petition any information supporting the proposal including data, reports and other documents: The Carmel River Steelhead Association, their web site. <http://www.carmelsteelhead.org/> : news letter June, 2017. My experiences and observations: I became a member of the Carmel Steelhead Association in the mid 1983 and spent a lot of time working on project and Steelhead rescues. Fishing on the Carmel River for Steelhead whenever possible. Spending time fishing on the Monterey wharf in the winter months when the swells were too big and unsafe along the California Coast line. Many days on the wharf schools of Salmon and steelhead would come cruising along the wharf wall seeking out the fresh water that came out into the surf; flowing out of a small stream located under the wharf. We were casting lures to them with hopes of hooking one of the fish. The schools were adult fish 8 to 15 pounds and there was from ten to thirty fish at a time in the schools; it was exciting to see them. Over the years seeing a Salmon or Steelhead became a rare sight. Today many of us fishermen on the wharf see large schools of Striper Bass with two or three hundred fish in the school. This has been for the past several years. Striped Bass are taking over and hunting in packs. Fishing for Striped Bass on the wharf is; casting lures but the fish that are hooked are always too small to keep. Ranging 12 to 16 inches long. Many surf fishermen are seeing the same size fish that are undersize to keep. The State law requires them to be 18 inches. Most fishermen are realizing that the Striped Bass has been one of the major factors causing the decline in Salmon and Steelhead. There is an enormous increase of Striper Bass being seen in all the California waters and Rivers. One river in particular I check is the Carmel River. Large schools of Striper Bass have been recorded in the river and also observed upstream above the recent dam removal location; mating, spawning, including sighting of there off springs. Photos of a large school of Striped Bass in the Carmel River will be included.

11. **Economic or Fiscal Impacts:** Identify any known impacts of the proposed regulation change on revenues to the California Department of Fish and Wildlife, individuals, businesses, jobs, other state agencies, local agencies, schools, or housing: This change in Ocean and River fishing law will help fishermen, Guide Fishing Service, Ocean Party boats, and local city stores with increased sales of fish



equipment which would improve the many local economies. This change will open the door for new fishery studies, and grants to assess the improvement and protection of fish species. This proposal will also give back to fisherman more river fishing time, and put food on their tables. This in turn helps improve and promotes California fishing license sales and the Warden Service. Having more people fishing on the rivers helps decrease poachers, it's a win win for all.

12. Forms: If applicable, list any forms to be created, amended or repealed:

[Click here to enter text.](#)

SECTION 3: FGC Staff Only

Date received: [Click here to enter text.](#)

FGC staff action:

- ☐ Accept - complete
- ☐ Reject - incomplete
- ☐ Reject - outside scope of FGC authority

Tracking Number

Date petitioner was notified of receipt of petition and pending action: _____

Meeting date for FGC consideration: _____

FGC action:

- ☐ Denied by FGC
- ☐ Denied - same as petition _____
- ☐ Granted for consideration of regulation change

Tracking Number

RECEIVED
CALIFORNIA
FISH AND GAME
COMMISSION
2017 NOV -2 AM 8:06

The California Fish and wild life commission is not enforcing the Law; they are allowing the non native Striped Bass to propagate and destroy the California native fish species. They are not protecting the **wild fish species**; Salmon and Steelhead including hatchery fish from predation; this is a significant reason that is causing a major decline in these fish. The Strip Bass in south coast rivers are land locked; setting up residents and mating. Devouring whatever they can find, killing all wild species.

As we know the Striped Bass Non-Native fish is an aggressive predator that has been invading California waterways for over one hundred and thirty years, with a population increase of tens of millions. They are voracious feeders; migrating into all waterways and are known as an Anadromous fish that have no limits. Ultimately this fish will cause total devastation to all the west coast wild fish populations (including Steelhead and Salmon) in California Rivers. It is possible they will consume all the wild fish species populations living along the coastal surf zone as they live and move on through these waters. Unfortunately, this is also true for the future of tens of millions of hatchery Salmon and Steelhead fish that are released yearly. Basically hatchery fish are weak and not as alert as the wild fish are.

It is time human action is taken to slow down the Striped Bass. *I have an idea on how to improve the California hatchery fish (Trout, Steelhead, and Salmon) and make them stronger, more alert, and possibly avoiding predators.* There is a safe and sane way to control and decrease the Striped Bass population from the waters. The proposed approach should not cost the Federal or State governments anything monetarily.

I propose to allow fishing of Striped Bass in all California South Coastal Rivers and streams **south** of the Golden Gate Bridge as soon as possible. This should be permitted for the South Coast because there are fishing businesses in the North Coastal Rivers. Consequently, this fishing policy change will not affect fishing Guide Service businesses in the North Coast. As far as I know there is no Fishing Guide Service in South Coast Rivers.

This change will help decrease and reduce the Striped Bass populations living in South Coastal Rivers where flows have become closed off to the ocean and the striped Bass are land locked. This will be a big help controlling the damage caused to the wild Trout, Steelhead and Salmon populations, and all other wild fish species that propagate in these waters. It will also give these wild fish species a chance to multiply, rebound and make a comeback. This small first step would be a great start with helping to improve the present condition for all fish species and help them make a comeback before it's too late.

This proposal will also give back to fisherman more river fishing time, and put food on their tables. This in turn helps improve and promotes California fishing license sales and the Warden Service. Having more people fishing on the rivers helps decrease poachers, it's a win win for all.

I propose to allow fishing daily in all California South Coast Rivers and Ocean Waters. Using the same river locations used for fishing steelhead and salmon in the winter months. No other fish may be retained and high graders will be severally punished. I suggest size limits be reduced to 12" inches to keep, with a three fish bag limit per day for striped Bass.

This change in Ocean and River fishing law will help fishermen, River Guide Fishing Service, Ocean Party boats, and local cities stores with increase sales of fish equipment which would improve the many local economies. This change will open the door for new fishery studies, and grants to assess the improvement and protection of fish species.

Brian K. Wells: from NOAA Southwest fisheries science center. At a MBARI seminar Oct 2017 studying Murre predation on Sardines, Salmon and Cod, notes that **hatchery Salmon fish are a weak fish**. When I asked about Stripe Bass predation; he said he did not study Stripe Bass fish. It then became obvious and it makes sense that millions of the hatchery Salmon and Steelhead releases is a food source for Striped Bass because their easy pickings and weak. Consequently that is the reason returns of Salmon and Steelhead into the rivers are small. California fish hatcheries produce about 40 million fish per year that include Salmon, Steelhead and Trout.

My observation; moving to Carmel / Monterey California in 1976 from I fished along the Big Sur rocky coast line, and fishing in the surf. I became a member of the Carmel Steelhead Association in the mid 1983 and spent a lot of time working on project and Steelhead rescues. Fishing on the Carmel River for Steelhead whenever possible. Spending time fishing on the Monterey wharf in the winter months when the swells were too big and unsafe along the California Coast line. Many days on the wharf schools of Salmon and steelhead would come cruising along the wharf wall seeking out the fresh water that comes out into the surf that is flowing out of a small creek located under the wharf. We are casting lures to the fish with hopes of hooking one. The schools were adult fish 8 to 15 pounds and there was ten to thirty fish in the schools; it was exciting to see them. Over the years seeing a Salmon or Steelhead became a rare sight. Today many of us fishermen on the wharf see schools of Striper Bass with two or three hundred fish in the school. This has been for the past several years. Striped Bass are taking over and hunting in packs. Fishing for Striped Bass on the wharf is; casting lures the fish that are hooked are always too small to keep. Ranging 14 to 16 inches long. Many surf fishermen are seeing the same size fish that are undersize to keep. The State law requires them to be 18 inches. Most fishermen are realizing that the Striped Bass has been one of the major factors causing the decline in Salmon and Steelhead. There is an enormous increase of Striper Bass being seen in all the California waters and Rivers. One river in particular I check is the Carmel River. Large schools of Striper Bass have been recorded in the river and also observed upstream above the recent dam removal location; mating, spawning, including sighting of there off springs.

Photographs: of large school of adult Striped Bass in the Carmel River Lagoon. THE RIVER MOUTH IS CLOSED to ocean.



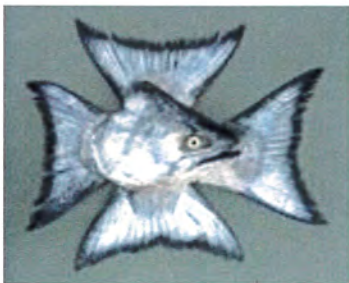


Photographs: of large school of adult Striped Bass in the Carmel River Lagoon. THE RIVER MOUTH IS CLOSED to ocean. This is happening to the entire costal rivers along the California Coast. This is a main reason we need to fish for Striped Bass and get them out of the rivers before they kill all the wild species.

Please let's get this done before it's too late..... Optimistically it's not too late.

Jim Lambert,

The Salmon Cross is a symbol that represents those individuals who have made it their mission in life to save the Wild Steelhead and Wild Salmon from extinction. Their work, dedication and sacrifices provide future generations the enjoyment of this treasured natural resource. @ Jim Lambert, Contemporary Photographs



CALIFORNIA FISH AND GAME COMMISSION
DECISION LIST FOR WILDLIFE NON-REGULATORY REQUESTS FOR ACTION THROUGH APRIL 19, 2018
Revised 06-07-2018

FGC - California Fish and Game Commission **DFW** - California Department of Fish and Wildlife **WRC** - Wildlife Resources Committee **MRC** - Marine Resources Committee

Date Received	Name of Petitioner	Subject of Request	Short Description	FGC Decision	Staff Recommendation
2/4/2018	Kelly Haines	Coyote	Requests that FGC act to eradicate coyotes in Orange County	Receipt: 4/18-19/2018 Action scheduled: 6/20-21/2018	Deny; inconsistent with FGC (and DFW) mandates governing wildlife management.
2/21/2018	Collin Fitzpatrick	Threatened and endangered species	Proposes a change to FGC's policy regarding threatened and endangered species	Receipt: 4/18-19/2018 Action scheduled: 6/20-21/2018	Deny; existing laws governing wildlife management and threatened and endangered species already provide sufficient protections. Therefore, additional guidance through the FGC policy is unnecessary at this time.
3/8/2018	Modoc County Fish, Game & Recreation Commission	Fishing licenses	Urges FGC to adopt a 365-day fishing license system, as with other states, which could provide an economic boost to Modoc County and other local economies	Receipt: 4/18-19/2018 Action scheduled: 6/20-21/2018	Deny; this request is outside of FGC authority and requires legislative action.
3/27/2018	Robert Blankenship	TV show highlighting DFW wardens	Requests that FGC reinstate a television program on DFW wardens at work in order to generate revenue for DFW law enforcement	Receipt: 4/18-19/2018 Action scheduled: 6/20-21/2018	Deny; day-to-day management of DFW is outside FGC authority and is at the discretion of DFW.
4/2/2018	Dennis Fox	Mountain lions	Asks that the state determine if the presence of mountain lions has resulted in large fires by way of overgrown forest understories due to deer being eaten	Receipt: 4/18-19/2018 Action scheduled: 6/20-21/2018	No FGC action required; resource assessments are conducted by DFW. Comment forwarded to DFW.

California Fish and Game Commission

Potential Agenda Items for August 2018 Commission Meeting

The next FGC meeting is scheduled for August 22-23, 2018, in Fortuna. This document identifies potential agenda items for the meeting, including items to be received from FGC staff and the California Department of Fish and Wildlife (DFW).

Wednesday, August 22: Marine-related and administrative items

1. Public forum
2. Executive director's report (staff report, legislative update)
3. Strategic planning
4. Tribal Committee
5. Marine Resources Committee
6. Notice: Groundfish
7. Notice: Ridgeback prawn incidental take allowance
8. Notice: Tale of red abalone (if approved under Agenda Item 36B)
9. Notice: Repeal state logbook requirements for federal fisheries (if approved under Agenda Item 36B)
10. Adopt: Rockport Rocks Special Closure
11. Adopt: Tribal take in marine protected areas
12. Receive red abalone fishery management plan
13. Receive statewide marine protected areas monitoring action plan
14. Adopt FGC meeting dates and locations for 2019
15. Marine items of interest from previous meetings
16. Action on marine petitions for regulation change
17. Action on non-regulatory marine requests from previous meetings
18. Receive DFW informational items (marine)
19. Executive session

Thursday, August 23: Wildlife- and inland fisheries-related and administrative items

20. Public forum
21. Wildlife Resources Committee
22. Notice: Archery equipment and crossbow
23. Notice: Deer/elk tag validation
24. Notice: Sport fishing (annual)
25. Adopt: Sage grouse preferential points and draw
26. Discuss and determine whether listing Humboldt marten as an endangered species is warranted
27. Adopt Commission's findings for listing coast yellow leptosiphon as an endangered species
28. Adopt Commission's findings for listing Lassics lupine as an endangered species
29. Adopt Commission's findings for listing tricolored blackbird as a threatened species

30. Recognize inductees into California Waterfowler's Hall of Fame
31. Wildlife and inland fisheries items of interest from previous meetings
32. Action on wildlife and inland fisheries petitions for regulation change
33. Action on non-regulatory, non-marine requests from previous meetings
34. Receive DFW informational items (wildlife and inland fisheries)
35. Administrative items (next meeting agenda items, rulemaking timetable, new business)

California Fish and Game Commission – Perpetual Timetable for Anticipated Regulatory Actions
(dates shown reflect the date intended for the subject regulatory action)

Updated: 06/06/18				ITEMS PROPOSED FOR CHANGE ARE SHOWN IN <u>BLUE FONT</u>												2019																
For FGC Staff Use				REGULATORY CHANGE CATEGORY	ACTION DATE, TYPE AND LOCATION	JUN 19	JUN 20 21	JUL 17	AUG 22 23	SEP 20	OCT 16	OCT 17 18	NOV 14	DEC 12 13	JAN TBD	FEB TBD	FEB TBD	MAR TBD	APR 18 19	MAY TBD												
QUARTERLY EFFECTIVE	DFW RU ANALYST	FGC ANALYST	LEAD			TC SACRAMENTO	FGC SACRAMENTO	MRC SAN CLEMENTE	FGC FORTUNA	WRC SACRAMENTO	TC FRESNO	FGC FRESNO	MRC SACRAMENTO	FGC OCEANSIDE	WRC TBD	TC TBD	FGC TBD	MRC TBD	FGC TBD	WRC TBD												
																					File Notice w/OAL by											
																					Notice Published											
				Title 14 Section(s)																												
	MR	JS	WLB	Mammal Hunting (Annual) if needed	TBD					R				N			D		A	V												
	KM	SF/ST	FB	Central Valley Salmon Sport Fishing (Annual)	7.50(b)(5), (68) & (156.5)			E 7/1		R				N			D		A	V												
	MR	JS	WLB	Waterfowl (Annual)	502			E 7/1		R				N			D		A	V												
	KM	SF	FB	Klamath River Basin Salmon Sport Fishing (Annual)	7.50(b)(91.1)				E 8/1	R				N			D		A	V												
	MR	DT	MR	Recreational Purple Sea Urchin (Emergency)	29.11				180 days				EE 11/7																			
	MR	JS	WLB	Upland (Resident) Game Bird (Annual)	300		A			E 9/1 V							N			D												
	MR	JS	WLB	Sage Grouse Preferential Points and Draw	716		D		A						E 1/1																	
	SB	SF	FGC	Tribal Take in MPAs	632(b)(33), (34), (97), (98), (112), (117)		D		A						E 1/1																	
*	SB	RP/SF	FGC	Rockport Rocks Special Closure	632(b)(17)		D		A						E 1/1																	
*	SB	RP/JS	MR	Commercial Non-Cancer Crab Incidental Take in Trap Fisheries	125.1(c)(3), 126 and 126.1		N					D/A																				
*	SB	RP/ST	MR	Ridgeback Prawn Incidental Take Allowance	120(e)		N					D/A							-													
	TBD	ST	MR	Groundfish	TBD				N			D		A	E 1/1																	
	TBD	TBD	MR	Recreational Take of Red Abalone	29.15				N			D		A				E 4/1														
*	TBD	TBD	MR	Repeal State Logbook Requirement for Federal Fisheries	107, 174 and 176				N					D/A																		
	MR	JS	LED	Deer/Elk Tag Validation	708.6, 708.11				N			D		A																		
	MR	JS	LED	Archery Equipment and Crossbow	354(f)				N			D		A																		
	TBD	JS	FB	Sport Fishing (Annual)	1.05 et al.				N			D		A	V			E 3/1		R												
*	TBD	ST	MR	Herring FMP Implementation	163, 163.1, 163.5 and 164							N		D			A															
*	MR	ST	MR	Commercial Fisheries Landing Requirements	197			E 7/1																								

RULEMAKING SCHEDULE TO BE DETERMINED

*			MR	Kelp and Algae Harvest Management	165, 165.5, 704			V										V		
*				Possess Game / Process Into Food	TBD															
*			OGC	American Zoological Association / Zoo and Aquarium Association	671.1															
				Night Hunting in Gray Wolf Range	474															
				Shellfish Aquaculture Best Management Practices	TBD			R										V		
*		ST		Fisher	670.5															
*		ST		Northern Spotted Owl	670.5															
*		ST		Lassics Lupine	670.2															
*		ST		Tri-colored Blackbird	670.5															
*		ST		Coastal Yellow Leptosiphon	670.2															
*				Ban of Neonicotinoid Pesticides on Department Lands	TBD															
*			MR	Commercial Pink Shrimp Trawl	120, 120.1 and 120.2															
*			MR	Ridgeback Prawn Incidental Take Allowance	120(e)															.
			MR	Recreational Take of Red Abalone	29.15															

EM = Emergency, EE = Emergency Expires, E = Anticipated Effective Date (RED "X" = expedited OAL review), N = Notice Hearing, D = Discussion Hearing, A = Adoption Hearing, V =Vetting, R = Committee Recommendation, WRC = Wildlife Resources Committee, MRC = Marine Resources Committee, TC = Tribal Committee

Memorandum

2018 JUN -8 AM 8:30

Date: June 7, 2018

To: Valerie Termini
Executive Director
Fish and Game Commission

From: Charlton H. Bonham
Director



Subject: **Request for Changes to the Fish and Game Commission's Timetable for Anticipated Regulatory Actions**

The Department of Fish and Wildlife (Department) requests the following schedule changes to the Fish and Game Commission's (Commission's) 2018 regulatory timetable:

- Move up the TDB rulemaking to amend Section 29.15 to consider changes for the recreational take of red abalone.
 - The requested meeting schedule is notice at the August 2018 meeting, discussion at the October 2018 meeting, and adoption at the December 2018.
- Add a rulemaking to amend sections 107, 174 and 176 for repealing the state logbook requirement for federal fisheries.
 - The requested meeting schedule is notice at the August 2018, and discussion/adoption at the December 2018 meeting.
- Delay the rulemaking to amend subsection 120(e) to consider changes to the ridgeback prawn incidental take regulations.
 - The revised meeting schedule is TBD.

If you have any questions or need additional information, please contact Regulations Unit Manager, Michelle Selmon at (916) 653-4674 or by email at Michelle.Selmon@wildlife.ca.gov.

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Valerie Termini, Executive Director
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June 7, 2018
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BEFORE THE
FISH AND GAME COMMISSION
STATE OF CALIFORNIA

In the Matter of the Accusation Against:

AARON LANCE NEWMAN,

Respondent.

Case No. 15ALJ07-FGC

OAH No. 2017100816

PROPOSED DECISION

Administrative Law Judge Ed Washington, Office of Administrative Hearings, State of California, heard this matter on March 27, 2018, in Sacramento, California.

Staff Counsel Stephanie Mello represented the Department of Fish and Wildlife (Department), State of California.

Attorney Paul Brisso represented respondent Aaron Lance Newman, who was present throughout the hearing.

Evidence was received, and the record was left open for the parties to submit written closing briefs. The parties' briefs were received and marked as Exhibits 14 (the Department's closing brief) and D (respondent's closing brief). The record was closed, and the matter was submitted for decision on April 9, 2018.

FACTUAL FINDINGS

1. Respondent held a sport fishing license issued by the Department. Those hunting and fishing privileges were suspended by the Superior Court of Humboldt County on October 29, 2014.
2. Complainant David Bess made the Accusation in his official capacity as Chief of the Law Enforcement Division of the Department. Through the Accusation, the Department seeks to permanently revoke respondent's sport fishing and hunting privileges in the State of California, based on his criminal convictions, described below.

Respondent's Conviction

3. On October 29, 2014, in the Superior Court of the State of California, County of Humboldt, Case No. CR 1302281, respondent was convicted, upon his plea of guilty, of three misdemeanor violations of the law, as follows:

- a. One count of violating Fish and Game Code section 1053.1, subdivision (a) (unlawfully obtaining more than one license, permit, reservation, or other entitlement of the same class or more than the number of tags authorized by statute or regulation for the same license year);
- b. One count of violating Fish and Game Code section 1054, subdivision (a) (unlawfully submitting, or conspiring to submit, false, inaccurate, or otherwise misleading information on an application or other document offered by the department for any purpose, including obtaining a license, tag, permit, or other privilege or entitlement pursuant to the Fish and Game Code or its regulations); and
- c. One count of violating Section 29.16, subdivision (b), of title 14 of the California Code of Regulations (unlawfully failing to tag any abalone taken and retained in the sport fishery).

4. As a result of these convictions, the court placed respondent on three years of informal probation, and ordered him to serve one day in jail, complete 250 hours of community service and to pay \$3,416.33 in related restitution, fines, and fees. The court also prohibited respondent from possessing or obtaining a recreational fishing or hunting license in any state during the term of his probation. Respondent has successfully completed his community service commitment. On November 29, 2017, respondent's conviction was dismissed pursuant to Penal Code section 1203.4.

5. The Department permits individuals who have lost their abalone permit report card or deer tag to apply for and receive a replacement. An abalone permit report card authorizes a person to take up to 24 abalone each season. The abalone permit report card includes 24 separate areas on which a fisherman may designate when and where each abalone was taken. It also includes 24 detachable tags that must be affixed to each abalone taken. A deer tag authorizes the recipient to take and harvest a single deer in the designated hunting zone each year. The B-zone is comprised of portions of more than a dozen different counties in northern California. The X3B deer hunting zone is in the most northeastern portion of California and is comprised of the portions of Modoc County and Lassen County which border the Oregon and Nevada border. A deer tag includes a section for specifying the harvest information and method of taking, in addition to a report card portion the hunter must complete specifying the same harvest information. The report card is maintained by the hunter and the tag is attached to the animal after it is taken.

6. The incident underlying respondent's conviction occurred between April and November 2012. On April 19, 2012, respondent obtained from the Department an original 2012 B-zone deer tag authorizing him to kill and harvest a single deer in the B-zone during the B-zone hunting season. September 2, 2012 respondent killed and harvested a four-point deer under this license. On September 10, 2012, respondent went to the Eureka Fish and Game office and reported that his original B-zone license had not been used and was lost. Respondent requested a second B-zone license, and signed an affidavit under penalty of perjury stating that he lost his original 2012 B-zone deer tag. On November 26, 2012, respondent unlawfully possessed untagged abalone.¹

The Department's Evidence

7. Kristin Hubbard, an Environmental Biologist in the Department's Fort Bragg office, compiled data reflecting the number of duplicate abalone report cards issued between 2002 and 2011, and the individuals who obtained them. According to the information available to the Department, respondent had requested and obtained 11 duplicate abalone report cards from 2003 through 2011. No one else in California had received more than two duplicate abalone report cards during that same period.

8. In fall 2011, Ms. Hubbard informed Game Warden Don Powers of her research results. Warden Powers noticed that respondent had obtained more duplicate abalone report cards than anyone else on the list, and suspected that respondent was illegally obtaining duplicate abalone report cards to take more than the legal limit of abalone during a season. Warden Powers shared this information with Game Warden Matthew Well, and other game wardens, and the Department initiated a formal investigation into duplicate license requests.

9. During the investigation, the game wardens determined that pursuant to a "big game drawing," respondent had obtained a 2012 X3B zone deer tag as his first deer tag application in 2012, and had also purchased a B-zone deer tag pursuant to his second deer tag application that year. They determined that respondent had obtained a duplicate 2012 B-zone deer tag on September 10, 2012. The wardens also discovered that respondent had completed and submitted an affidavit for a 2012 duplicate abalone permit in which he certified under penalty of perjury that that he had taken seven abalone that season utilizing his original report card.

10. On November 26, 2012, the wardens served a search warrant on respondent's residence. The wardens interviewed respondent regarding his abalone fishing and deer hunting activities. Respondent told them he only had "this year's ab card" in his possession and there were no old abalone permit report cards in his home. When asked to explain why

¹ The Accusation specifies that one basis for respondent's conviction was that on August 8, 2012, respondent requested and received a duplicate abalone report card. The court documents admitted at hearing did not support that any activity occurring on August 8, 2012, formed the basis for respondent's conviction.

he had obtained so many duplicate abalone permit report cards, respondent replied "I lost a bunch of stuff." During the search, the wardens secured respondent's cell phone, digital camera, and computer, which all contained photographs of respondent and others engaged in hunting and fishing activities. The wardens discovered a set of three point deer antlers with a completed 2012 X3B zone deer tag issued to respondent in his garage. They discovered a set of four point deer antlers in respondent's living room near the fireplace that appeared "fresh," as there was dried hair and flesh attached to the skull plate. They discovered an unfilled duplicate 2012 B-zone deer tag issued to respondent. They discovered the completed report card portion of an original 2012 B-zone deer tag issued to respondent, which specified that respondent killed a four-point buck on September 2, 2012.

11. The wardens also discovered several items related to respondent's abalone fishing activities. They discovered respondent's 2009 original abalone permit report card, which reflected that respondent had secured 21 abalone as of June 3, 2009. In respondent's 2009 affidavit for a duplicate abalone permit report card, signed under penalty of perjury by respondent on June 4, 2009, he certified that he had lost his original 2009 abalone permit report card and had only secured three abalone that season using the original card. The wardens also discovered respondent's 2012 duplicate abalone report card. The wardens noted that 23 of the 24 abalone tags on the 2012 duplicate report card had been used. The wardens also discovered three frozen abalone in respondent's freezer that were untagged and had each been removed from their shells.

12. The investigating wardens obtained a copy of respondent's affidavit to support his request for a duplicate 2012 second deer tag for the B-zone. Within that affidavit, respondent certified under penalty of perjury as follows:

[Respondent] applied for and received a [2012] second deer tag for B-zone. Said license, permit, or other entitlement, has been lost or destroyed and, after making a diligent search, I am unable to find the same . . . and I hereby apply for a license, permit, or other entitlement, using this affidavit as a replacement for said notice. If the original license, permit, or other entitlement, is recovered, I agree to return it immediately to the Department of Fish and Game where it was issued. I understand that falsely applying for a license, permit, or other entitlement, or failure to return the original license, permit, or other entitlement, if recovered, is a violation of the law, punishable by a fine of up to \$1,000 and/or imprisonment in the county jail for up to six months or both the fine and imprisonment.

13. Based on all the information obtained during its investigation, the Department reported respondent's activities to the Humboldt County District Attorney's Office and recommended that he be prosecuted for multiple violations of the law. This information and recommendation led to respondent's criminal conviction, specified in Finding 3.

Respondent's Evidence

14. Respondent is a self-employed commercial fisherman and has worked in this capacity for approximately 20 years. On or about June 9, 2013, respondent was arrested for suspicion of criminal fishing and hunting activity discovered during the Department's 2012 investigation.

15. Respondent acknowledged that on September 10, 2012, he went to the Fish and Game office and obtained a duplicate B-zone deer tag. He asserted that he did not intend to obtain a duplicate B-zone tag. Instead, he intended to obtain a duplicate X3B zone deer tag, as the X3B zone season was about to begin in October. Respondent's first deer tag acquired in 2012 was his X3B zone deer tag, and the second was his B-zone deer tag. According to respondent, since the X3B zone season is second, he inadvertently asked for a duplicate of his second deer tag, when he should have asked for a duplicate for his first deer tag, since the X3B zone tag was acquired first. Because he asked for a duplicate second deer tag, he was issued a duplicate B-zone deer tag. Respondent did not notice that he had received a B-zone duplicate tag prior to departing the Fish and Game office. By the time respondent realized he had inadvertently obtained a duplicate B-zone tag rather than a duplicate X3B zone deer tag, he found his original X3B zone tag in his pickup truck. Respondent never returned the duplicate B-zone deer tag to the Department because he "thought he would look foolish." He asserted that he did not use the duplicate B-zone tag for any purpose whatsoever. He had previously taken a deer in the B-zone and had no use for the duplicate B-zone tag.

16. Respondent explained that he obtained multiple duplicate abalone permit report cards between 2003 and 2011 for several legitimate reasons. On at least three occasions his original abalone permit report card was washed away or otherwise lost to the water. Respondent recalled that on another occasion he left his original abalone permit report card in a friend's pickup truck and was unable to recover it. On another occasion his fishing equipment was stolen along with his original abalone permit report card. And, on multiple other occasions he misplaced his original abalone permit report cards due to his travels. He asserted that he completed each affidavit for a duplicate card to the best of his recollection.

17. Respondent also acknowledged that, on November 26, 2012, he had three abalone in his freezer that were not in their shells and were not tagged. He stated that the abalone were legally taken and properly tagged. However, he was unaware that they had to remain tagged once they were removed from their shells and placed in his freezer. He emphasized that the tagged and empty shells were only a few feet away from the frozen abalone when they were discovered by the wardens.

18. Respondent contends the Department should not revoke or suspend his hunting and fishing privileges because the Superior Court has already suspended his fishing and hunting privileges for the duration of his probation, and he has already paid over \$3,000 and performed 250 hours of community service based on the same conduct. Respondent also

asserted that despite his guilty plea to each of the counts specified in Finding 3 above, his conviction was due to his inadvertence and his underlying conduct was neither intentional nor reckless.

Discussion

19. The Fish and Game Commission may suspend or revoke respondent's hunting or sport fishing license or permit privileges if he has been convicted of a violation of the Fish and Game Code, its supportive regulations or provisions, and if it is established that respondent's commission of the offense(s) was done intentionally, knowingly, or recklessly. (Cal. Code Regs., tit. 14, §745.5, subd. (a).) On October 29, 2014, respondent was convicted of three counts of violating the Fish and Game Code and its supportive regulations. He unlawfully obtained multiple 2012 B-zone deer hunting permits, and obtained them by providing false, inaccurate, or misleading information to the Department. Respondent also failed to properly tag abalone taken as a result of his sport fishing activities.

20. Respondent provided several explanations for his unlawful acts at hearing. He asserted he mistakenly requested a duplicate 2012 B-zone deer tag, when he intended to request a duplicate 2010 X3B zone deer tag, because he frequently confuses one season for the other. He testified that he realized that he had inadvertently obtained a duplicate 2012 B-zone deer tag shortly after he obtained it, but did not return it to the Department as required by law because he was embarrassed. Respondent also asserted that he was not fully aware of the abalone tagging requirements when he stored abalone he caught in his freezer.

21. Respondent is a commercial fisherman with approximately 20 years of experience. He has obtained multiple duplicate sport fishing and hunting licenses during that period and should be well aware of the requirements for sport fishing, hunting, and replacing lost fishing and hunting licenses and permits. Respondent's explanations for his criminal activities were neither credible nor persuasive when considered with all the evidence presented at hearing. The evidence established that his criminal offenses were committed intentionally, knowingly, or recklessly.

22. Respondent's contention that he has already been punished in the criminal proceeding is not convincing. The form of discipline (e.g., revocation of a license) in administrative proceedings is different from the sanctions imposed in criminal proceedings (e.g., monetary fines or incarceration). (See *In Re Brown* (1995) 12 Cal.4th 205.) The goal of discipline in this case is to protect the public and protect California's at-risk fish and wildlife, not to punish the licensee.

23. When all the evidence discussed above is considered, respondent did not demonstrate that he is capable of exercising the privileges granted pursuant to a hunting license in a manner consistent with the Department's mission to manage California's diverse wildlife for the use and enjoyment by the people of the State of California. Therefore, his hunting license privileges should be permanently revoked.

LEGAL CONCLUSIONS

1. The Department has the burden of proving the existence of legal cause to permanently revoke respondent's hunting and sport fishing privileges. (*Mann v. Department of Motor Vehicles* (1999) 76 Cal.App.4th 312, 320 ["[T]he DMV's burden was to prove by a preponderance of the evidence that Mann exercised the privilege of his license in derogation of the public interest"].) And it must do so by a preponderance of the evidence. (*Imports Performance v. Department of Consumer Affairs, Bureau of Automotive Repair* (2011) 201 Cal.App.4th 911, 916-917 [proceedings to discipline a nonprofessional or occupational license "are governed by the preponderance of evidence standard of proof"].)

2. Once the Department has met its burden, the burden shifts to respondent to demonstrate, by a preponderance of the evidence, that his hunting privileges should not be permanently revoked, despite the existence of legal cause to do so. (*Martin v. Alcoholic Beverage Control Appeals Board of California* (1959) 52 Cal.2d 259; *Southern California Jockey Club v. California Horse Racing Board* (1950) 36 Cal.2d 167; *Breakzone Billiards v. City of Torrance* (2000) 81 Cal.App.4th 1205.)

Applicable Law

3. Fish and Game Code section 1053.1, subdivision (a), provides:

A person shall not obtain more than one license, permit, reservation, or other entitlement of the same class, or more than the number of tags authorized by statute or regulation for the same license year

4. Fish and Game Code section 1054, subdivision (a), provides:

It is unlawful to submit, or conspire to submit, any false, inaccurate, or otherwise misleading information on any application or other document offered or otherwise presented to the department for any purpose, including, but not limited to, obtaining a license, tag, permit, or other privilege or entitlement pursuant to this code or regulations adopted thereto.

5. California Code of Regulations, title 14, section 29.16, subdivision (b), provides:

Tagging Requirements. An Abalone Report Card includes detachable tags that shall be used to tag any abalone that is taken and retained in the sport fishery. Any red abalone possessed by any person shall be tagged.

(1) Cardholders shall tag any red abalone either immediately upon exiting the water or immediately upon boarding a vessel,

whichever occurs first. For the purposes of this section a vessel is defined as any watercraft used or capable of being used as a means of transportation on water (reference Section 9840(a) CVC). Cardholders shall not wait to return to their vehicle, beach site or other location to tag any abalone in possession.

Exception: Cardholders who dive from a non-motorized vessel such as a kayak that is in the water may wait until immediately after disembarking from the non-motorized vessel to tag and record any abalone in possession, but shall not transfer any abalone from his or her immediate possession unless they are first tagged and recorded on the report card.

(2) The cardholder shall fill in the month, day, time of catch, and fishing location on the abalone tag, remove and completely detach the tag from the card, and affix it to the shell of the abalone.

(3) The tag shall be securely fastened to the shell of the abalone. To affix the tag, a "zip tie", string, line or other suitable material shall be passed through a siphon hole on the abalone shell and through the tag at the location specified on the abalone tag.

(4) Tags shall be used in sequential order, and shall not be removed from the report card until immediately prior to affixing to an abalone. Any tags detached from the report card and not affixed to an abalone shall be considered used and therefore invalid.

(5) No person shall possess any used or otherwise invalid abalone tags not attached to an abalone shell.

6. California Code of Regulations, title 14, section 745.5, subdivision (a), provides that the commission may suspend or revoke a person's sport fishing license or permit privileges, provided that:

(1) In a court of law the person is convicted of a violation of any provision of the California Fish and Game Code; any provision of title 14, California Code of Regulations; or any other provision of law intended to protect fish and wildlife of the State of California; and,

(2) The commission complies with the procedures set forth in section 746, title 14, California Code of Regulations; and,

(3) The hearing officer determines that person committed the offense intentionally, knowingly, or recklessly.

7. Cause exists pursuant to California Code of Regulations, title 14, section 745.5, subdivision (a), to permanently revoke respondent's hunting and fishing privileges based on his conviction, as specified in Finding 3, and as discussed in Findings 19 through 23.

8. When all the evidence is considered, respondent did not demonstrate that he is capable of exercising the privileges granted pursuant to his hunting and sports fishing licenses in a manner consistent with the Department's mission to manage California's diverse wildlife for the use and enjoyment by the people of the State of California. Therefore, his hunting and sport fishing privileges should be permanently revoked.

ORDER

Respondent Aaron Newman's hunting and sport fishing privileges are PERMANENTLY REVOKED.

DATED: May 9, 2018

DocuSigned by:
Ed Washington
D1857747BA4F405..

ED WASHINGTON
Administrative Law Judge
Office of Administrative Hearings

