California Fish and Game Commission

Marine Resources Committee

Meeting Binder

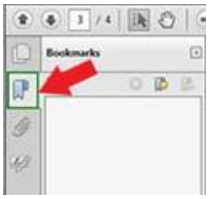
March 16, 2021

Webinar/Teleconference

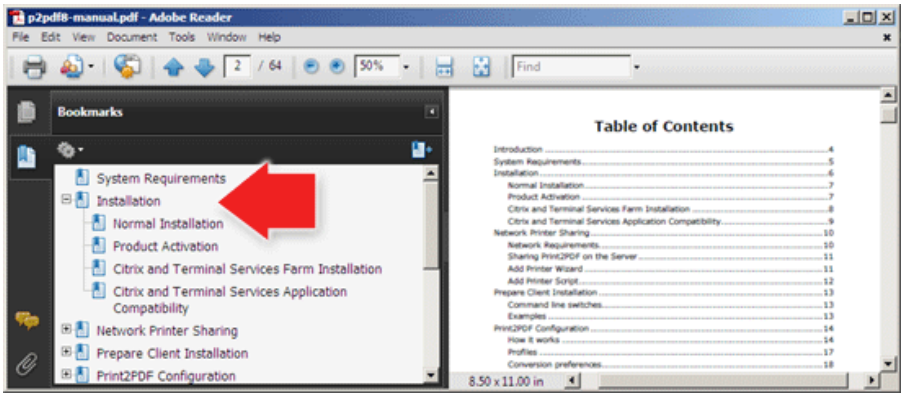
EASY GUIDE TO USING THE BINDER

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.

OVERVIEW OF FISH AND GAME COMMISSION COMMITTEE MEETING

- Welcome to this meeting of the Marine Resources Committee. The Committee is comprised of up to two Commissioners who co-chair each meeting; members are assigned by the Commission annually.

- Our goal today is informed discussion to guide future decision making, and, we need your cooperation to ensure a lively and comprehensive dialogue.

- We are operating under Bagley-Keene Open Meeting Act, but 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.

- These proceedings are being recorded for reference and archival purposes and are available upon request.

- Items may be heard in any order pursuant to the determination of the Committee Co-Chairs.

- 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.

- Committee meetings operate informally and provide opportunity for everyone to provide 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.
    2. Provide your name, affiliation (if any), and the number of people you represent.
    3. Time is limited; please keep your comments precise to give others time to speak.
    4. If several speakers have the same concerns, please appoint a group spokesperson.
    5. If speaking during public comment, the subject matter you present should <u>not be related</u> to any item on the current agenda (public comment on agenda items will be taken at the time the Committee members discuss that item).

INTRODUCTIONS FOR FISH AND GAME COMMISSION MARINE RESOURCES COMMITTEE

FISH AND GAME COMMISSIONERS

Samantha Murray	MRC Chair (Del Mar)
Peter Silva	Visiting Commissioner

COMMISSION STAFF

Melissa Miller-Henson	Executive Director
Rachel Ballanti	Deputy Executive Director
Susan Ashcraft	Marine Advisor
Sherrie Fonbuena	Staff Services Analyst
Jenn Greaves	Program Analyst
Rose Dodgen	Sea Grant State Fellow
Corinna Hong	Sea Grant State Fellow

DEPARTMENT OF FISH AND WILDLIFE

Mike Stefanak	Assistant Chief, Law Enforcement Division
Randy Lovell	Statewide Aquaculture Coordinator
Craig Shuman	Regional Manager, Marine Region
Sonke Mastrup	Program Manager, Invertebrate Fisheries, Marine Region
Becky Ota	Program Manager, Habitat Conservation, Marine Region
Kirsten Ramey	Program Manager, State Fisheries, Marine Region
Wes Boyle	Captain, Law Enforcement Division
Adam Frimodig	Senior Environmental Scientist Supervisor, Marine Region

INVITED SPEAKERS

Jenn Eckerle	Deputy Director, California Ocean Protection Council
Mike Esgro	Marine Ecosystems Program Manager, Tribal Liaison, California Ocean Protection Council

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

STATE OF CALIFORNIA
Gavin Newsom, Governor

Fish and Game Commission

Melissa Miller-Henson
Executive Director
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Wildlife Heritage and Conservation!

MARINE RESOURCES COMMITTEE
Committee Chair: Commissioner Murray

Meeting Agenda
March 16, 2021; 9:00 a.m.

Webinar and Teleconference

The California Fish and Game Commission is conducting this committee meeting by webinar and teleconference to avoid a public gathering and protect public health during the COVID-19 pandemic, consistent with Executive Order N-33-20.

Pursuant to Executive Order N-29-20, members may participate in meetings remotely. The public may provide public comment during the public comment periods, and otherwise observe remotely consistent with the Bagley-Keene Open Meeting Act.

To participate in the meeting, please join via Zoom or by telephone.
Please click here or go to https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=189225&inline for instructions on how to join the meeting.

Note: Please see important meeting procedures and information at the end of the agenda. Unless otherwise indicated, the California Department of Fish and Wildlife is identified as Department. 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. **General public comment for items not on 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].

3. **Kelp restoration and recovery**
Receive and discuss an update on collaborative kelp restoration and recovery efforts, including an interim kelp action plan prepared by the California Ocean Protection Council.

4. **Marine aquaculture in California**
Receive an update on marine aquaculture planning and discuss near-term priorities and a potential committee recommendation.

   (A) Receive an update from the California Ocean Protection Council on developing aquaculture principles and a state aquaculture action plan.

   (B) Discuss and consider a potential committee recommendation regarding the current hiatus on receiving new applications for state water bottom leases for the purpose of aquaculture (excepting previously received applications currently under consideration).

5. **Coastal Fishing Communities Project**
Receive an update on staff analyses and discuss a potential committee recommendation for next steps in exploring options to support California's coastal fishing communities.

6. **Staff and agency updates requested by the Committee**
Receive updates from staff and other agencies, including current topics on the work plan for which the Committee has requested an update.
Note: To enhance meeting efficiency in the webinar/teleconference format, the Committee intends to receive updates primarily in writing. The public will be given an opportunity to provide comments, although the level of in-meeting discussion will be at the discretion of the Committee.

   (A) California Ocean Protection Council

   (B) Department
      I. Law Enforcement Division
      II. Marine Region
         a. Recreational red abalone fishery management plan development
         b. Marine Life Management Act master plan for fisheries implementation
            i. Updated implementation work plan
            ii. California halibut status and fishery management review
            iii. Commercial pink shrimp trawl fishery management plan development
         c. Planning and scientific guidance for the first decadal review of California's marine protected area network in 2022
         d. Commercial kelp and algae harvest regulations development and stakeholder engagement

   (C) Commission staff

7. **Future agenda items**

   (A) Review work plan agenda topics, priorities, and timeline

   (B) Potential new agenda topics for Commission consideration

Adjourn

California Fish and Game Commission
2021 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
April 13, 2021		**Tribal** Webinar/teleconference
April 14-15, 2021	Webinar/teleconference	
May 11, 2021		**Wildlife Resources** Webinar/teleconference
May 11, 2021	Webinar/teleconference	
June 16-17, 2021	Webinar/teleconference	
July 20, 2021		**Marine Resources** Sacramento
August 17, 2021		**Tribal** Sacramento
August 18-19, 2021	Sacramento	
September 16, 2021		**Wildlife Resources** Sacramento
October 13-14, 2021	Sacramento	
November 9, 2021		**Marine Resources** Sacramento
December 14, 2021		**Tribal** Sacramento
December 15-16, 2021	Sacramento	

Other Meetings of Interest

Association of Fish and Wildlife Agencies

- September 12-15, 2021, Providence, RI

Pacific Fishery Management Council

- April 6-13, 2021, webinar
- June 22-29, 2021, Vancouver, WA
- September 8-15, 2021, Spokane, WA
- November 15-22, 2021, Costa Mesa, CA

Pacific Flyway Council

- August or September 2021, TBD

Western Association of Fish and Wildlife Agencies

- July 18-23, 2021 Santa Fe, NM

Wildlife Conservation Board

- May 27, 2021, videoconference or teleconference
- August 26, 2021, videoconference or teleconference
- November 18, 2021, videoconference or teleconference

IMPORTANT COMMITTEE MEETING PROCEDURES INFORMATION

Welcome to a meeting of the California Fish and Game Commission's Marine Resources Committee. The Committee is composed of and chaired by up to two Commissioners; these assignments are made by the Commission each year.

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 preserving our outdoor heritage and conserving 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 Department's Equal Employment Opportunity (EEO) Office at (916) 653-9089 or EEO@wildlife.ca.gov. Accommodation requests for facility and/or meeting accessibility and requests for American Sign Language (ASL) Interpreters should be submitted at least two weeks prior to the event. Requests for Real-Time Captioners should be submitted at least four weeks prior to the event. These timeframes are to help ensure that the requested accommodation is met. If a request for an accommodation has been submitted but is no longer needed, please contact the EEO Office immediately.

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**; mail** to California Fish and Game Commission, P.O. Box 944209, Sacramento, CA 94244-2090; or **deliver** to California Fish and Game Commission, 1416 Ninth Street, Room 1320, Sacramento, CA 95814.

COMMENT DEADLINES

The **Written Comment Deadline** for this meeting is **5:00 p.m. on Wednesday, March 3, 2021**. Written comments received at the Commission office by this deadline will be made available to Commissioners prior to the meeting.

The **Supplemental Comment Deadline** for this meeting is **noon on Thursday, March 11, 2021**. Comments received by this deadline will be made available to Commissioners at 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.*

Note: Materials provided to the Committee may be made available to the general public.

REGULATION CHANGE PETITIONS

As a general rule, requests for regulatory change must be redirected to the full Commission and submitted on the required petition form, FGC 1, *Petition to the California Fish and Game Commission for Regulation Change* (Section 662, Title 14, California Code of Regulations). 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. You will be given instructions during the meeting for how to be recognized by the Committee co-chair(s) to speak.
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 speaking during public comment for items not on the agenda (Agenda Item 2), 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 comment 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 **Supplemental 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 or delivered to the Commission on a USB flash drive by the deadline.
2. All electronic formats must be Windows PC compatible.

COMMITTEE STAFF SUMMARY FOR MARCH 16, 2021 MRC

2. GENERAL PUBLIC COMMENT

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

Receive public comment for items not on the agenda.

Summary of Previous/Future Actions (N/A)

Background

MRC receives two types of correspondence or comment under general public comment: requests for MRC to consider new topics and informational items. As a general rule, requests for a regulation change must be submitted in writing to FGC using form FGC 1, *Petition to the California Fish and Game Commission for Regulation Change* (available on the FGC website at https://fgc.ca.gov/Regulations/Petition-for-Regulation-Change). However, MRC may, at its discretion, request that staff follow up on items of potential interest for possible recommendation to FGC.

Significant Public Comments (N/A)

Recommendation

FGC Staff: Hold any new agenda items based on issues raised and within FGC's authority for discussion under Agenda Item 7, *Future Agenda Items.*

Exhibits (N/A)

Committee Direction/Recommendation (N/A)

COMMITTEE STAFF SUMMARY FOR MARCH 16, 2021 MRC

3. KELP RESTORATION AND RECOVERY

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

Receive and discuss an update on collaborative kelp restoration and recovery efforts, including an interim kelp action plan prepared by the California Ocean Protection Council (OPC).

Summary of Previous/Future Actions

- FGC referred kelp recovery and restoration tracking to MRC — Oct 9-10, 2019; FGC, Valley Center
- MRC received overview of collaborative kelp recovery and restoration efforts — Nov 5, 2019; Sacramento
- **Today's update and discussion** — **Mar 16, 2021; Webinar/Teleconference**

Background

Kelp is an ecologically and economically important biogenic habitat managed by DFW. Managers have observed significant declines in the statewide kelp forest canopy since 2014. The declines have largely been driven by changing oceanographic conditions, such as warmer temperatures, and ecological stressors, including a decline in sea star populations and significant increases in purple urchin populations. Losses in kelp also contributed to declining abalone populations weakened by the same changing oceanographic conditions and outcompeted by purple urchins for its primary food source (kelp).

In Oct 2019, FGC discussed concerns regarding dramatic kelp declines and referred a discussion on kelp recovery and restoration strategies and efforts to MRC (see Exhibit 1 for more background). In Nov 2019, DFW presented to MRC a proposal to develop a kelp restoration strategy with potential policy options to aid in promoting kelp recovery, and discussed potential projects planned for spring 2020 on the north coast. Representatives from OPC, Greater Farallones National Marine Sanctuary, and partner stakeholders highlighted efforts their respective agencies/groups were coordinating and/or funding to contribute to kelp restoration. Throughout 2020, MRC received updates on collaborative efforts to restore and recover kelp, including OPC allocation of funding for kelp restoration, DFW engagement in collaborative urchin removal studies, and kelp canopy surveys conducted by The Nature Conservancy using drones.

Additionally, in Feb 2021, OPC released an interim draft kelp action plan (Exhibit 2). As explained in an OPC staff memo (Exhibit 3), the draft action plan provides a snapshot of kelp ecosystem health statewide, summarizes current state-supported efforts on kelp resilience, highlights knowledge gaps, and identifies priorities for collaborative action; it is intended as an interim plan to serve for engaging tribes, stakeholders, and agencies, ultimately leading to developing a final action plan.

Today, DFW and OPC staff will provide a joint update on efforts to track, coordinate on, and plan for kelp recovery, and provide updates on current conditions for MRC discussion.

Significant Public Comments (N/A)

Recommendation (N/A)

Exhibits

1. Background document: Staff summary for Nov 2019 MRC meeting, Agenda Item 8
2. OPC *Interim Action Plan for Protecting and Restoring California's Kelp Forests*, dated Feb 2021
3. OPC staff memo regarding interim kelp action plan, dated Feb 16, 2021

Committee Direction/Recommendation (N/A)

COMMITTEE STAFF SUMMARY FOR MARCH 16, 2021 MRC

4. MARINE AQUACULTURE IN CALIFORNIA

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

Receive an update on marine aquaculture planning and discuss near-term priorities and a potential committee recommendation:

(A) California Ocean Protection Council (OPC) update on developing aquaculture principles and a state aquaculture action plan

(B) Discussion and potential committee recommendation regarding current hiatus on receiving new applications for state water bottom leases for the purpose of aquaculture

Summary of Previous/Future Actions

• FGC referred discussion of potential temporary hiatus on new lease applications to MRC	Feb 21, 2020; FGC, Sacramento
• MRC discussed and recommended six-month hiatus on new lease applications	Apr 29, 2020; Webinar/Teleconference
• FGC approved MRC recommendation for six-month hiatus	Jun 24-25, 2020; FGC, Webinar/Teleconference
• MRC reviewed hiatus and recommended for four-month extension	Nov 10, 2020; Webinar/Teleconference
• FGC approved MRC recommendation for four-month extension of hiatus	Dec 9-10, 2020; FGC, Webinar/Teleconference
• **Today receive update on aquaculture principles and potential recommendation on hiatus for new lease applications**	**Mar 16, 2021;Webinar/Teleconference**

Background

FGC has the authority to lease state water bottoms to any person for the purpose of conducting aquaculture in marine waters of the State, under terms agreed upon between FGC and the lessee (sections 15400 and 15405, California Fish and Game Code). Currently there are 17 FGC-issued aquaculture leases used to cultivate shellfish (16 leases) or seaweed (1 lease). Three applications for new state water bottom leases were received by FGC prior to 2020 and are currently undergoing DFW and/or environmental reviews. The three applications were the first for new lease areas that FGC had received in over 25 years, and the processes for reviewing leases, and methods of interagency coordination, had to be created anew.

In Jun 2020, FGC approved a six-month hiatus in considering any additional new lease applications, based on a recommendation from MRC. In making its recommendation, MRC acknowledged resource capacity concerns; the time needed to clarify protocols for processing, coordination, and review of new applications, beginning with the three already under consideration; and existing workload to manage and coordinate amendment requests associated with the 17 existing leases. Further, MRC noted it might be helpful for decisions regarding prospective new lease applications to be made within the context of a broader

statewide policy and vision (see Exhibit 1 for additional background). FGC scheduled review of the hiatus by MRC for Nov 2020.

At the Nov 2020 MRC meeting, DFW and FGC staff reported on an enhanced administrative process for reviewing new lease applications and amendment requests. Also, OPC staff reported that the California Natural Resources Agency (CNRA) is leading an effort among multiple state agencies with jurisdiction over aquaculture activities to develop statewide aquaculture principles and help set a common vision; OPC is also planning to develop a state aquaculture action plan that, upon implementation, is expected to more efficiently coordinate resources currently allocated to permitting and managing aquaculture. MRC recommended that the temporary hiatus be continued for an additional four months. In Dec 2020, FGC approved the MRC recommendation and scheduled MRC review for Mar 2021 (this meeting).

Update

At today's meeting, DFW, FGC, and OPC staff will provide updates on (A) marine aquaculture planning in California generally, and (B) new aquaculture lease applications specifically.

(A) Aquaculture Principles. In late 2020, CNRA convened leadership from state resource management, public health, and food and agriculture agencies to collaborate on defining a suite of shared aquaculture principles to increase coordinated and transparent decision-making in support of sustainable aquaculture in California. FGC and DFW leadership has participated in CNRA-led interagency discussions and review of draft guiding principles for sustainable aquaculture in California. The draft principles are consistent with FGC's past discussions and stated principles for sustainable aquaculture development. While CNRA is still working with individual agencies to address their comments in a revised draft, staff does not anticipate misalignment of FGC's approach with the prospective principles.

Today, OPC staff will provide an update on the effort to formulate shared aquaculture principles and provide an update on planning for a state aquaculture action plan.

(B) FGC leases: DFW and FGC staff have continued to work closely and make significant progress on a shared system to track, administer, and coordinate processing of lease requests, both new and existing.

Staff has identified the administrative and legal needs for new lease applications, including increased coordination amongst trustee and responsible agencies and with applicants. FGC staff have clarified expectations for environmental review and have set up consultations with other agencies to help applicants integrate additional agency perspectives and expectations.

DFW and FGC's joint effort to evaluate requests to amend existing leases is moving forward more effectively. The improved coordination is serving to clarify and track each request, identify issues preventing a lease request from moving forward, track questions to other agencies, and progress toward advancing each request. Currently, 10 of the 17 leases have pending requests, such as amending or reconciling allowed uses and boundaries, or transferring assignment to a new lessee; this is an unprecedented number of concurrent requests, several of which are nearing resolution.

While significant progress has been made, the principle limiting factor that prevents advancing requests more quickly is resource capacity, a constraint that is not anticipated to change in the near-term. Members of the public, environmental organizations, and some current growers have expressed concerns over lease siting and operations absent programmatic- and regional-scale planning, which they believe should be addressed before considering any new leases. Staff recognizes these concerns and anticipates that some of the public's requests and questions will be identified and explored through the state aquaculture action plan. FGC's aquaculture program is significantly strengthened from when a hiatus was first instituted, and staff believes it would be reasonable not to extend the current hiatus. Staff envisions exercising caution in evaluating individual lease proposals, supported through the more structured coordination and joint problem-solving being pursued among agencies of jurisdiction.

Today's agenda item provides an opportunity for MRC to discuss updates regarding current efforts and future aquaculture planning, and consider a potential committee recommendation regarding receiving new applications for state water bottom leases.

Significant Public Comments

Ten non-governmental organizations sent a joint letter expressing support for extending the temporary hiatus on receiving new applications for state water bottom leases, as well as support for OPC development of aquaculture principles and a state aquaculture action plan. They support and encourage a more coordinated planning effort amongst agencies in considering careful review of proposed aquaculture, including OPC's planning work, application of California Coastal Commission's coastal development permit guidance document, and potentially completing FGC's best management practices rulemaking that is currently on hold.

Recommendation

FGC staff: (1) Do not recommend extending the current hiatus on receiving new lease applications, (2) direct staff to continue prioritizing current lease requests, (3) direct staff to continue to refine the process for joint review with DFW and coordinating with other agencies of jurisdiction, and (3) schedule for the Jul 2021 meeting an update on progress with requests for changes to existing leases and the three new lease applications, and an update on longer-term aquaculture planning activities (principles and action plan).

Exhibits

1. Background document: Staff summary for Mar 17, 2020 MRC meeting, Agenda Item 7
2. Background document: Staff summary for Nov 10, 2020 MRC meeting, Agenda Item 5
3. Email from Ashley Eagle-Gibbs transmitting joint letter from 10 organizations, received Mar 4, 2021

Committee Direction/Recommendation

Schedule for the July 2021 Marine Resources Committee meeting an update on requests related to existing aquaculture leases, the three new lease applications, and longer-term aquaculture planning.

COMMITTEE STAFF SUMMARY FOR MARCH 16, 2021 MRC

5. COASTAL FISHING COMMUNITIES PROJECT

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

Receive an update on staff analyses and discuss a potential committee recommendation for next steps in exploring options to support California's coastal fishing communities.

Summary of Previous/Future Actions

- FGC referred topic to MRC — Feb 11, 2015; FGC, Sacramento
- MRC discussions — 2015-2020; Various
- Most recent MRC update — Nov 10, 2020; Webinar/Teleconference
- **Today's update and direction** — **Mar 16, 2021; Webinar/Teleconference**

Background

The MRC Coastal Fishing Communities Project has been underway since 2015, and included a series of eight coastal community meetings in 2016-2018. In 2019, FGC adopted a *Staff Synthesis Report on California Coastal Fishing Communities Meetings, 2016-2018* (https://fgc.ca.gov/Committees/Marine/Coastal-Fishing-Communities-Project). The report synthesized key themes from the community meetings and proposed ten staff recommendations (SRs) as "initial concepts for potential development" by FGC (Exhibit 1). MRC directed staff to further develop the SRs to help evaluate and prioritize the recommendations upon which FGC may choose to act.

At the Jul 2020 MRC meeting, staff proposed a draft analytical approach for a more in-depth analysis of each SR (Exhibit 2; for background purposes), and MRC directed staff to move forward with analyses using the draft approach presented.

In Nov 2020, staff presented MRC with a draft analysis of the first SR (*develop and adopt a policy and definition for coastal fishing communities*) (Exhibit 3), prepared based on the analytical framework. Staff has since used the analytical framework to develop four additional analyses for this meeting:

- SR3 - *Approve specific, small-scale projects to test and evaluate proposed new approaches* (Exhibit 4);
- SR4 - *Engage legislative staff to pursue adjustments to laws as ideas are refined, if warranted to support fishing community adaptability* (Exhibit 5);
- SR5 - *Direct staff to increase engagement and coordination with sister agencies, when feasible, on management decisions affecting California coastal communities* (Exhibit 6); and
- SR8 - *Survey communities, commercial and recreational fishers, and processors about their priorities for FGC focus* (Exhibit 7).

Analysis of the remaining five SRs is underway.

The SR 1 analysis suggests pursuing an FGC policy and definition for coastal fishing communities on its own merit; the policy has the potential to guide development of the other SRs. While reviewing analysis of all SRs together to could help MRC evaluate the relative priority of different actions, completing the remaining analyses could occur concurrently with additional work on a draft policy.

Preliminary work toward SR 1 was completed in 2019 based on MRC direction; staff worked with stakeholders to draft a proposed definition for *coastal fishing communities,* and MRC adopted the definition for purposes of the project. The second step in developing SR 1 is to build a policy and, in Nov 2020, staff recommeded reengaging stakeholders to further evaluate and explore the potential for developing a coastal fishing communities policy while the other SRs were further analyzed. Since Nov, staff has held individual conversations with several fishing community leaders who previously contributed to policy considerations by commenting on the 2019 draft staff synthesis report and participating in drafting the working definition of coastal fishing communities.

At this meeting, staff will present findings from initial conversations with stakeholders concerning a policy, as well as a draft proposed strategy and timeline for stakeholder engagement for MRC consideration.

Significant Public Comments (N/A)

Recommendation

FGC staff: Direct staff to continue developing analyses for the remaining SRs (2, 6, 7, 9 and 10), and to begin outreach to stakeholders to inform development of a draft policy on coastal fishing communities.

Exhibits

1. Coastal fishing communities project staff recommendations, excerpted from the 2019 staff synthesis report
2. FGC staff-proposed analytical approach presented to MRC in Jul 2020
3. Revised draft analysis of staff recommendation 1, dated Mar 10, 2021
4. Draft analysis of staff recommendation 3, dated Mar 10, 2021
5. Draft analysis of staff recommendation 4, dated Mar 5, 2021
6. Draft analysis of staff recommendation 5, dated Mar 8, 2021
7. Draft analysis of staff recommendation 8, dated Mar 8, 2021

Committee Direction/Recommendation

Direct staff to begin working with stakeholders to inform development of a policy on coastal fishing communities.

COMMITTEE STAFF SUMMARY FOR MARCH 16, 2021 MRC

6. STAFF AND AGENCY UPDATES

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

Receive updates from staff and other agencies related to topics requested by the Committee.

(A) California Ocean Protection Council (OPC)

(B) DFW

I. Law Enforcement Division (LED)

II. Marine Region

a. Recreational red abalone fishery management plan (FMP) development

b. Marine Life Management Act (MLMA) master plan for fisheries implementation
   i. Updated implementation work plan
   ii. California halibut status and fishery management review
   iii. Commercial pink shrimp FMP development

c. Planning and scientific guidance for the first decadal review of California's marine protected area (MPA) network in 2022

d. Commercial kelp and algae harvest regulations development and stakeholder engagement

(C) FGC staff

Summary of Previous/Future Actions (N/A)

Background

This is a standing item for staff and agencies to provide an update on marine-related activities of interest. Verbal reports are expected at the meeting for items (A) through (C).

(A) ***OPC***

OPC will provide an update on recent activities, including authorization at the Feb OPC meeting to disburse up to $5.8 million for MPA long-term monitoring and data analysis in support of the 2022 MPA network decadal review (Exhibit 1).

(B) ***DFW***

I. *LED*

The LED report will include an update on MPA enforcement tracking.

II. *Marine Region*

The Marine Region has provided a "year in review" of its 2020 activities and key 2020 marine management statistics, including commercial and recreational landings, permitting and environmental review, etc. (exhibits 2 and 3).

Marine Region will also provide updates on six topics on the MRC work plan:

- *Recreational red abalone FMP development*: The most recent MRC update was provided in Jul 2020.
- *MLMA master plan updated implementation work plan:* DFW will highlight changes to the updated work plan provided to FGC in Feb 2021 (Exhibit 4).
- *California halibut management:* The update will focus on outcomes of the stock assessment and planning for fishery management review.
- *Commercial pink shrimp FMP development:* In Dec 2020, FGC approved an MRC recommendation to support development of an FMP, as recommended by DFW, in coordination with pink shrimp trawl fishermen and added the topic to the MRC work plan.
- *2022 MPA network management review:* Preparations for the first decadal review of the statewide MPA network are well underway, with substantial coordination among DFW, OPC, and FGC staff, MPA monitoring project leads, and partners. Two OPC Science Advisory Team work groups led by California Ocean Science Trust are developing guidance on scientific evaluation for the decadal review (Exhibit 5).
- *Commercial kelp and algae harvest regulations and stakeholder engagement:* DFW is pursuing a re-envisioned stakeholder engagement process for draft commercial kelp and algae harvest regulations, in response to FGC guidance following DFW's presentation of draft proposed regulations at the Mar 2020 MRC meeting (see Exhibit 6 for background). Feedback from commercial harvesters on the draft proposal led MRC to recommend that FGC request DFW conduct additional outreach with affected industry members, tribes, and interested parties; FGC approved the MRC recommendation and delayed the rulemaking schedule to a future date to be determined.

  DFW responded by hosting two outreach meetings via webinar (May 20 and Jun 2, 2020). In Nov 2020, DFW provided MRC with an update including plans to convene two stakeholder work groups, one for bull kelp and one for edible algae (seaweed). A bull kelp work group meeting was held in late Dec 2020. Today, DFW will highlight its efforts to adapt the work group structure and meeting format, where compatible with staff and budget capacity, in response to stakeholder requests (see public comments below).

(C) **FGC staff**

The Commission's 2020 Sea Grant state fellow, Rose Dodgen, concludes her year-long tenure on FGC staff with this meeting; this is also the first meeting for her successor fellow, Corinna Hong. We have benefitted from a four-week overlap as Rose has oriented Corinna to her new role and shared her subject expertise on special project details as Corinna assumes the coastal fishing communities project for the next stage of development in 2021.

Significant Public Comments

Stakeholders interested in commercial kelp and algae harvest regulations development provided comment to FGC in Feb 2021 regarding the bull kelp working group established by DFW for stakeholder engagement. Concerns have centered around working group composition, logistics, and process, including public access to meetings or meeting summaries; additional concerns included lack of a neutral meeting facilitator and parallel, separate processes for tribes and commercial harvesters. Commenters requested that DFW allow harvesters and other stakeholders to listen in as non-active participants, or be provided meeting notes following each meeting in order to most effectively stay apprised of developments.

Recommendation (N/A)

Exhibits

1. OPC staff recommendation, Item 6 – MPA long-term monitoring and data analysis, dated Feb 16, 2021 (also available at www.opc.ca.gov/webmaster/ftp/pdf/agenda_items/20210216/Item_6__MPA_Monitoring_and_Data_Analysis_StaffRec_FINAL.pdf)
2. DFW *Marine Region 2020 Year in Review* report, received Feb 2021
3. DFW *Marine Region "By the Numbers"* report, received Feb 2021
4. *DFW Marine Life Management Act Master Plan: Implementation Work Plan*, dated Jan 29, 2021
5. DFW presentation, 2020 MPA network management review
6. Background document: Staff summary for Mar 17, 2020 MRC meeting, Agenda Item 6

Committee Direction/Recommendation (N/A)

COMMITTEE STAFF SUMMARY FOR MARCH 16, 2021 MRC

7. FUTURE AGENDA ITEMS

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

Review upcoming agenda items scheduled for the next and future MRC meetings, discuss priorities and timeline, and consider requests for new agenda items.

Summary of Previous/Future Actions

- FGC approved MRC agenda — Feb 10, 2021; FGC, Webinar/Teleconference
- **Today's discussion** — **Mar 16, 2021; Webinar/Teleconference**
- Next MRC Meeting — Jul 20, 2021; Sacramento

Background

Committee topics are referred by FGC and scheduled as appropriate. FGC-referred topics and their current schedule are shown in the MRC work plan (Exhibit 1), and currently include several complex and time-intensive topics under development. MRC has placed emphasis on issues of imminent regulatory or management importance; thus, scheduling current topics and considering new topics for MRC review will require planning relative to existing workload and timing considerations.

MRC Work Plan and Timeline

At this time, five topics are proposed for the Jul 2021 meeting and are grouped by the type of anticipated action to help inform workload and prioritization, if needed.

Discussion and Potential Recommendations

1. Kelp and algae commercial harvest regulations
2. Coastal Fishing Communities Project

Updates

3. MLMA master plan for fisheries implementation (standing agenda item)
4. Aquaculture state water bottom leases: Status of requested lease amendments and of new lease applications
5. Aquaculture planning (aquaculture principles, state aquaculture action plan)

Depending upon progress made between now and Jun 2021, several additional items on the MRC work plan may also be appropriate to schedule for updates at the Jul 2021 meeting:

- Red abalone fishey management plan (FMP)
- California halibut FMP
- California pink shrimp FMP
- Marine protected areas network – 2022 decadal management review

Staff welcomes guidance from MRC regarding scheduling of any specific topics on the work plan. Staff will bring an update and recommendation for Jul 2021 draft agenda topics to the Jun 15-16 FGC meeting.

Discuss and Recommend New MRC Topics

Today is an opportunity to identify any potential new agenda topics to recommend to FGC for referral to MRC. Two new topics have been identified for potential referral to MRC:

1. DFW recommends adding a discussion regarding market squid fishery management review, and scheduling for Jul 2021.

2. FGC staff recommends adding a review of the emergency regulation prohibiting use of hydraulic pump gear to take clam and related species, and scheduling for Jul 2021.

Significant Public Comments (N/A)

Recommendation

FGC staff: Discuss priorities, recommend FGC refer two new topics to MRC and add to the work plan, and determine whether additional referred topics on the work plan should be recommended for the Jul 2021 MRC meeting agenda.

Exhibits

1. MRC work plan, dated Mar 16, 2021
2. FGC perpetual timetable for regulatory actions, dated Mar 5, 2021

Committee Direction/Recommendation

The Marine Resources Committee recommends that the Committee work plan be updated with the following changes: _____.

STAFF SUMMARY FOR NOVEMBER 5, 2019
For background purposes only

8. KELP RESTORATION AND RECOVERY EFFORTS

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

Update on the development of kelp restoration strategies, including purple urchin removal experiments conducted in collaboration with interested stakeholders.

Summary of Previous/Future Actions (N/A)

Background

At its Oct 2019 meeting, following public comment and discussion regarding observed declines in kelp forest canopy and the notable increase in purple urchin populations, FGC referred to MRC a discussion on kelp recovery and restoration efforts, including purple urchin management strategies.

Kelp is an ecologically and economically important biogenic habitat managed by DFW. Significant declines in the statewide kelp forest canopy have been observed by managers since 2014. The declines have largely been driven by changing oceanographic conditions, such as warmer temperatures, and ecological stressors, including a decline in sea star populations and significant increases in purple urchin populations. Losses in kelp have also contributed to declining abalone populations weakened by the same changing oceanographic conditions and outcompeted by purple urchins for its food source (kelp).

In an effort to increase overall kelp canopy coverage and health, stakeholders and managers have been exploring avenues to reduce purple urchin populations. In May 2018, FGC took emergency action to increase the daily bag limit for the recreational take of purple urchin to 20 gallons by hand while diving; in Oct 2018, FGC adopted a regular rulemaking that authorizes up to 40 gallons per day. Many stakeholders requested to smash urchins in place rather than harvesting them; however, FGC and DFW have emphasized that under Fish and Game Code Section 7704, take may not be wasted and, therefore, smashing purple urchins rather than harvesting for utilization is in violation of code. DFW has been working with partners to permit and monitor controlled purple urchin removal experiments and to identify ways that harvested purple urchin can be effectively utilized.

For today's discussion, DFW will provide a presentation on kelp restoration and recovery efforts that have been undertaken or are planned by a wide range of partners and DFW; efforts include possible additional purple urchin removal experiments in collaboration with interested stakeholders, and the development of a statewide kelp restoration toolkit (Exhibit 1).

Significant Public Comments

1. An update from Reef Check California on results of an urchin removal experiment conducted in the Monterey area under a DFW-approved scientific collecting permit, and will present its update during the meeting (Exhibit 2).
2. Comment and link from a commercial diver representing a California State University at Chico diving organization, discussing a modified air lift developed to remove purple urchins and seeking assistance with securing funding to continue the work (Exhibit 3).

STAFF SUMMARY FOR NOVEMBER 5, 2019
For background purposes only

Recommendation (N/A)

Exhibits

1. DFW presentation
2. Email and presentation from Reef Check on urchin removal experiments along the central coast, received Oct 23, 2019
3. Email from Jon Holcomb with link to video, received Oct 8, 2019

Motion/Direction (N/A)

INTERIM ACTION PLAN
for Protecting and Restoring California's Kelp Forests

February 2021

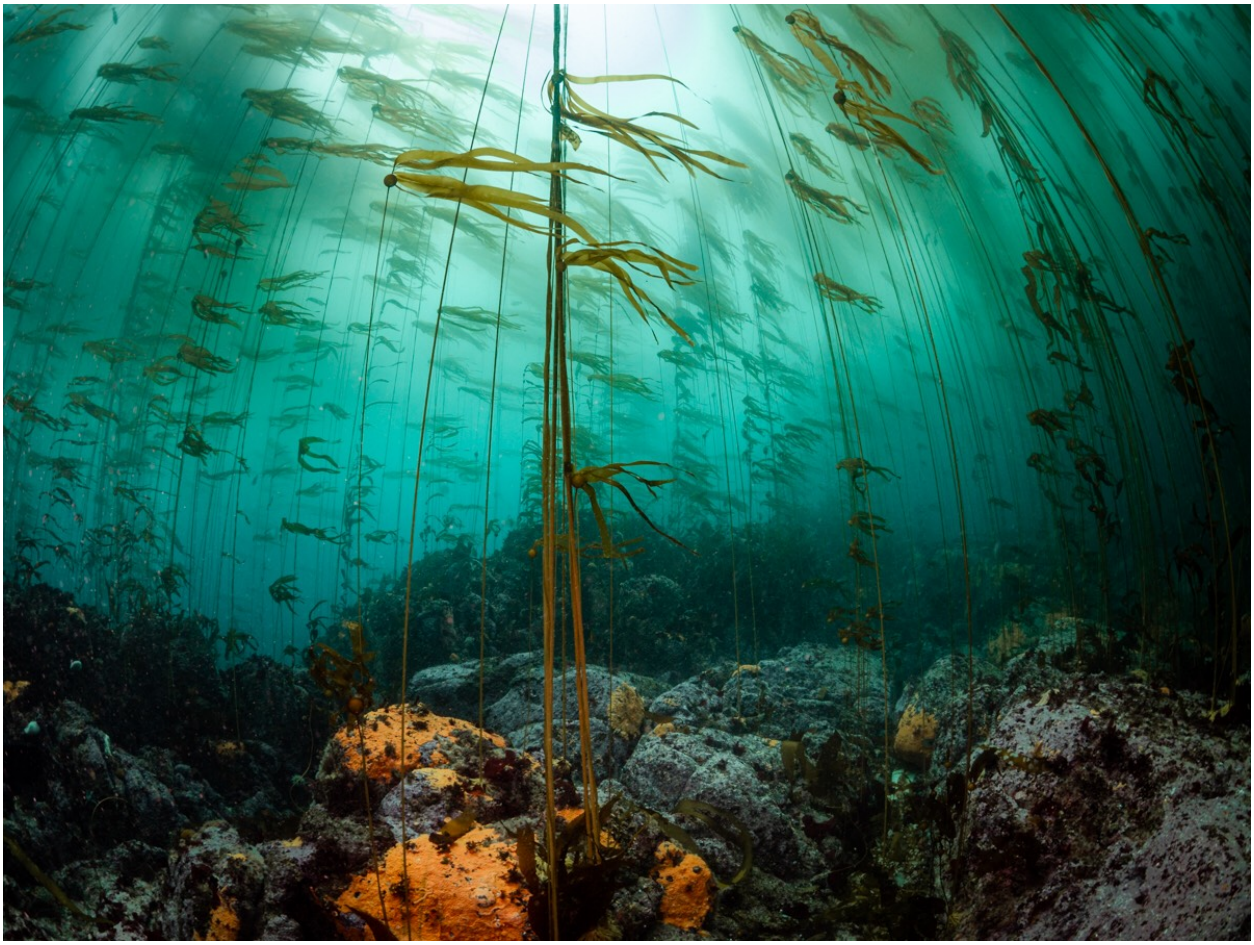

Photo: Patrick Webster // @underwaterpat

Citation: California Ocean Protection Council. 2021. Interim Action Plan for Protecting and Restoring California's Kelp Forests.

Contributors: Michael Esgro (California Ocean Protection Council) and James Ray (California Department of Fish and Wildlife)

OCEAN PROTECTION COUNCIL

Executive Summary

Kelp forests are fundamental to California's marine biodiversity and its ocean economy. Both giant kelp (*Macrocystis pyrifera*), a perennial alga that dominates in southern and central California, and bull kelp (*Nereocystis luetkeana*), an annual alga that dominates in northern California, are foundational species that provide a variety of ecological functions and ecosystem services. In general, California's nearshore environment has supported healthy kelp forests for decades; satellite imagery dating back to 1984 shows significant interannual variability but a stable overall trend in kelp canopy area across the state prior to the onset of a marine heatwave in 2014. The marine heatwave had variable effects on kelp in each of California's major geographic regions: northern California (California/Oregon border to San Francisco Bay), central California (San Francisco Bay to Point Conception), and southern California (Point Conception to the California/Mexico border, including the Channel Islands). Bull kelp forests in northern California were devastated, experiencing greater than 95% loss in kelp canopy from 2014 to 2019 and limited recovery in 2020. Giant kelp forests in central California have exhibited patchy declines since 2014, but no discernible region-wide trend. The marine heatwave generally had no strong effects on giant kelp forests in southern California.

Given the ecological and socioeconomic importance of kelp, the severity of kelp declines on the north coast, and the anticipated impacts of changing ocean conditions, the protection and restoration of California's kelp forests has emerged as a top priority for the California Ocean Protection Council (OPC) and the California Department of Fish and Wildlife (CDFW). Efforts initiated in 2019 and 2020 are providing resource managers with critical monitoring data, an enhanced understanding of the drivers of kelp loss and persistence, and science-based evaluations of potential kelp restoration approaches. However, significant knowledge gaps remain. In support of OPC's Strategic Plan to Protect California's Coast and Ocean 2020-2025, (Objective 3.2, Target 3.2.1), this Action Plan is intended to summarize current state-supported kelp research and restoration initiatives, as well as other relevant efforts in California; highlight key knowledge gaps; and outline priorities for action in kelp research and monitoring, policy development, restoration, and community engagement. Those priorities include: completing pilot efforts; developing science-based metrics for tracking kelp forest ecosystem health; implementing statewide kelp forest monitoring based on those metrics; initiating the development of a kelp restoration and management plan, which will include a restoration "toolkit"; and engaging with California's coastal communities and Native American Tribes.

OPC has developed this interim Action Plan in partnership with CDFW to serve as a starting point for discussion between resource managers, the academic community, California Native American Tribes, coastal stakeholders (including the diving and fishing communities), and members of the public. OPC will offer opportunities for engagement on this draft throughout 2021, and a final version of the Action Plan will be presented to the Council for consideration and possible adoption in Spring 2022. That version will incorporate results from research and restoration projects currently underway, as well as scientific, Tribal, and public input.

1. Introduction

California's iconic kelp forests are among the most productive and biodiverse ecosystems on the planet. Both giant kelp (*Macrocystis pyrifera*), a perennial alga that dominates in southern and central California, and bull kelp (*Nereocystis luetkeana*), an annual alga that dominates in northern California, are foundational species that provide a variety of ecological functions and ecosystem services. Kelp forests form complex three-dimensional habitat and host a diverse array of invertebrates, fishes, marine mammals, and birds. Kelp is an important food source for herbivores and detritivores and underpins nearshore food webs. Additionally, kelp buffers shorelines against waves and storms, plays an important role in coastal nutrient cycling, and may help to mitigate ocean acidification at local scales (Steneck et al. 2002, Springer et al. 2010, Carr & Reed 2016, Miller et al. 2018, Nielsen et al. 2018, Hirsh et al. 2020, Lamy et al. 2020).

Kelp is also critical to the well-being of California's coastal residents and the state's $44 billion ocean economy (NOAA 2015). California's indigenous peoples, who have inhabited and stewarded the coast since time immemorial, continue to rely on kelp forest ecosystems for food, medicine, and ceremony. Kelp supports a variety of commercially and recreationally important fisheries, including recreational red abalone (*Haliotis rufescens*), commercial red sea urchin (*Mesocentrotus franciscanus*), and groundfish, including rockfishes (*Sebastes* spp.). Kelp itself is harvested commercially and recreationally in California, both for human consumption and as feed for aquaculture operations. Finally, kelp forests are a major coastal attraction for many Californians, offering unparalleled opportunities for skin and scuba diving, kayaking, surfing, and wildlife viewing.

Globally, kelp forests naturally fluctuate from year to year, and the significant interannual variability of kelp canopy area on the California coast has been well documented (Dayton et al. 1992, Springer et al. 2010, Krumhansl et al. 2016). However, in general, California's nearshore environment has supported healthy kelp forests for decades; Landsat imagery dating back to 1984 shows a stable overall trend in kelp canopy area across the state prior to a marine heatwave in the Northeast Pacific that started in 2014 and persisted through 2016 (Reed et al. 2011, Bell et al. 2020).

Indicators of kelp forest ecosystem "health" include species-level metrics (e.g. canopy area, biomass, genetic diversity), community-level metrics (e.g. functional diversity, species composition), and socioeconomic metrics (e.g. fisheries landings, tourism revenue). Threats to kelp include overgrazing (often by sea urchins, which can proliferate when populations of their predators are reduced), poor water quality, sedimentation, invasive species, and nutrient limitation, which is typically associated with elevated water temperatures. Disturbance in the form of wave events can also control kelp abundance. These metrics and drivers vary substantially across California's 1,200-mile coastline (Reed et al 2016, Cavanaugh et al 2019, Beas-Luna et al 2020). Accordingly, the 2014-2016 marine heatwave had varying impacts on kelp forest ecosystem health in the state's three major geographic regions: northern California (California/Oregon border to San Francisco Bay), central California (San Francisco Bay to Point Conception), and southern California (Point Conception to the California/Mexico border, including the Channel Islands) (Fig 1).

Bull kelp forests in northern California have declined substantially since 2014. Surveys conducted by CDFW and The Nature Conservancy (TNC) show that more than 90% of the bull kelp canopy off Mendocino and Sonoma Counties was lost between 2014 and 2016 (Rogers-Bennett & Catton 2019) (Fig 2), with an additional 85% decline between 2016 and 2019 (TNC 2020). The scale, magnitude, and speed of the 2014-2019 decline, and the subsequent lack of recovery, are unprecedented (Rogers-Bennett & Catton 2019).

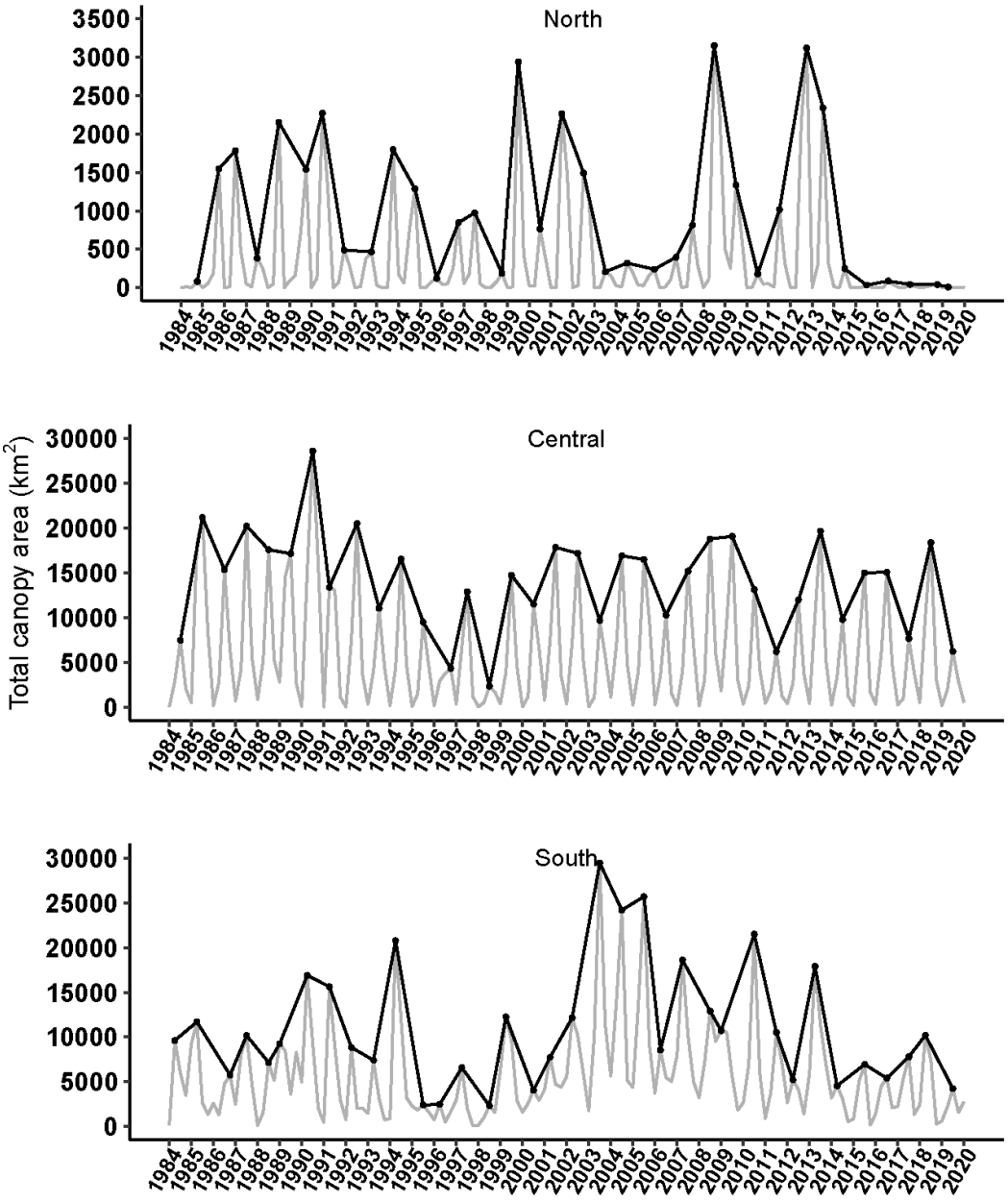

Figure 1. Kelp canopy area 1984-2020 in CDFW Administrative Kelp Beds in northern California, central California, and southern California. Black lines show maximum quarterly area and gray lines show total quarterly area. Preliminary estimates generated from Landsat imagery (Bell et al. 2020). From CDFW in prep.

The loss of bull kelp has been attributed to a "perfect storm" of changing ocean conditions in northern California (Rogers-Bennett & Catton 2019, McPherson et al. in press). The 2014-2016 marine heatwave, which included both the 2014-2015 "Warm Blob" temperature anomaly and a strong El Nino-Southern Oscillation event in 2015-2016, resulted in warm, nutrient-poor waters that reduced kelp productivity and limited the ability of new kelp to establish and grow. Just prior to the marine heatwave, sea star populations were decimated by Sea Star Wasting Syndrome, a disease that resulted in the disappearance of the sunflower star (*Pycnopodia helianthoides*), a predominant urchin predator, from California waters. The sunflower star is now listed as critically endangered by the International Union for Conservation of Nature (Gravem et al. 2020). While the initial occurrence of Sea Star Wasting Syndrome may not have been linked to ocean temperatures, it is possible that warmer waters exacerbated its effects (Harvell et al. 2019).

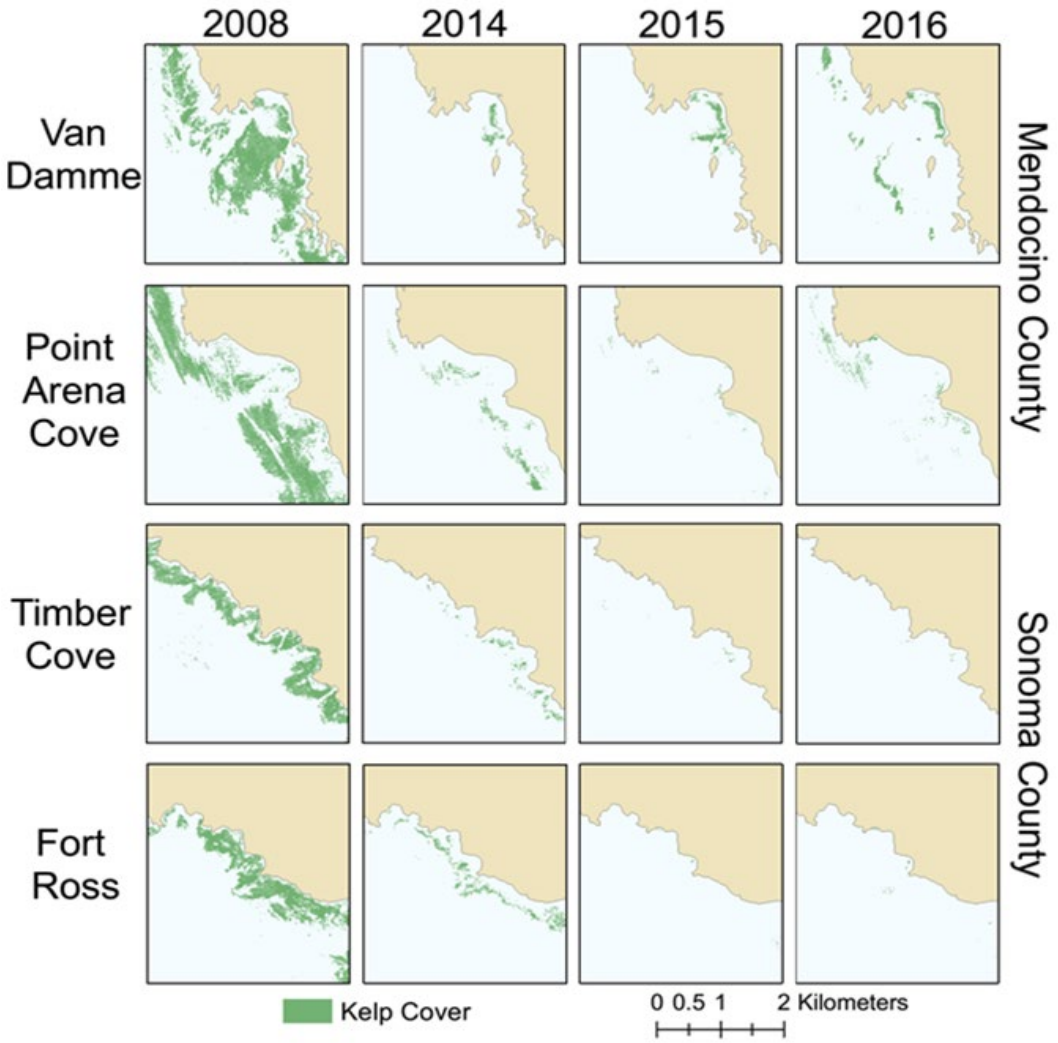

Figure 2. Kelp canopy cover at various sites in Mendocino and Sonoma Counties, derived from aerial surveys conducted by CDFW in 2008 and from 2014-2016. From Rogers-Bennett & Catton 2019.

In the absence of sunflower stars, purple sea urchin (*Strongylocentrotus purpuratus*) populations exploded in northern California, grazing once-lush kelp forests down to bare rock or "urchin barrens" (Rogers-Bennett & Catton 2019); warm waters linked to the marine heatwave may have increased purple urchin recruitment in this region (Okamoto et al. 2020). Even as the marine heatwave has subsided, purple urchin densities remain up to 60 times higher than normal levels at many locations on the north coast (Fig 3). This is consistent with a phenomenon known as hysteresis, or discontinuous phase shift, between kelp and urchins. The threshold urchin density for a shift from kelp forest to urchin barren is much higher than the threshold for the reverse shift from urchin barren to kelp forest. In other words, kelp forests can quickly transform into urchin barrens, but once established, urchin barrens can persist for extended periods as alternative stable states (Filbee-Dexter & Scheibling 2014, Ling 2015, Caselle et al. 2020).

Drone surveys conducted along the Mendocino and Sonoma coast in fall 2020 have documented bull kelp at locations from which it has been absent since 2014 (Norah Eddy, Vienna Saccomanno, and Rietta Hohman, personal communication). However, a potentially depleted spore bank, the persistence of urchin barrens, the local extinction of the sunflower star, and the lack of other urchin predators in northern California will likely constrain the ability of the system to naturally recover to pre-2014 levels (McPherson et al. in press).

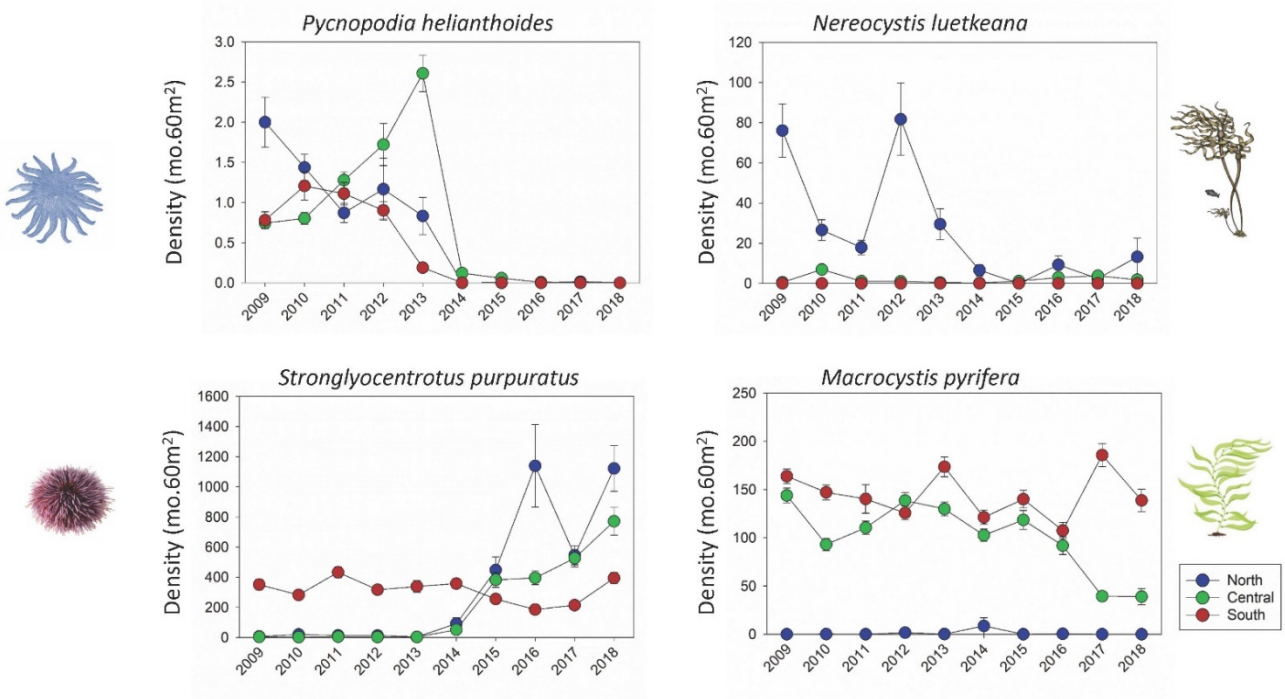

Figure 3. Dive survey data showing (number/60 m^2) of key kelp forest species in northern (blue), central (green) and southern (red) California from 2009-2018. Clockwise, plots show: sunflower stars (*Pycnopodia helianthoides*), bull kelp (*Nereocystis luetkeana*), giant kelp (*Macrocystis pyrifera*) and purple urchins (*Stronglyocentrotus purpuratus*). Beginning in 2014, sunflower stars were lost in all regions and purple urchins showed increases of variable magnitudes across regions with the greatest increase in northern California. Bull kelp showed a large decline in northern California while giant kelp showed patchy declines in central California. Data are courtesy of J. Caselle and come from two long-term datasets (Partnership for Interdisciplinary Studies of Coastal Oceans (PISCO) and Reef Check California).

The loss of bull kelp has had significant impacts on ecological function and ecosystem services in northern California. Commercial red sea urchin landings in 2016 were 80% lower in northern California than the 2006-2015 average, leading the U.S. Secretary of Commerce to issue a federal fishery disaster declaration for the northern California red sea urchin fishery in 2019 (Teck et al. 2018, CDFW 2019). Populations of red abalone, California's only remaining abalone fishery, have declined so substantially that the $44 million recreational red abalone fishery was closed by the California Fish and Game Commission in 2017 and will likely remain so until the population begins to recover. The north coast's dive tourism industry, which has historically depended on abalone fishing, has been heavily impacted.

In contrast to the devastation observed on the north coast, patterns in giant kelp abundance along California's central coast are more complex (Beas-Luna et al. 2020, Cavanaugh et al. in prep, Smith et al. in press) (Fig 4). In general, from 2014-2019, central California has been characterized by patchy kelp distribution, with no discernible overall trend. Kelp has persisted in some locations but appears to have declined in others; one area of particular concern is the Monterey Peninsula, where kelp has exhibited significant losses since 2014. In contrast to the region-wide dynamics on the north coast, factors at smaller spatial scales likely drive kelp persistence on the central coast. These factors include temperature, local urchin densities, and the foraging behavior of sea urchins and southern sea otters. Urchin grazing pressure has increased in some areas, including Monterey; however, it is not currently clear if that increased grazing pressure is a function of increased abundance from high recruitment, or if initial heatwave-driven declines in kelp triggered a shift to the more aggressive urchin feeding behavior associated with insufficient food supply (CDFW in prep, Smith et al. in press). Although sea otters readily forage for urchins in kelp forests, recent studies indicate that otter predation on urchins contributes to the persistence of remnant forests but is ineffective at reducing urchin abundances in barrens, likely because of the poor body condition of those urchins (Smith et al. in press). This limits the ability of sea otters to facilitate kelp recovery on the central coast.

Reed et al. (2016) found that the 2014-2016 marine heatwave had no strong effects on giant kelp in southern California. Kelp canopy area in southern California declined following the onset of the marine heatwave in 2014, but these losses were within the normal range of variability and kelp quickly recovered (Reed et al. 2016). Importantly, however, some areas where kelp has historically persisted in the Channel Islands, such as San Miguel Island and the west side of Santa Rosa Island, have been converted to urchin barrens (Kyle Cavanaugh and Tom Bell, personal communication). As with the central coast, smaller-scale factors likely drive kelp abundance on the south coast; in particular, the presence of urchin predators such as California Sheephead and California spiny lobsters may provide kelp forests with a measure of functional redundancy that has increased the resilience of these systems to the loss of the sunflower star (Eisaguirre et al. 2020). Furthermore, wave disturbance is consistently lower in southern California than in central or northern California, potentially contributing to kelp persistence (Reed et al. 2011). Tracking top-down drivers (e.g. herbivory), bottom-up drivers (e.g. nutrients) and disturbance regimes (e.g. waves) over space and time, as well as assessing the role of other factors (e.g. invasive species, proximity to kelp spore sources, freshwater input, water quality/sedimentation, and management measures such as marine protected areas (MPAs)), will be critical to conserving kelp across California.

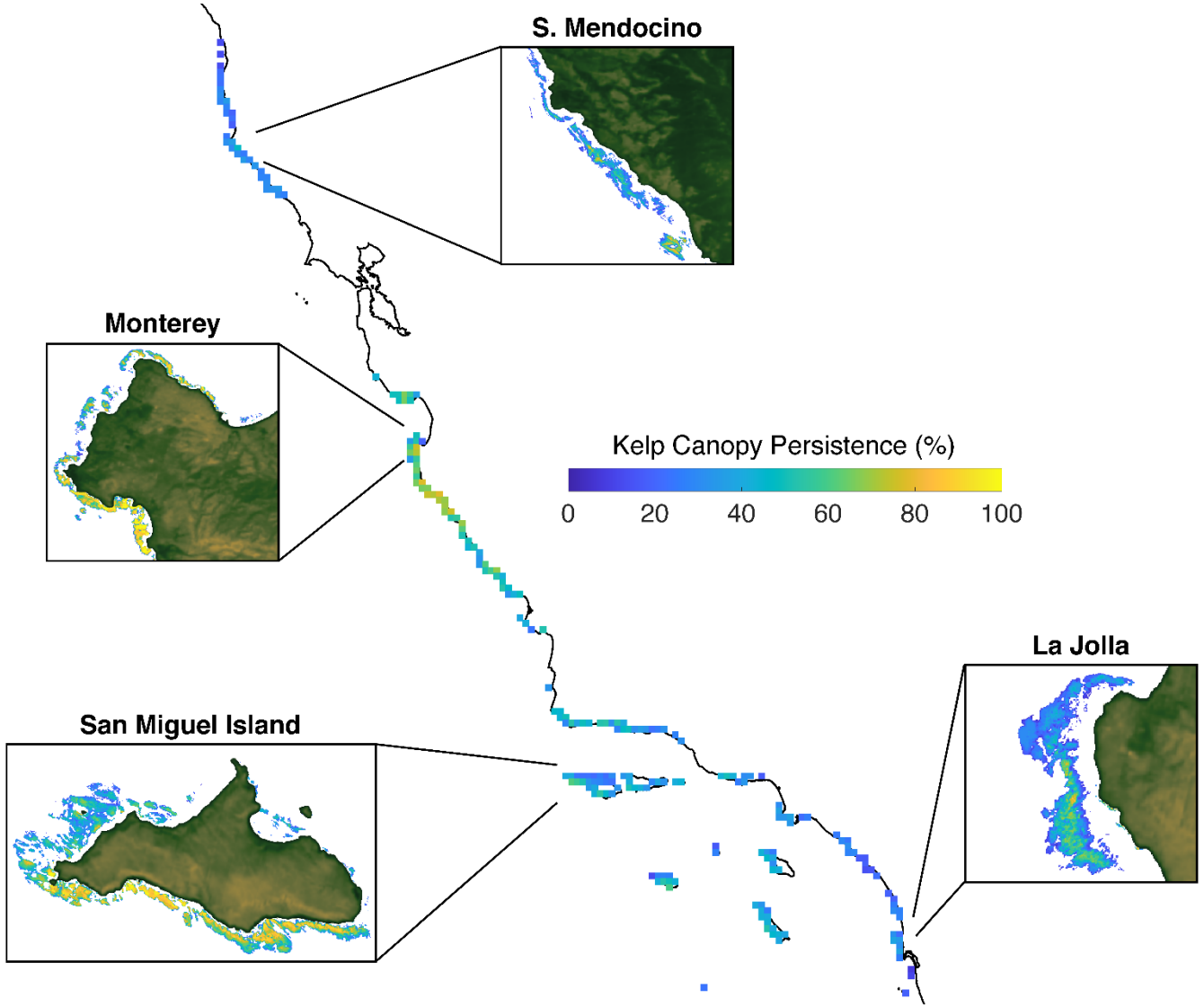

Figure 4. Kelp persistence for all coastal areas of California using kelp canopy data derived from Landsat satellite sensors. Boxes along the coast show the mean kelp persistence for all 30 x 30 m pixels within a 5 x 5 km area from 1984-2020. Persistence is defined as the percentage of years where kelp canopy was identified in a pixel at least once during a calendar year. The mean persistence for each box is shown if at least 100 Landsat pixels have been classified as kelp canopy during the 37-year period of assessment. The four insets show kelp persistence in selected areas along the coast of California at the native 30 x 30 m resolution of the Landsat data. Data used to create this figure is available at: https://sbclter.msi.ucsb.edu/data/catalog/package/?package=knb-lter-sbc.74

Given the ecological and socioeconomic importance of kelp, the severity of the crisis on the north coast, and the anticipated impacts of changing ocean conditions (Beas-Luna et al. 2020), the protection and restoration of California's kelp forests has emerged as a top priority for OPC and CDFW. In support of OPC's Strategic Plan to Protect California's Coast and Ocean 2020-2025 (Objective 3.2, Target 3.2.1) (OPC 2020), this Action Plan is intended to summarize current state-supported kelp research and restoration initiatives, as well as other relevant efforts in California; highlight key knowledge gaps; and outline priorities for action in kelp research and monitoring, policy development, restoration, and community engagement.

2. Current Research and Restoration Efforts

Building on recommendations contained in the Sonoma-Mendocino Bull Kelp Recovery Plan (Hohman et al. 2019), OPC and CDFW have recently initiated several projects to monitor kelp forest ecosystems, better understand drivers of kelp loss and persistence, and test potential kelp restoration approaches. These efforts represent an investment of more than $3 million in 2019-2020. They are summarized below.

Kelp canopy monitoring and mapping. Historically, aerial surveys of kelp canopy were the primary method of monitoring kelp forest extent; however, aerial surveys are expensive and have several logistical constraints. Due to funding limitations and the lack of availability of suitable contractors, CDFW has not conducted aerial surveys of kelp canopy in northern California since 2016. Resource managers therefore lack a consistent and timely understanding of kelp abundance and spatial distribution in the region.

TNC and UCLA are currently working to address that knowledge gap on the north coast by conducting aerial surveys of kelp canopy from Monterey to the Oregon border. Imagery from those aerial surveys will be compared to high-resolution Planet satellite imagery, which may be a more cost-effective and robust strategy for long-term kelp canopy monitoring. This project will result in recommendations for a scalable, statewide effort that will use remote sensing platforms to provide monthly kelp cover estimates. These recommendations are anticipated by Spring 2021.

In 2020, the Greater Farallones Association (GFA) launched a collaborative mapping project to improve the accuracy and efficiency of kelp canopy monitoring in West Coast National Marine Sanctuaries. OPC and CDFW are committed to working with GFA, TNC, and other partners to share data and lessons learned in pursuit of improved kelp canopy monitoring.

Experimental determination of urchin threshold densities. There is considerable scientific evidence that the reduction of sea urchin grazing pressure can facilitate kelp regrowth in urchin-dominated habitats (Steneck et al. 2002, Ford & Meux 2010, Watanuki et al. 2010, Filbee-Dexter & Scheibling 2014). To date, kelp restoration efforts in California have largely focused on the removal or in-water culling of purple urchins. Urchin threshold densities are generally known for giant kelp systems (approximately 14 urchins per square meter to convert a kelp forest to an urchin barren, and 2-3 urchins per square meter to restore an urchin barren back to a kelp forest (see discussion of hysteresis above; Filbee-Dexter & Scheibling 2014)), and recent modeling efforts have generated preliminary estimates of threshold densities in bull kelp systems (Arroyo-

Esquivel et al. in prep). However, for both systems, further study is needed to empirically validate threshold densities, understand whether or not threshold densities can be maintained without constant human intervention, and assess the scales at which threshold densities apply. These questions are critical for informing larger-scale restoration efforts.

Reef Check California (RCCA), a nonprofit organization dedicated to the conservation of California's rocky reefs and kelp forests through community science, is currently working to experimentally validate urchin threshold densities on the central coast, a giant kelp system, and will soon set up a similar project on the north coast, a bull kelp system. The north coast work will also include a comparison of the effectiveness, or catch per unit effort, of physical removal of urchins vs. in-water culling of urchins. Results are anticipated by December 2021.

Urchin removal by commercial fishermen. Commercial sea urchin fishermen are skilled at harvesting urchins underwater and can be extremely effective at clearing urchin barrens, which may facilitate kelp regrowth. However, the efficacy of this potential kelp restoration tool has yet to be scientifically investigated in California. In 2020, OPC, CDFW, and RCCA initiated a partnership with north coast commercial red sea urchin fishermen, who have largely been unable to fish since the collapse of their fishery in 2016, to remove purple urchins in support of kelp restoration at Noyo Bay and Albion Cove in Mendocino County. RCCA is tracking changes in ecological metrics (including urchin density, kelp density, and community composition) at these restoration sites to evaluate the efficacy of large-scale urchin removal as a kelp restoration tool. This project will also result in the development of best practices and lessons learned, which can be used to scale up commercial urchin removals on the north coast and statewide should this method prove effective. Furthermore, by directly engaging stakeholders who have been severely impacted by the kelp crisis, this project is providing significant social and economic benefit to Mendocino County and the broader north coast community. Results are anticipated by December 2021.

In-water urchin culling by recreational divers. In-water urchin culling (i.e. smashing or crushing sea urchins *in situ*) has the potential to be an effective method of kelp restoration, if sufficient focused effort can be sustained and ocean conditions are favorable for algal regrowth. The Bay Foundation, for example, has engaged in in-water culling of purple urchins off the Palos Verdes Peninsula since 1997, and has documented increased giant kelp canopy cover and stipe density across approximately 50 acres of reef where culling has been conducted (Ford & Meux 2010, The Bay Foundation & Vantuna Research Group 2018). California's recreational diving community has advocated for changes in state regulations to allow in-water urchin culling, and recreational divers have potential to serve as valuable partners in kelp restoration efforts. However, before in-water urchin culling by recreational divers can be broadly supported by resource managers as a kelp restoration tool, further study is needed on 1) the efficacy of such efforts at reducing urchin densities to the level required for kelp regrowth, including how long such efforts need to be maintained, and 2) ecological effects, including potential unintended negative impacts such as bycatch or damage to underlying reef structure.

California has recently permitted in-water urchin culling by recreational divers at two specific locations: Caspar Cove in Mendocino County, a system dominated by bull kelp, and Tanker Reef in Monterey County, a system dominated by giant kelp. Divers are following

established protocols and are encouraged to report their efforts through online forms. To assess ecological effects, culling is being monitored by RCCA at both locations via the same approach being used for the commercial removal effort. Together, the Caspar and Tanker projects will help to answer the following questions:

- Can recreational divers operating under sea urchin sport harvest regulations reduce sea urchin densities to levels expected to facilitate kelp regrowth via in-water urchin culling?
- Does reduction of sea urchin grazing pressure via in-water urchin culling facilitate natural kelp regrowth?
- Are there negative impacts associated with in-water urchin culling (e.g. bycatch, damage to underlying reef structure, disturbance to marine mammal populations)?
- How can potential negative impacts to the commercial red sea urchin fishery be avoided?
- Can recreational divers collect, analyze, and communicate data/results in a way that is informative to resource managers?

Preliminary results are anticipated by Winter 2021.

Statewide Kelp Recovery Research Program. As the kelp crisis has unfolded, resource managers have been constrained by a variety of knowledge gaps surrounding kelp forest ecosystem dynamics. In order to more effectively mitigate the kelp crisis at broad spatial and temporal scales, and to promote the resilience of kelp ecosystems into the future, OPC, CDFW, and California Sea Grant have initiated a partnership with California's leading kelp forest researchers to create a statewide Kelp Recovery Research Program. This partnership is supporting six innovative, solutions-oriented research projects aimed at informing kelp management efforts. Results for all projects are anticipated by Fall 2022.

- *Jennifer Caselle, Tom Bell (UC Santa Barbara), Mark Carr (UC Santa Cruz): Where, when and how? A guide to kelp restoration in California using spatio-temporal models of kelp dynamics.* This project will use cutting-edge modeling techniques to identify key ecological, oceanographic, geographic, and management-related drivers of kelp persistence at local and regional scales. Model results will be used to produce a restoration guide. This guide will enable resource managers to choose optimal locations, times, and methods for kelp restoration activities statewide.
- *Michael Graham, Scott Hamilton (Moss Landing Marine Laboratories): Assessment of practical methods for re-establishment of northern California bull kelp populations at an ecologically relevant scale.* Re-establishing kelp populations via seeding or outplanting is a promising restoration tool that, when paired with urchin removal efforts, may lead to more successful restoration outcomes than urchin removal alone. This project will test the efficacy of various methods for 1) culturing bull kelp in the lab and 2) outplanting cultured kelp to reefs following sea urchin removal in northern California. Investigators will monitor the growth, survival, and reproduction of bull kelp following outplanting.
- *Joleah Lamb, Matthew Bracken (UC Irvine): Scaling a new cost-effective intervention tool to restore and future-proof coastal kelp forests.* This project will complement Graham's project (described above) by testing the efficacy of various methods for culturing and outplanting giant kelp in southern California. In addition, investigators will

pursue an "assisted evolution" approach that will acclimatize young kelps to warmer waters, helping to ensure future restoration success in the face of climate change.

- *Brian Gaylord, Marissa Baskett, Aurora Ricart (UC Davis), Matt Edwards (UC San Diego), Mackenzie Zippay, Brent Hughes, Sean Place (Sonoma State University), Jason Hodin (University of Washington): A multi-pronged approach to kelp recovery along California's north coast.* This multi-pronged project will accomplish the following: 1) culture heat-tolerant strains of bull kelp and test their outplanting success; 2) model bull kelp spore dispersal to help inform site selection for restoration on California's north coast; 3) assess the reproductive viability of malnourished purple urchins in urchin barrens, helping to determine whether in-water urchin culling may inadvertently cause urchins to spawn; 4) quantify the predation rate of juvenile sunflower sea stars on juvenile purple urchin; and 5) develop a dynamic model of the kelp-urchin-sea star system, to help isolate the best policy levers for management action.
- *Alison Haupt (CSU Monterey Bay), Jan Freiwald (Reef Check California): Informing restoration and recovery of central coast kelp forests – understanding the dynamics of urchin recruitment, reproduction and density.* This project will examine the reproductive potential of intertidal and subtidal purple urchin populations, helping to determine potential reproductive sources of sea urchins that may play a role in maintaining urchin barrens. Investigators will also assess spatial patterns in kelp and sea urchin recruitment by collecting larvae at a variety of central and north coast sites, including sites where purple urchin removal is currently being conducted. An improved understanding of kelp and urchin demographics will assist resource managers in restoration site selection.
- *Felipe Alberto (University of Wisconsin – Milwaukee), Peter Raimondi (UC Santa Cruz), Sergey Nuzhdin (USC): Conservation genomics and gametophyte banking of bull kelp in California.* This project will create a bull kelp "seed bank" that will include both spores and living kelps, helping to preserve the species and its genetic diversity for decades into the future. Investigators will also assess genetic variation in bull kelp populations over time and space, enhancing resource managers' understanding of why bull kelp is persisting at certain locations but not others, and helping to optimize restoration site selection on the north coast.

The Kelp Recovery Research Program may be complemented by other research initiatives currently underway in California and elsewhere. For example, TNC is currently supporting several scientific research projects that address emerging questions of management relevance, such as the feasibility of a sunflower star captive breeding and reintroduction program. To the extent practicable, OPC and CDFW will work to ensure communication between Kelp Recovery Research Program scientists and other researchers and partners, to identify potential overlap between efforts, maximize information sharing, and facilitate uptake of the best available science into policy and management discussions.

3. Knowledge Gaps

The research and restoration efforts described above are exploring a substantial number of knowledge gaps surrounding kelp forest ecosystem dynamics and the efficacy of various

restoration approaches. However, resource managers still face a variety of broader scientific, policy, and management questions, including:

- What are the most important metrics of kelp forest ecosystem health?
- How can kelp monitoring results be integrated with environmental datasets to forecast short-term changes in kelp abundance?
- How will kelp distribution change long-term under predicted climate scenarios? What are the potential ecological and socioeconomic effects of these changes?
- What are the most effective and efficient methods of kelp restoration in California? When and where should they be pursued?
- What are the risks and potential unintended consequences of different kelp restoration methods?
- What are the ecological baselines to which resource managers should seek to restore kelp forests? Are these baselines realistic given predicted climate scenarios? How do they translate into science-based goals, objectives, and metrics of success for restoration?
- How should kelp protection and restoration efforts be integrated with existing management measures, such as MPAs?
- How can resource managers identify reliable funding streams and institutional support to implement kelp restoration and resilience efforts, particularly given the urgency of other resource management needs?
- How can alternative "ways of knowing"—including both local knowledge and indigenous traditional knowledge—complement scientific efforts and contribute to our understanding of kelp resilience?

4. Priorities for Action

In support of the protection and restoration of California's kelp forests, and to address the knowledge gaps highlighted above, OPC has identified the following priorities for action. OPC views these as efforts that can and should be undertaken collaboratively with agency, Tribal, academic, nongovernmental/nonprofit, and community partners. Lead entities and timelines for individual actions will be identified as the final draft of this Action Plan is developed.

Research and monitoring

- Continue the suite of six Kelp Recovery Research Program projects. Work closely with researchers to ensure that scientific findings contribute to policy and management outcomes, in particular the final draft of this Action Plan and the development of a statewide Kelp Restoration and Management Plan (see below).
- Develop agreed-upon, science-based metrics for tracking kelp forest ecosystem health.
- Develop and implement a standardized statewide kelp monitoring program (including both kelp canopy and subtidal monitoring) to track metrics of kelp forest ecosystem health. Leverage existing monitoring efforts where possible.
- Develop methods to reliably forecast changes in kelp abundance and distribution based on known drivers.

- Initiate scientific projects to better understand the connection between physical oceanography and dispersal/recruitment of kelp forest species.
- Further explore the role of grazer predators in providing kelp forest ecosystem resilience.

Policy development

- Complete Enhanced Status Report (ESR) for bull kelp and giant kelp. The ESR should provide a comprehensive overview of both species and fisheries, along with current management and monitoring efforts and future management needs.
- Initiate the development of a statewide, ecosystem-based Kelp Restoration and Management Plan (KRMP).
- Update commercial harvest regulations for bull kelp and giant kelp.
- Ensure that aquaculture efforts related to kelp restoration (e.g. kelp sporophyte culturing, land-based "ranching" of harvested purple urchin for human consumption, etc.) are consistent with the state's interagency guiding principles for aquaculture and upcoming Aquaculture Action Plan.
- In collaboration with state MPA managers and partners, develop a clear policy outlining the circumstances under which kelp restoration methods could be considered in MPAs.

Restoration

- Continue pilot restoration projects and use results to develop a preliminary kelp restoration "toolkit" for inclusion in the KRMP.
    - The toolkit should consist of kelp restoration options available to resource managers in California, as well metrics of restoration success and a summary of the ecological and socioeconomic conditions under which various options are likely to be most effective.
    - The toolkit should contain methods for evaluating the risks and benefits of restoration actions. A precautionary approach should be adopted, and restoration methods with a high likelihood of unintended ecological consequences should be avoided.
- Engage with the commercial red sea urchin fishery to develop restoration incentives and explore potential markets for purple urchin.
- Engage with the global kelp forest restoration community to share best practices and lessons learned.

Community engagement

- Initiate projects to improve access to kelp forests for Californians from underserved communities, through both field-based and virtual programs.
- Continue engagement with California's Native American Tribes.
    - Ensure that Tribal perspectives are represented in policy and management conversations.
    - Include Tribes in research and monitoring efforts, potentially through California's recently launched Tribal Marine Stewards Network.
    - Begin development of a pathway for the consideration of Indigenous Traditional Knowledge in state policy and management decisions related to kelp.

- Engage stakeholders to ensure California's coastal communities are represented in policy and management discussions, including the development of the KRMP.
- Utilize knowledge and capacity of diving and fishing communities, as well as kelp and algae harvesters, to assist with kelp monitoring and restoration efforts.

5. Conclusion

Kelp forests are fundamental to California's marine biodiversity and its ocean economy. However, the ocean is rapidly changing, and kelp faces an uncertain future. Marine heatwaves are predicted to become more frequent and more severe. Changing ocean conditions may also lead to more intense storm and wave activity, and marine disease may become more prevalent. While such threats are generally beyond the control of resource managers, steps can be taken to support healthy kelp forests in California. For example, some stressors such as harvest, pollution, sedimentation, and urchin grazing may be managed to promote resilience in the face of an increasingly hostile ocean. Robust research and monitoring, science-informed policy, the development of effective restoration methods, and meaningful partnership with California Native American Tribes and stakeholder communities will help resource managers craft proactive, "climate-ready" strategies for kelp management, protecting our state's underwater forests for the benefit of current and future generations.

OPC, in partnership with CDFW, has developed this interim Action Plan to serve as a starting point for discussion between resource managers, the academic community, California Native American Tribes, coastal stakeholders (including the diving and fishing communities), and members of the public. OPC will offer opportunities for engagement on this draft throughout 2021, and a final version of the Action Plan will be presented to the Council for consideration and possible adoption in Spring 2022. That version will incorporate results from research and restoration projects currently underway, as well as scientific, Tribal, and public input.

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Item 7

Staff Memo
February 16, 2021

Interim Kelp Action Plan

Michael Esgro, OPC Marine Ecosystems Program Manager & Tribal Liaison

LOCATION: Statewide

STRATEGIC PLAN OBJECTIVE(S): 3.2: Restore and protect kelp ecosystems

EXHIBITS:
Exhibit A: Interim Action Plan for Protecting and Restoring California's Kelp Forests

EXECUTIVE SUMMARY AND GOAL OF DISCUSSION:

Kelp forests are fundamental to California's marine biodiversity and its ocean economy. Both giant kelp, a perennial alga that dominates in southern and central California, and bull kelp, an annual alga that dominates in northern California, are foundational species that provide a variety of ecological functions and ecosystem services. In general, California's nearshore environment has supported healthy kelp forests for decades; satellite imagery dating back to 1984 shows significant interannual variability but a stable overall trend in kelp canopy area across the state prior to the onset of a marine heatwave in 2014. That marine heatwave had variable effects on kelp in each of California's major geographic regions. Bull kelp forests in northern California were devastated, experiencing greater than 95% loss in kelp canopy from 2014 to 2019 and limited recovery in 2020. Giant kelp forests in central California have exhibited patchy declines since 2014, but no discernible region-wide trend. The marine heatwave generally had no strong effects on giant kelp forests in southern California.

Given the ecological and socioeconomic importance of kelp, the severity of kelp declines on the north coast, and the anticipated impacts of changing ocean conditions, the protection and restoration of California's kelp forests has emerged as a top priority for OPC and the California Department of Fish and Wildlife. Efforts initiated in 2019 and 2020 are providing resource managers with critical monitoring data, an enhanced understanding of the drivers of kelp loss and persistence, and science-based evaluations of potential kelp restoration approaches. However, significant knowledge gaps remain. In support of OPC's Strategic Plan to Protect California's Coast and Ocean 2020-2025, (Objective 3.2, Target 3.2.1), the Interim Kelp Action Plan (Action Plan) is intended to summarize current state-supported kelp research and restoration efforts, as well as other relevant efforts in

California and globally; highlight key knowledge gaps; and outline priorities for action in kelp research and monitoring, policy development, restoration, and community engagement. Those priorities include: completing pilot efforts; developing science-based metrics for tracking kelp forest ecosystem health; implementing statewide kelp forest monitoring based on those metrics; initiating the development of a kelp restoration and management plan, which will include a restoration "toolkit"; and engaging with California's coastal communities and Native American Tribes.

OPC has developed the Action Plan to serve as a starting point for discussion between resource managers, the academic community, California Native American Tribes, coastal stakeholders (including the diving and fishing communities), and members of the public. This discussion item is intended to provide the Council with a venue for open dialogue regarding the priorities, knowledge gaps, and next steps outlined in the Action Plan. OPC staff will build on this discussion by offering opportunities for engagement on the Action Plan throughout 2021, and a final version will be presented to the Council for consideration and possible adoption in Spring 2022. That version will incorporate results from research and restoration projects currently underway, as well as scientific, Tribal, and public input.

BACKGROUND:

California's iconic kelp forests are among the most productive and biodiverse ecosystems on the planet. Both giant kelp, a perennial alga that dominates in southern and central California, and bull kelp, an annual alga that dominates in northern California, are foundational species that provide a variety of ecological functions and ecosystem services. Kelp is also critical to the well-being of California's coastal residents, including California Native American Tribes, and the state's $44 billion ocean economy. Kelp supports a variety of commercially and recreationally important fisheries, is harvested commercially for human consumption and as feed for aquaculture operations, and offers unparalleled opportunities for skin and scuba diving, kayaking, surfing, and wildlife viewing.

Globally, kelp forests naturally fluctuate from year to year, and the significant interannual variability of kelp canopy area on the California coast has been well documented. However, in general, California's nearshore environment has supported healthy kelp forests for decades; satellite imagery dating back to 1984 shows a stable overall trend in kelp canopy area across the state prior to a marine heatwave in the Northeast Pacific that started in 2014 and persisted through 2016.

Bull kelp forests in northern California were devastated by the marine heatwave. The sudden decline of bull kelp (greater than 95% loss during the 2014-2019 period) has been attributed to a "perfect storm" of changing ocean conditions in this region. Warm, nutrient-poor waters reduced kelp productivity and constrained the ability of new kelp to establish and grow. Just prior to the marine heatwave, sea star populations were decimated by Sea Star Wasting Syndrome, a disease resulted in the disappearance of the sunflower star, a

predominant urchin predator, from California waters. In the absence of sunflower stars, purple sea urchin populations exploded in northern California, grazing once-lush kelp forests down to bare rock or “urchin barrens”; warm waters may have increased purple urchin recruitment in this region. Even as the marine heatwave has subsided, purple urchin densities remain up to 60 times higher than normal levels at many locations on the north coast. Drone surveys conducted along the Mendocino and Sonoma coast in fall 2020 have documented bull kelp at locations from which it has been absent since 2014. However, a potentially depleted spore bank, the persistence of urchin barrens, the local extinction of the sunflower star, and the lack of other urchin predators in northern California will likely constrain the ability of the system to naturally recover to pre-2014 levels.

In contrast to the devastation observed on the north coast, patterns in giant kelp abundance along California’s central coast are more complex. In general, from 2014-2019, central California has been characterized by patchy kelp distribution, with no discernible overall trend. Kelp has persisted in some locations but appears to have declined in others; one area of particular concern is the Monterey Peninsula, where kelp has exhibited significant losses since 2014. In contrast to the region-wide dynamics on the north coast, factors at smaller spatial scales likely drive kelp persistence on the central coast. These factors include temperature, local urchin densities, and the foraging behavior of sea urchins and southern sea otters.

In general, the 2014-2016 marine heatwave had no strong effects on giant kelp in southern California. Kelp canopy area in southern California declined following the onset of the marine heatwave in 2014, but these losses were within the normal range of variability and kelp quickly recovered. As with the central coast, smaller-scale factors likely drive kelp abundance on the south coast; in particular, the presence of urchin predators such as California Sheephead and California spiny lobsters may provide kelp forests with a measure of functional redundancy that has increased the resilience of these systems to the loss of the sunflower star. Furthermore, wave disturbance is consistently lower in southern California than in central or northern California, potentially contributing to kelp persistence.

Given the ecological and socioeconomic importance of kelp, the severity of the crisis on the north coast, and the anticipated impacts of changing ocean conditions, the protection and restoration of California’s kelp forests has emerged as a top priority for OPC and the California Department of Fish and Wildlife (CDFW). In support of OPC’s Strategic Plan to Protect California’s Coast and Ocean 2020-2025 (Objective 3.2, Target 3.2.1), the Interim Kelp Action Plan (Action Plan) is intended to summarize current state-supported kelp research and restoration efforts, as well as other relevant efforts in California and globally; highlight key knowledge gaps; and outline priorities for action in kelp research and monitoring, policy development, restoration, and community engagement. OPC developed the Action Plan in close collaboration with CDFW staff, and academic partners provided informal scientific review and feedback.

SUMMARY OF ACTION PLAN CONTENT:

Current Research and Restoration Efforts

OPC and CDFW have recently initiated several projects to monitor kelp forest ecosystems, better understand drivers of kelp loss and persistence, and test potential kelp restoration approaches. These efforts represent an investment of more than $3 million in 2019-2020.

The Action Plan provides a summary of these projects and discusses their anticipated results and relevance to management needs. Notable projects include:

- Improved kelp canopy monitoring and mapping using remote sensing techniques.
- Partnership with north coast commercial fishermen to remove urchin in support of kelp restoration at targeted restoration locations in Mendocino County[1].
- Collaboration between scientists, managers, and the recreational dive community to assess in-water urchin culling as a potential kelp restoration approach.
- Launch of the statewide Kelp Recovery Research Program, a unique partnership between state government and California's leading kelp forest scientists that is supporting a suite of six innovative, solutions-oriented kelp research and restoration projects[2].

Knowledge Gaps

The research and restoration efforts described in the Action Plan are exploring a substantial number of knowledge gaps surrounding kelp forest ecosystem dynamics and the efficacy of various restoration approaches. However, the Action Plan notes that resource managers still face a variety of broader scientific, policy, and management questions, including:

- What are the most important indicators of kelp forest ecosystem health?
- How can kelp monitoring results be integrated with environmental datasets to forecast short-term changes in kelp abundance?
- How will kelp distribution change long-term under predicted climate scenarios? What are the potential ecological and socioeconomic effects of these changes?
- What are the most effective and efficient methods of kelp restoration in California? When and where should they be pursued?
- What are the risks and potential unintended consequences of different kelp restoration methods?
- What are the ecological baselines to which resource managers should seek to restore kelp forests? Are these baselines realistic given predicted climate

[1] https://www.opc.ca.gov/webmaster/ftp/pdf/agenda_items/20200226/Item%205_Kelp-Staff-Recommendation-Final.pdf

[2] https://opc.ca.gov/webmaster/ftp/pdf/agenda_items/20200619/Item8_KelpRecoveryResearchProgram_FINAL.pdf

scenarios? How do they translate into science-based goals, objectives, and metrics of success for restoration?
- How should kelp protection and restoration efforts be integrated with existing management measures, such as marine protected areas (MPAs)?
- How can resource managers identify reliable funding streams and institutional support to implement kelp restoration and resilience efforts, particularly given the urgency of other resource management needs?
- How can alternative "ways of knowing"—including both local knowledge and indigenous traditional knowledge—complement scientific efforts and contribute to our understanding of kelp resilience?

Priorities for Action

In support of the protection and restoration of California's kelp forests, and to address the knowledge gaps highlighted above, the Action Plan identifies the following priorities for action. OPC views these as efforts that can and should be undertaken collaboratively with agency, Tribal, academic, nongovernmental/nonprofit, and community partners. Lead entities and timelines for individual actions will be identified as the final draft of the Action Plan is developed.

Research and monitoring
- Continue the suite of six Kelp Recovery Research Program projects. Work closely with researchers to ensure that scientific findings contribute to policy and management outcomes, in particular the final draft of this Action Plan and the development of a statewide Kelp Restoration and Management Plan (see below).
- Develop agreed-upon, science-based metrics for tracking kelp forest ecosystem health.
- Develop and implement a standardized statewide kelp monitoring program (including both kelp canopy and subtidal monitoring) to track metrics of kelp forest ecosystem health. Leverage existing monitoring efforts where possible.
- Develop methods to reliably forecast changes in kelp abundance and distribution based on known drivers.
- Initiate scientific projects to better understand the connection between physical oceanography and dispersal/recruitment of kelp forest species.
- Further explore the role of grazer predators in providing kelp forest ecosystem resilience.

Policy development
- Complete Enhanced Status Report (ESR) for bull kelp and giant kelp. The ESR should provide a comprehensive overview of both species and fisheries, along with current management and monitoring efforts and future management needs.
- Initiate the development of a statewide, ecosystem-based Kelp Restoration and Management Plan (KRMP).
- Update commercial harvest regulations for bull kelp and giant kelp.

- Ensure that aquaculture efforts related to kelp restoration (e.g. kelp sporophyte culturing, land-based "ranching" of harvested purple urchin for human consumption, etc.) are consistent with the state's interagency guiding principles for aquaculture and upcoming Aquaculture Action Plan.
- In collaboration with state MPA managers and partners, develop a clear policy outlining the circumstances under which kelp restoration methods could be considered in MPAs.

Restoration

- Continue pilot restoration projects and use results to develop a preliminary kelp restoration "toolkit" for inclusion in the KRMP.
    - The toolkit should consist of kelp restoration options available to resource managers in California, as well metrics of restoration success and a summary of the ecological and socioeconomic conditions under which various options are likely to be most effective.
    - The toolkit should contain methods for evaluating the risks and benefits of restoration actions. A precautionary approach should be adopted, and restoration methods with a high likelihood of unintended ecological consequences should be avoided.
- Engage with the commercial red sea urchin fishery to develop restoration incentives and explore potential markets for purple urchin.
- Engage with the global kelp forest restoration community to share best practices and lessons learned.

Community engagement

- Initiate projects to improve access to kelp forests for Californians from underserved communities, through both field-based and virtual programs.
- Continue engagement with California's Native American Tribes.
    - Ensure that Tribal perspectives are represented in policy and management conversations.
    - Include Tribes in research and monitoring efforts, potentially through California's recently launched Tribal Marine Stewards Network.
    - Begin development of a pathway for the consideration of Indigenous Traditional Knowledge in state policy and management decisions related to kelp.
- Engage stakeholders to ensure California's coastal communities are represented in policy and management discussions, including the development of the KRMP.
- Utilize knowledge and capacity of diving and fishing communities, as well as kelp and algae harvesters, to assist with kelp monitoring and restoration efforts.

NEXT STEPS FOR ACTION PLAN DEVELOPMENT:

OPC has developed the Action Plan to serve as a starting point for discussion between resource managers, the academic community, California Native American Tribes, coastal

stakeholders (including the diving and fishing communities), and members of the public. This discussion item is intended to provide the Council with a venue for open dialogue regarding the knowledge gaps and priorities outlined in the Action Plan. OPC staff will build on this discussion by offering opportunities for engagement on the Action Plan throughout 2021, and a final version will be presented to the Council for consideration and possible adoption in Spring 2022. That version will incorporate results from research and restoration projects currently underway, as well as scientific, Tribal, and public input. Next steps for developing this interim draft into a final plan include:

- Incorporate results from research and restoration projects that are currently underway.
- Incorporate technical guidance and recommendations from the research community, leveraging OPC's partnership with top kelp scientists.
- Solicit Tribal comment to ensure that Tribal perspectives and priorities are reflected in the final Kelp Action Plan.
- Solicit public comment to ensure that the perspectives and priorities of a variety of stakeholders (including commercial and recreational fishermen, divers, ocean business/tourism operators, members of coastal communities, and others) are reflected in the final Kelp Action Plan.

COMMITTEE STAFF SUMMARY FOR MARCH 17, 2020 MRC

For Background Purposes

7. MARINE AQUACULTURE IN CALIFORNIA

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

Receive update on marine aquaculture and discuss near-term priorities and potential committee recommendations related to:

(A) DFW aquaculture informational report, status of programmatic environmental impact report (PEIR), and proposed next steps; and

(B) Potential temporary hiatus in considering new state water bottom lease applications.

Summary of Previous/Future Actions

• Discussed best management practices in shellfish aquaculture	2016-2017; FGC and MRC, various
• FGC referred topic of future lease planning to MRC	Jun 21-22, 2017; Smith River
• MRC initial discussion on future lease planning	Jul 20, 2017; MRC, Santa Rosa
• MRC received overview of current aquaculture leases and update on future lease planning	Mar 6, 2018; MRC, Santa Rosa
• FGC referred PEIR topic to MRC	Apr 18-19, 2018; Ventura
• MRC received general overview of PEIR	Nov 14, 2018; MRC, Sacramento
• MRC received PEIR update	Mar 20, 2019; MRC, Sacramento
• FGC referred discussion of potential temporary hiatus on new lease applications to MRC	Feb 21, 2020; Sacramento
• **Today's program update and discussion**	**Mar 17, 2020; MRC, Santa Rosa**

Background

FGC has the authority to lease state water bottoms to any person for the purpose of conducting aquaculture in marine waters of the State, under terms agreed upon between FGC and the lessee (sections 15400 and 15405, California Fish and Game Code). FGC is prohibited from issuing leases for commercial offshore marine finfish aquaculture in California until a programmatic environmental impact report (PEIR) evaluates a management framework for potential future offshore marine aquaculture.

There are currently 17 active, FGC-issued, state water bottom leases held by 10 growers across the state for cultivating shellfish (16 leases) or seaweed culture (1 lease). In addition, FGC has received 3 applications for new state water bottom leases that are currently undergoing DFW and/or environmental reviews necessary before FGC schedules them for consideration.

Topics related to current lease management, desired enhancement of the state aquaculture program, and possible pathways to achieving an enhanced program have been discussed at various FGC and MRC meetings since 2016.

COMMITTEE STAFF SUMMARY FOR MARCH 17, 2020 MRC

For Background Purposes

In Mar 2018, MRC received an overview of existing leases and current management efforts from DFW, and discussed how management efforts by DFW and other agencies may contribute to future aquaculture planning and enhanced management of the state aquaculture program (Exhibit 1). However, the discussion highlighted a disparity between proposed program development areas and staff capacity to pursue them. In light of the competing interests and needs, MRC made a recommendation for how to prioritize the various planning efforts.

In Apr 2018, FGC accepted the MRC recommendation and, based on FGC direction, MRC received an overview and update on PEIR development at the Nov 2018 and Mar 2019 meetings (see Exhibit 2 for background).

For today's meeting there are two areas of focus for discussion: aquaculture in California generally and new state water bottom leases.

(A) DFW will provide an update on its recommendations regarding the aquaculture PEIR, including discussions and public engagement it believes are necessary to clarify a long-range vision for California's marine aquaculture development. DFW is developing an aquaculture information report and anticipates the report will be available at today's meeting. DFW suggests that the report could serve as a foundation to engage interested parties in discussions about current and future marine aquaculture management and development in California.

(B) FGC referred to MRC a discussion about a potential temporary hiatus in considering new state water bottom lease applications, excluding the applications already received (two proposed offshore sites in southern California, and one proposed site in Tomales Bay). The three applications are the first new lease applications FGC has received in over 25 years; currently there is not an established process to guide FGC review and consideration of lease applications, coordination protocols between FGC and DFW staff need to be further developed, staff roles and responsibilities need to be more clearly articulated, and practices for communicating expectations with lease applicants need to be refined. Available staff resources are a concern; staff needs to focus on managing the 17 existing leases and processing the three applications already under consideration before undertaking additional new leases. It may be helpful for decisions regarding prospective new lease applications to be made within the context of a broader statewide policy and vision.

Significant Public Comments

1. A mariculturist supports placing a hiatus on considering new state water bottom leases, requests that future lessees be subject to more stringent experience and qualification requirements, and recommends provisions for a program that would train new lessees in mariculture, such as providing small trial plots to new lessees and internships in mariculture. Requests clarification on where future leases will be placed (Exhibit 3).
2. A non-governmental organization expresses support for placing a hiatus on considering new state water bottom leases until a review of aquaculture activities by FGC and other agencies is complete, and asks that FGC exercise caution when considering new leases, especially in Tomales Bay, due to potential impacts of shellfish farms on bay food webs and shorebird populations (Exhibit 4).

3. A non-governmental organization expresses a desire for a more workable permitting process for restorative aquaculture, requests that the State remove barriers to entry into restorative aquaculture, and asks that a completed PEIR and a more streamlined permitting process be established by the end of 2020 (Exhibit 5).

Recommendation

(A) Consider requests received from DFW during the meeting, and

(B) Consider supporting a temporary hiatus on considering new state water bottom lease applications not already received by FGC and schedule a follow-up discussion for a future MRC meeting.

Exhibits

1. Background document: Staff summary for Mar 6, 2018 MRC meeting, Agenda Item 8
2. Background document: Staff summary for Mar 20, 2019 MRC meeting, Agenda Item 8
3. Email from Bernard Friedman, Santa Barbara Mariculture Company, received Mar 2, 2020
4. Email from Nils Warnock, Audubon Canyon Ranch, received Mar 4, 2020
5. Email from Katherine O'Dea, Save Our Shores, received Mar 5, 2020

Committee Direction/Recommendation (N/A)

COMMITTEE STAFF SUMMARY FOR NOVEMBER 10, 2020 MRC
For Background Purposes Only

5. NEW MARINE AQUACULTURE LEASES

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

Discuss and consider potential MRC recommendation regarding the current temporary hiatus on receipt of new applications for state water bottom leases for the purpose of aquaculture (excepting previously-received applications currently under consideration).

Summary of Previous/Future Actions

• FGC referred discussion of potential temporary hiatus on new lease applications to MRC	Feb 21, 2020; Sacramento
• MRC discussion and recommendation for six-month hiatus on new lease applications	Apr 29, 2020; MRC (part 2), webinar/teleconference
• FGC approved MRC recommendation for six-month hiatus on new lease applications	Jun 24-25, 2020; webinar/teleconference
• **MRC review of hiatus and potential recommendation**	**Nov 10, 2020; MRC, webinar/teleconference**

Background

In Feb 2020, FGC referred to MRC discussion about a potential temporary hiatus in considering new state water bottom lease applications, excluding the applications already received (two proposed offshore sites in Southern California, and one proposed site in Tomales Bay). With the exception of Santa Barbara Mariculture, where reconfiguration of its existing lease was administered as a new lease application for purposes of the California Environmental Quality Act (CEQA), the three applications are the first for new lease areas that FGC has received in over 25 years; much has changed in the subsequent years and the methods and processes for reviewing leases have had to be created anew.

At the Apr 29 MRC meeting, FGC staff highlighted the need to establish an administrative process and standards to guide FGC review and consideration of new lease applications, further develop coordination protocols between FGC and DFW staff, more clearly articulate staff roles and responsibilities, and refine practices for communicating expectations with lease applicants. Available FGC and DFW staff resources were identified as a particular concern; staff is responsible for managing 17 existing leases that must necessarily take priority, in addition to processing the three lease applications already under consideration, before it can consider undertaking additional new lease reviews. See Exhibit 1 for additional background.

MRC recommended, and FGC approved at its Jun 24-25, 2020 meeting, a six-month hiatus on accepting any new state water bottom lease applications for aquaculture purposes; the approved hiatus is slated to expire Dec 24, 2020.

Update

Marine aquaculture is an adapting and growing industry, with increased interest in supporting locally-grown seafood. Optimally, decisions regarding prospective new lease applications would

be made within the context of a broader policy and vision, in addition to the enhanced administrative process being developed. FGC staff is participating in an effort led by the California Ocean Protection Council (OPC) to develop statewide aquaculture principles and a statewide aquaculture action plan, recognizing the need to have a common vision among the multiple state agencies of jurisdiction and to more efficiently and effectively coordinate the resources currently allocated to permitting and managing aquaculture in California. OPC's effort is likely to identify the need for additional state support if the state's goal is to increase sustainable aquaculture.

Specific to the approved hiatus, FGC and DFW staff has made progress in administrative coordination of application review, clarifying respective roles, advancing environmental review under CEQA for one application, and improving coordination with other agencies of jurisdiction (there are at minimum seven, and usually more depending on the project). Additional progress is still needed to support a consistent review process for new lease applications, especially with regard to meeting CEQA requirements. Meeting the review and coordination requirements in a time frame preferred by applicants will continue to be a challenge.

Concurrent to the existing lease application review processes, staff is also focused on responding to requests from several existing lessees for lease amendments, transfers, or other remedies related to authorized culture species, culture methods, lease boundaries and/or operations. Some requests are discretionary; however, for the majority of the current requests, the principle driver is the need to comply with new conditions established through other agency permitting processes that are raising questions and concerns not previously identified or addressed. The current requests from existing lessees have not been simple and have required research, interagency consultation, and environmental review.

Staff recognizes that continuing the hiatus on any new lease applications will not serve to remedy the challenges facing FGC and DFW staff in the receipt and review of lease applications; therefore, staff is not requesting a continuation of the hiatus. However, staff anticipates that OPC's effort to develop statewide aquaculture principles will contribute to articulating a vision and framework that will support how FGC reviews and considers aquaculture lease applications while a statewide aquaculture action plan is being developed. Based upon initial conversations, staff believes the principles will be consistent with concepts and values that FGC has previously expressed regarding aquaculture in California.

Unless directed otherwise, staff will prioritize existing lessee requests first, followed by the three lease applications already under consideration before initiating a review process for any new applications that may be received in the future.

Significant Public Comments

An aquaculture leaseholder operating offshore from Santa Barbara urges that FGC not approve any new state water bottom leases until a clear vision is defined and comprehensive management program for implementing new leases developed, including the applications already received by FGC. Offers specific recommendations related to leveraging the capacity of other organizations, supporting training and internship opportunities, setting more stringent experience and qualification requirements, and authorizing complementary rather than

competing culture operations where available sites are constrained (Exhibit 2).

Recommendation

FGC staff: Allow the current hiatus on receipt of new lease applications to lapse, recognizing the limitations in staff and resources; direct staff to continue developing and refining review processes with DFW and other agencies of jurisdiction; schedule an update related to aquaculture principles and action plan details for the Mar 2020 MRC meeting, and schedule an update on aquaculture leases for a future MRC meeting.

Exhibits

1. Background document: Staff summary for Mar 17, 2020 MRC meeting, Agenda Item 7
2. Email from Bernard Friedman, Santa Barbara Mariculture Company, received Oct 27, 2020

Committee Direction/Recommendation (N/A)

From:	Ashley Eagle-Gibbs
To:	FGC
Cc:	Morgan Patton; Emily Parker
Subject:	Comments re. FGC MRC Agenda Item 4: Marine Aquaculture in California
Date:	Wednesday, March 3, 2021 4:13:51 PM
Attachments:	2021.03.03 Joint Comments re. FGC MRC Agenda Item 4 FINAL.pdf

Dear Commissioner Murray,

Please find attached joint comments related to the Marine Resources Committee (MRC) Agenda Item 4. Thank you for your consideration of our comments. We look forward to reviewing the staff report, and many of the organizations also look forward to participating at the March 16th MRC.

Sincerely,
Ashley Eagle-Gibbs

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* Note - I typically work Tuesday - Friday.

March 3, 2021

California Fish and Game Commission
Marine Resources Committee
P.O. Box 944209
Sacramento, CA 94244-2090
Via Electronic Delivery: fgc@fgc.ca.gov

Re: FGC MRC Agenda Item 4: Marine Aquaculture in California

Dear Commissioner Murray,

Thank you for the opportunity to comment on Marine Resources Committee Agenda Item 4, *marine aquaculture in California*. The undersigned organizations have extensive knowledge of marine resources off the California coast and experience navigating the various laws and policies associated with coastal and marine development. Together, we offer our general support for the Committee's consideration to continue a temporary hiatus on receipt of new applications for state water bottom leases for the purpose of aquaculture (excepting previously received applications currently under consideration) as well as support for the California Ocean Protection Council (OPC)'s development of aquaculture principles and a state aquaculture action plan, which we look forward to participating in.

A number of the undersigned organizations initially supported the hiatus due to capacity issues, as well as environmental concerns and the need for a coordinated planning effort. There is voluminous interest in new aquaculture leases at this time in both federal[1] and state waters including the Ventura Shellfish Enterprise Project and Pacific Ocean Farms projects, and there is a need to take a coordinated approach between state agencies including the OPC and the California Coastal Commission to plan

[1] Aquaculture Opportunity Areas, https://www.fisheries.noaa.gov/aquaculture-opportunity-areas

collaboratively for protecting California's biodiverse waters and coastal communities. We were pleased to see OPC's update on the coordinated aquaculture principles at their February meeting.

We continue to voice our general support for the complementary efforts already undertaken by other state agencies including the California Coastal Commission's efforts to revise and update Coastal Development Permits (CDP) to include enforceable permit conditions and their development of a statewide CDP Permit Guidance. The Fish and Wildlife Department's Aquaculture Information Report[2] will also help inform OPC's aquaculture action plan. Many agencies are involved in aquaculture permitting, further demonstrating the need for a coordinated effort between the state agencies mentioned above, as well as the Army Corps of Engineers and the Public Health Departments, etc. A more coordinated effort may also provide time for the Fish and Game Commission's stalled aquaculture Best Management Practices regulatory process to resume or merge with OPC's aquaculture action plan, as well as ensure that the public has a meaningful opportunity to provide input.

The importance of carefully reviewing impacts is critical, since aquaculture development is often placed within sensitive and complex ecosystems. Historical examples highlight some of the challenges and environmental impacts of the aquaculture industry, such as extensive clean up after operational closure[3] and the impacts of unpermitted activities[4], both of which can leave behind lasting impacts to habitat, and in extreme cases, there have been threats to public health and safety.[5] A coordinated effort is even more critical due to the changing climatic conditions and other ecosystem changes, including shorebird decline,[6] our waters and bays are already experiencing.

Concerns with Unsustainable Aquaculture Development

We also take this opportunity to voice our opposition to more environmentally damaging and unsustainable forms of aquaculture (such as bivalve facilities that use pesticides, operations that damage eelgrass[7], and any large finfish facilities).

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[2] California Department of Fish and Wildlife, The Status of Commercial Marine Aquaculture in California, Final Report to the California Fish and Game Commission, May 2020, pp. 22-68 of the PDF *available at*, https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=180517&inline

[3] Guy Kovner, The Press Democrat, "More work ahead to restore estero after Drakes Bay Oyster Co. departure," January 9, 2016, https://www.pressdemocrat.com/article/news/more-work-ahead-to-restore-estero-after-drakes-bay-oyster-co-departure/?ref=related; *See also* California Coastal Commission, Staff Report and Findings for Consent Cease and Desist Order No. CCC-07-CD-11 showing unpermitted operations, December 12, 2007.

[4] For example, after-the fact authorizations have been issued to Morro Bay (December 13, 2019), Santa Barbara Mariculture (July 13, 2018), Hog Island Oyster Company (February 8, 2019), and other operations.

[5] Rob McMillan, ABC7, "Hidden danger off SoCal coast leads to tragic death of Orange County man who was fishing," December 10, 2019, https://abc7.com/hidden-danger-off-socal-coast-leads-to-tragic-death-of-oc-man/5745369/

[6] Nils Warnock, et al., Declining wintering shorebird populations at a temperate estuary in California: A 30-year perspective, Vol. 123, American Ornithological Society, February 10, 2021.

[7] We appreciate the specific discussion of the importance of eelgrass, a foundational species, which begins on p. 28 of the CDP Application Guidance (CDP Guidance), December 2020, https://documents.coastal.ca.gov/assets/cdp/CDP%20Application%20Guidance_12.08.20.pdf

These types of aquaculture can cause damage to essential habitat, water quality, and public health when poorly sited and/or scaled, as well as contributing to marine debris. For example, while wild bivalves are known to clean water, the water quality impacts of intensive shellfish aquaculture may not always be beneficial; many aquaculture activities can negatively impact water quality through the removal of eelgrass, the increase of waste from concentrated production, and the disruption of sediments.

Other significant potential environmental impacts from dense shellfish aquaculture is a reduction in shoreline biodiversity, installation of plastic gear (e.g., PVC tubes, polyethylene anti-predator netting, and polyolefin ropes), and use of pesticides. Massive shellfish operations also pose risks to marine wildlife and public health and safety. Aquaculture can also have significant negative impacts on shorebirds as mentioned under the wildlife section of the CDP Guidance.[8]

The development of OPC's aquaculture principles and state aquaculture action plan will be an essential tool to guide the continued growth of aquaculture in the state and work to ensure that harmful aquaculture practices are prevented. We support a continued hiatus on new aquaculture leases until such time that these principles are finalized to ensure consistency in future projects. Thank you for the consideration of our comments and for your continued dedication to the marine resources of our state.

Sincerely,

Ashley Eagle-Gibbs
Conservation Director
Environmental Action Committee of West Marin

Emily Parker
Coastal and Marine Scientist
Heal the Bay

Susan Jordan
Executive Director
California Coastal Protection Network

Cea Higgins
Executive Director
Coastwalk/California Coastal Trail Association

Catherine Kilduff
Senior Attorney
Center for Biological Diversity

Sylvia Wu
Senior Attorney
Center for Food Safety

Marcie Keever
Oceans & Vessels Program Director
Friends of the Earth

Irene Gutierrez
Senior Attorney, Oceans Team
Natural Resources Defense Council

Courtney S. Vail
Director of Strategic Campaigns
Oceanic Preservation Society

Patrick McDonough
Staff Attorney
San Diego Coastkeeper

[8] CDP Guidance, p. 36

California Fish and Game Commission Marine Resources Committee
California Coastal Fishing Communities Project Staff Recommendations

The ten recommendations in this document are excerpted from *Staff Synthesis Report on California Coastal Fishing Communities Meetings, 2016 – 2018*, pages 10-12, as prepared by California Fish and Game Commission staff in 2019. This document is intended only as a quick-reference guide for public discussions about the recommendations under consideration by the Commission's Marine Resources Committee.

1. Develop and adopt a policy and definition for coastal fishing communities.

Consider developing a new policy related to coastal fishing communities for Commission adoption. A policy could help clarify how the Commission wishes to consider coastal fishing community needs in decision-making, and the information necessary to help support those decisions. Given that the term "fishing community" is not defined in the California Fish and Game Code, a definition could be developed for inclusion in the policy. Multiple stakeholders representing fishing groups have requested and provided written recommendations for this definition. Developing a draft definition and policy may be best accomplished in collaboration with stakeholders.

2. Review the Commission's policy on restricted access commercial fisheries.

Restricted access programs and the Commission's policy were cited by many community members as contributing barriers to entry and adapting fishing strategies and targets as local changes arise, including those associated with climate dynamics. Other community members defended current restricted access programs as effective management that has improved the resource, the economic viability of fishing, or both. The Commission could conduct a review of how the policy has been applied since it was adopted in 1999, to examine where it was or wasn't applied to specific fisheries, how the policy performed at meeting the fishery objectives, identifying any unintended consequences for fishing communities, and whether any objectives have changed that warrant possible adjustments to the policy. This complex policy includes 21 individual sub-policies across 9 unique topic areas.

3. Approve specific, small-scale projects to test and evaluate proposed new approaches.

Stakeholders have requested that the Commission allow for stakeholders and partners to develop small-scale projects to test new approaches, including departures from the restricted access policy and current permit structures, acknowledging that permit holders are key stakeholders in helping to create, design and define these projects, in consultation with the Department. The new *experimental fisheries permit* program, authorized through legislation as of January 1, 2019, provides a possible pathway to testing pilot projects once regulations implementing the program are adopted by the Commission. Consider projects supporting opportunities for small-scale fishing that can be designed to help to fill information gaps consistent with guidance from the MLMA master plan for fisheries.

4. Engage legislative staff to pursue adjustments to laws as ideas are refined, if warranted to support fishing community adaptability.

Recognizing that some possible actions may be outside of Commission authority to accomplish, direct staff to seek to partner with stakeholders, the Department, and non-governmental organizations to find appropriate issues and means of engaging with legislative staff.

5. Direct staff to increase engagement and coordination with sister agencies, when feasible, on management decisions affecting California coastal communities.

Commission-related actions in isolation cannot meet all needs of coastal fishing communities, and

decisions made by different coastal management authorities can have a combined influence on the health of a coastal community. Community members have requested deeper Commission engagement with coastal management agencies to urge them to consider potential impacts to California's coastal fishing communities from their decision-making. Sister agencies that fishing community members emphasized include the Pacific Fishery Management Council (PFMC) related to west coast federal fisheries management decisions, and the California Coastal Commission, related to coastal development permit approvals to facilitate awareness and coordination on relevant topics and/or projects.

6. Explore pathways for authorizing community-based adaptable fishery structures (e.g., community permit banks or risk pools).

Explore options for community-organized structures that provide for adaptable responses within the community and could include co-management responsibilities. Consult with partner organizations and possibly convene an experts' workshop. This recommendation may require legislative or regulatory frameworks to accommodate such avenues. An example of such a structure that could be used as a model is the Monterey Fisheries Trust.

7. Explore filling data needs through collaborative research and data collection.

Coastal fishing community members have raised a concern that adaptive responses and new management strategies have not been pursued due to lack of data. Many fishermen have offered to support of collaborative data gathering. The Commission could work with the Department on identifying data gaps and possible scientific information that could be gathered through collaborative research or experimental fishing between partner entities and fishermen. Such efforts might be coordinated through creating an app or a website. However, great care must be taken to create citizen science data collecting systems that provide credible data. The Commission would have to rely on partners for labor costs.

8. Survey communities, commercial and recreational fishers, and processors about their priorities for Commission focus.

This strategy could help refine understanding about the issues facing coastal fishing communities and their priorities. Some stakeholders have criticized this idea as being too similar to this coastal fishing communities project.

9. Explore a model of "fishing community sustainability plans" (CSPs) and possible development of a state fisheries-based module to add to existing CSPs.

CSPs are cited in the Magnuson-Stevens Act as a potential method to avoid negative impacts in small fishing communities from the catch share program; they enable communities to plan strategically and to be more proactive in developing fishing community resilience for a sustainable future. Staff envisions that incorporating a state fisheries module could potentially be part of a future where ports are empowered to define how to support their own fishing community resilience and structure fisheries access according to their unique needs.

10. Continue to develop an understanding of climate change impacts on fisheries and fishing communities.

Science is still evolving regarding how fish populations and fisheries are affected by and respond to changing climate dynamics, including short-term, extreme ocean events. Developing successful fisheries management response strategies that meet both biological and socioeconomic/community needs is still nascent. Increased understanding of what is often referred to as "climate-responsive fisheries management" or adaptable management structures).

California Fish and Game Commission Marine Resources Committee Coastal Fishing Communities Project: Proposed Approach to Analyzing Staff Recommendations

July 28, 2020

In developing an approach for a more detailed report on the staff recommendations outlined in *2019 Staff Synthesis Report on Coastal Fishing Communities*, staff have encountered a consistent challenge in that "analysis" has a variety of definitions. To clarify how best to direct staff information-gathering and analysis to inform Marine Resources Committee decisions about recommendations to present to the California Fish and Game Commission (Commission), staff has developed a proposed approach for committee consideration.

It is important to note that while staff's analysis will include and build on information to be included in brief update reports for each recommendation (under development), staff believes the breadth of information in those reports will be insufficient for decisions about prioritizing potential actions related to the ten recommendations. The approach outlined in this document is meant to inform development of a more in-depth report on potential actions.

The proposed approach groups questions into four categories: ***Basic informational needs***, ***current regulatory and policy context***, ***potential Commission role***, and ***costs and benefits***.

Basic Informational Needs

This section is proposed to inform the baseline understanding of the recommendation. Potential questions to answer include:

- Are there any data that would inform this recommendation? What information do we have (not already described in the update document), and what do we need?
- Is this a qualitative or a quantitative interest?
- Is this a near-term or long-term effort?
- Does the recommendation tie into other recommendations or is it a stand-alone issue?
- What external projects exist that are relevant to this recommendation?
- Are there similar actions by other organizations, governmental or not, that we could draw from as examples?

Current Regulatory and Policy Context

This section is proposed to set the stage by laying out existing policies and structures that affect this recommendation and any previous, relevant Commission actions. Potential questions to answer include:

- What Commission or committee actions have been taken to date related to this recommendation?
- Has the Commission taken similar actions in a different context that we could draw from?

- What existing fisheries, structures, and policies established by the Commission are relevant to this issue?
- Are there other policies, regulatory structures or management plans that may constrain Commission flexibility to act?

Potential Commission Role

This section is proposed to refine the scope of potential Commission engagement and identify feasible ways to take action. Potential questions to answer in this section include:

- What is the Commission's authority to act on this recommendation? (*This question may be difficult to answer easily for some recommendations that are quite broad. This question may require identifying specific contributing actions and determine authority on those actions rather than authority on the recommendation overall.*)
- What avenues exist for FGC action, either through direct or indirect authority?
- Where does the Commission have potential influence with partner organizations or sister coastal resource agencies?

Costs and Benefits

This section is proposed to help evaluate necessary staff resources, scale of stakeholder investment, and time commitment, as well as who generally may benefit from a given recommendation and what specific benefits are anticipated to fishing communities. To that end, staff has identified six broad goals that could potentially frame what will be primarily qualitative descriptions when moving forward with this project: adaptability, consistency, accessibility, manageability, affordability, and resilience.

Adaptability

- What positive impact could this have on the Commission's ability to put forward adaptive management?
- How would this provide flexibility/adaptation options to coastal fishing communities?

Consistency

- How might this lead to potential changes to stable fishery management structures, such as impacts to an existing restricted access program?
- Does this align with or possibly reflect a change to existing Commission policies?

Accessibility

- Does this increase accessibility of a given fishery, and at what level (e.g., individual fishermen, new entrants, fishery-level, community- or geographic-level?
- How might this affect the species or fishing community involved?

Manageability

- How might this increase the California Department of Fish and Wildlife's (Department's) management burden?
- How might this potentially introduce management structures that would cause concern among partners?

Affordability

- What amount of Commission staff investment would be required to make this action feasible?
- What amount of Department investment would be required to make this action feasible?
- What level of engagement or involvement from partners, fishing industry members, or other stakeholders would be required?
- What work is already underway that might assist or inhibit this moving forward at a reasonable pace?
- What is the potential budget?
- What is the potential timeline?

Resilience

- What affect would this have on adaptability and socioeconomic resilience of coastal fishing communities, and at what scale?
- Would this improve the economic prospects of a given community?
- Would this promote fisheries that are ecologically resilient amidst changing ocean conditions?

Staff desires to work with stakeholders and partners to determine the best way to capture and convey the breadth of information identified for inclusion in the four proposed sections of a more detailed report on potential actions for the Marine Resources Committee to consider recommending to the Commission.

California Fish and Game Commission
Coastal Fishing Communities Project

Revised DRAFT Analysis of Staff Recommendation 1 to "Develop and adopt a policy and definition for coastal fishing communities"

Draft Revised March 10, 2021

Background

In July 2020, staff presented the California Fish and Game Commission (Commission) Marine Resources Committee (MRC) with a draft standardized approach for evaluating and analyzing the staff recommendations contained in *2019 Staff Synthesis Report on Coastal Fishing Communities*. The approach was presented as a potential structure for staff information-gathering and analysis of each recommendation to help inform MRC consideration of options for potential future action to recommend to the Commission. The approach presented to MRC forms the basis for this staff recommendation analysis, which focuses around four categories: ***Basic informational needs***, ***current regulatory and policy context***, ***potential Commission role***, and ***costs and benefits***.

An overview of SR 1, as reflected in the 2019 report, is:

Consider developing a new policy related to coastal fishing communities for Commission adoption. A policy could help clarify how the Commission wishes to consider coastal fishing community needs in decision-making, and the information necessary to help support those decisions. A policy could help flesh out the vision for the role Commission decision-making can play in preserving coastal fishing communities in California. Developing a draft policy is best accomplished in collaboration with stakeholders, tribes and tribal communities, academics, the Department, and other government agencies and jurisdictions that influence the sustainability of coastal fishing communities through their actions.

Analysis

I. *Basic Informational Needs*

Developing a definition of coastal fishing community and a Commission policy would be a near-term effort, relying on qualitative information derived from stakeholder input, existing laws and regulations, and relevant Commission direction as reflected in adopted management documents.

Information at hand: Input by stakeholders and fishing organization representatives on a potential policy was included in original comment letters on the 2019 staff report; the comments have been synthesized as an appendix to the report (table will be attached in final report). Needs for a policy, as identified by stakeholders, include but are not limited to recognizing loss of infrastructure, addressing access issues, and enumerating the pathways between biological and economic sustainability. Commission staff would ideally have more recent input on what stakeholders are interested in including in a policy, which would require additional stakeholder engagement.

Additionally, there are other models that could serve to assist in forming a policy. The Pacific Fishery Management Council (PFMC) Climate and Communities Initiative is an ecosystem-

based fishery management initiative based on the Magnuson-Stevens Fishery Conservation and Management Act's definition and guidance for fishing communities; the initiative has similar goals to the Commission's coastal fishing communities project and is currently active in California. Commission staff, along with staff from the California Department of Fish and Wildlife, the California Ocean Protection Council and the California Ocean Science Trust, as well as California fishermen and other partners, participated in a 2018 workshop as a part of the scoping for the initiative, and Commission staff have continued to confer with PFMC representatives to find ways to harmonize efforts. The most recent activities of the PFMC initiative include a January 2020 workshop in which participants developed a series of climate scenarios and potential fishery impacts. The potential impacts will be discussed at an upcoming series of regional workshops with members of commercial fisheries communities in Washington, Oregon, and California.

Information deficits: Relevant statutes (i.e., California Fish and Game Code, California Public Resources Code), including legislative findings, policies and mandates, need to be identified and compiled; sections of the MLMA and MLPA master plans need to be reviewed and evaluated for potential gaps and inconsistencies in guidance pertaining to coastal fishing community and socioeconomic considerations when developing management actions.

Potential impacts: A policy would likely have a bearing on how other recommendations are pursued. A policy could set a vision for California's coastal fishing communities, which may identify goals and priorities to take into account in any review and possible revision to the restricted access policy (recommendation 2) and how FGC may choose to prioritize potential small scale projects proposed to test new approaches based on alignment of project goals with the policy (recommendation 3). A policy may indirectly affect how staff approaches interagency outreach in support of communities (recommendation 5), fishery flexibility (recommendation 6), collaborative work (recommendation 7), or continued outreach and collaboration with communities (recommendation 8). Because this policy has the potential to impact any or all of the subsequent recommendations, staff believes that action to advance this recommendation, while the prioritization and scoping process for other items is still underway, would be a positive impact.

II. *Current Regulatory and Policy Context*

MRC actions and context: In November 2019, MRC adopted a stakeholder-developed working definition of "*coastal fishing community*" for use in the Coastal Fishing Communities Project. As reported to the Commission in December 2019, the working definition is:

> "A coastal fishing community is defined as a social, cultural, economic, and/or place-based group whose members are fishermen dependent upon or engaged in commercial, recreational, or subsistence fishing to meet the social or economic needs of the community; this includes, but is not limited to, businesses and organizations that depend on or support fishing by providing goods and services, including infrastructure. A fishing community may be a subset or member of larger or associated coastal communities which have an interest in and/or are dependent on healthy ocean ecosystems."

Adopting a definition is the first part of this recommendation. A policy has not yet been developed, though there have been some internal drafting discussions among Commission staff.

Commission actions and context: Prior relevant policies, including the restricted access policy and the formerly held commercial fishing and packing policy, could be used as references.

The commercial fishing and packing industries policy, adopted around 1993 and repealed in 2006, encouraged "…the development and expansion in all lawful ways of commercial fishing…consistent with the State's policy to provide for aesthetic, educational, scientific, and recreational uses of California's fisheries resources; the necessity of regulating the catch to sustain long term yields, and the development of distant water and overseas fisheries enterprises." Fostering and encouraging commercial fishing so explicitly, through the contemporary lens of the Marine Life Management Act, would be welcome to many stakeholders.

The restricted access policy is considerably longer than the now defunct commercial fishing and packing industries, but also includes language outlining that "…California's fisheries are a public trust resource. As such, they are to be protected, conserved, and managed for the public benefit, which may include food production, commerce and trade, subsistence, cultural values, recreational opportunities, maintenance of viable ecosystems, and scientific research." Stakeholders may rightfully argue that the "public benefit" is most directly relevant to them, as members of a community that relies on how a fishery is managed and, therefore, this ideal should be more explicitly shifted to their community needs. Any fishing communities policy will most likely affect and be affected by this restricted access policy, as well as non-restricted access fisheries, and outreach to the communities for any drafting process should include representatives from a diverse group of fisheries.

In addition to the Commission's words, there is also the matter of its actions. In 2017, the Commission directed staff to draft and send a letter to the California Coastal Commission in response to requests from fishing community stakeholders who attended the 2016-2018 public coastal fishing communities meetings. The letter urged the California Coastal Commission to consider fishing community infrastructure and economic needs when approving coastal development projects. While such a request does not constitute regulation or policy, it is a prior act that implies values about coastal fishing communities which could be relevant to a new policy. The letter included language about the Commission's desire to "strengthen the shared commitment of our partner coastal management agencies to maximize support for California's coastal fishing communities" and to "preserve and balance California's maritime heritage and economy and its coastal and ocean environments", both of which are statements which could be tenants of a policy.

Statutory context: There is policy embedded in sections of the California Fish and Game Code and the California Public Resources Code that outlines, to a varying extent, the current stance of the institution towards fishing communities, though there is not a specific and explicit policy. Portions on conservation of aquatic resources, offshore fisheries that have become newly accessible, and assorted parts of the Marine Life Management Act include language about fishing community members or fishery participants. While it would take considerable text to describe all the relevant language from policy, there is support for growth of commercial fishery, protection for fishing infrastructure in ports, development of aquaculture, recognition of the importance of fisheries to economy and culture, and a desire to involve fishing community members in research and management concerning fishery resources. A compilation of select relevant parts of code relevant to fishing communities will be attached to the final report.

Further state context: The California Ocean Protection Council 2020-2025 strategic plan includes large, overarching goals and objectives that are relevant to coastal fishing communities. For example, goal one is to "safeguard coastal and marine ecosystems and communities in the face of climate change," which inherently includes coastal fishing communities. Furthermore, objectives under goal four ("support ocean health through a sustainable blue economy") include targets specifically bright-lining coastal fishing communities, such as objective 4.1, to "advance sustainable seafood and thriving fishing communities." While not statutory or regulatory language, the unique position of the California Ocean Protection Council means that its strategic plan indicates a political will and articulates a policy of the state, at least in line with the current administration. Therefore, the strategic plan is an important touchstone for issues currently considered administration priorities. The broader scope of the California Ocean Protection Council, especially its role as an interagency coordinator, may allow it to act with greater speed and breadth of role than the Commission in reference to coastal fishing communities.

Federal context: The Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act) includes a federal definition of coastal fishing community, and includes a series of national standards for fishery management. National Standard eight defines the federal approach to fishery management relevant to the needs of fishing communities. The Magnuson-Stevens Act definition of a fishing community is "a community that is substantially dependent on or substantially engaged in the harvest or processing of fishery resources to meet social and economic needs, and includes fishing vessel owners, operators, and crew, and fish processors that are based in such communities. A fishing community is a social or economic group whose members reside in a specific location and share a common dependency on commercial, recreational, or subsistence fishing or on directly related fisheries-dependent services and industries (for example, boatyards, ice suppliers, tackle shops)." The standard states that any conservation and management measures must "take into account the importance of fishery resources to fishing communities by utilizing economic and social data that are based upon the best scientific information available in order to: (1) Provide for the sustained participation of such communities; and (2) To the extent practicable, minimize adverse economic impacts on such communities", recognizing the social and economic importance of fisheries to communities affected by management measures.

III. *Potential Commission Role*

The Commission has authority to adopt policies to guide its actions and to guide the actions and set the expectations for what the Department brings to the Commission for its consideration. Therefore, the Commission can take action on this item directly within its own authorities. However, this policy may be constrained by the fact that the Commission has only partial jurisdiction over commercial fishing in California, as some restricted access programs fall under the authority of the Department or the California State Legislature. A policy will necessarily have to be coordinated with the Department as it may affect the work of the Department.

IV. *Costs and Benefits*

Adaptability

How might a policy help support adaptability of coastal fishing communities? Depending on the specific language of the policy, providing for adaptation could be a goal built into the policy. If

the Commission chose to include support for the principle of adaptive solutions for communities, that would provide more flexibility for those communities to pursue adaptable solutions, as well as strengthening their position to propose new approaches and providing support to leverage for pursuing other staff recommendations. However, this would require coordination with the Department and with stakeholders to ensure that any language on fishery or fishing community adaptability is feasible in terms of implementation and enforcement and usefulness for the fishing community. Of course, this is in addition to the anticipated need to make adaptations to the policy itself. Between climate change-driven impacts and changing economic conditions, it would be wise for the policy to anticipate the need to incorporate an adaptive element as new issues emerge and needs are identified.

Consistency

- How might this policy lead to potential changes to current fishery management structures, such as impacts to an existing restricted access commercial fishery program? It may define new policy priorities and objectives that would lead to a review of existing management structures and programs to assess if the structures need to be adjusted in any way in response to the priorities/objectives within the new policy.
- Does this align with or possibly reflect a change to other existing Commission policies? It has the potential of placing greater emphasis on understanding the implications of proposed management actions to not just the stock and the fishery, but also toward socioeconomic impacts at a finer scale – at the community and/or port level.

Accessibility

- Does this increase accessibility of a given fishery, and at what level (e.g., individual fishermen, new entrants, fishery-level, community- or geographic-level? Has the potential to express policy for providing access at the levels described herein.
- How might this affect the species or fishing community involved? Does it increase engagement of fishing communities, in a manner that does not affect the sustainability of species harvested?

Manageability

A new policy would require the Department to consider the new policy when reviewing projects and developing recommendations, and take the lens of coastal fishing communities, which might increase the time and effort required for a review. Not all fishery information is collected at the smaller scale that a fishing community or groups of fishing communities might necessitate. It could create a data gap that the Department would need to evaluate how to fill regarding collecting and reporting information at the relevant scale. The Department may also have staffing gaps in expertise needed to address socio-economic vitality which will need to be filled.

It would also be important to involve partners in drafting this policy, as any who do not feel represented in the process may take issue with the work of the Commission and Department related to the policy. Having a policy in place would demonstrate to commercial fishing communities that their current and future needs, and very value to preserve for the future, are recognized by the Commission, which might generate greater investment and engagement by communities to assist with management.

Affordability/Investment

Stakeholders have indicated that they believe that developing a policy is a worthy investment. In terms of the investment required to develop the policy itself, the process would require staff time investment on a number of fronts. Commission staff would be the lead on this effort, including the marine advisor, the Sea Grant fellow, and potentially the executive director or deputy executive director. The marine advisor and Sea Grant fellow would likely be responsible for initial drafting and for coordinating efforts to involve partners and stakeholders. The executive director and deputy executive director would be responsible for review and approval of materials and it would require a considerable investment from the marine advisor and sea grant fellow. Developing a policy would require multiple meetings with Department staff and partners, and one or two public workshops. The cost associated with this process would primarily be staff time diverted from other work for both FGC staff and Department staff.

Resilience

If a policy were structured to prioritize resilience, it would require specific actions toward that goal, such as potentially requiring the department to bring changes relevant to these communities to the Commission for consideration. A policy could require the Commission and the Department to give consideration to fishing community needs on project approvals, which may create more space for adaptive and economically beneficial programs to move forward in the fishing community. This additional consideration has the potential to improve both economic prospects and economic and ecological resilience in a broad, general way. However broad, evidence of general support would be useful for commercial fishing communities.

Conclusions

[To be developed]

California Fish and Game Commission
Coastal Fishing Communities Project

DRAFT Analysis of Staff Recommendation 3: "Approve specific, small-scale projects to test and evaluate proposed new approaches"

March 10, 2021 Draft

Background

In 2019, the California Fish and Game Commission (Commission) Marine Resources Committee (MRC) received a final *Staff Synthesis Report on Coastal Fishing Communities Meetings, 2016-2018*, which included a list of ten staff-recommended options for potential Commission action in response to input received during the meetings. The staff recommendations were advanced as initial concepts, and MRC directed staff to more fully develop and evaluate them to help guide the Commission in determining which, if any, to pursue in support of coastal fishing community needs. Each staff recommendation (SR) is being evaluated using a draft standardized analytical approach that was presented to MRC in July 2020, which focuses evaluation around four categories: I. *Basic informational needs*; II. C*urrent regulatory and policy context*; III. P*otential Commission role*; and IV. C*osts and benefits*.

Overview of Staff Recommedation 3

This evaluation is for SR 3, to "approve specific, small-scale [fisheries] projects to test and evaluate proposed new approaches." As contextualized in the 2019 staff synthesis report, stakeholders have requested that the Commission allow for stakeholders and partners to develop small-scale projects and test new approaches in California fisheries, acknowledging that stakeholders, including fishing permit holders, can be key in helping to create, design and define these projects in consultation with the California Department of Fish and Wildlife (Department).

I. Basic Informational Needs

The first informational need to be met is identifying what different models or approaches could be employed to authorize new approaches on a small scale; this will require information gathering to determine how approaches could be implemented in compliance with statute, and how various approaches may affect staff time investment and collaborative investment from the Department and other agencies. Staff will also need to assess how different approaches affect or include different members of the community. For example, does this include industry representatives willing to volunteer without compensation? If fishing community members participate, is there a means to compensate them?

The second informational need is how these possible approaches fit into the California fishery context. It will be valuable to consult with fishing community members regarding their ideas for small-scale ideas or structures to test based on the concerns their specific communities are facing. Community members and Commission staff would then need feedback from Department managers regarding the feasibility of the proposed projects, adaptations to make them more feasible, and prospects of the project being an option for full implementation in the future if successful. A framework will need to be developed for how to evaluate ideas that

come forward, not just for the sake of testing concepts, but for their potential to help fishing communities and fisheries management adapt to meet emerging needs and challenges.

There are many external agencies and organizations, such as the California Ocean Protection Council (OPC), the California Ocean Science Trust, and NOAA Fisheries, that may provide relevant guidance or models for similar action. One program is the federal exempted fishing permit program considered through regional fishery management councils and administered by NOAA Fisheries. The program is managed on a region-by-region basis and covers fisheries under federal jurisdiction.

II. Current Regulatory and Policy Context

The new experimental fisheries permit (EFP) program, authorized through statute effective January 1, 2019, provides one readily-available pathway for the Commission to approve pilot projects without amending regulations. Such projects could, at an exploratory level, allow for departures from the Commission's policy on restricted access commercial fisheries or current fishing permit structures, which would otherwise require regulatory changes, or could provide opportunities for small-scale fishing designed to help fill information gaps consistent with guidance from the Marine Life Management Act master plan for fisheries. Regulatory frameworks for experimenting with different management structures may be preferred for projects that require longer time frames than allowed under the EFP program, but a regulatory approach is less flexible than the EFP program and requires more time and staff investment.

Development of the EFP program is still ongoing at the time of this writing, though a rulemaking is scheduled for 2021. This new program will provide a vehicle for exploring small-scale fishery projects through EFPs that allow compensatory fishing (i.e., selling catch) for experimental permit holders. There will be project-specific informational needs under this approach to clarify proposed goals and methods, assess feasibility with the Department, and think through implications relative to current management structures. EFPs are a vehicle that allows for more creatively testing ideas, in a manner that allows offsetting of participation costs through commercial sale of catch for commercial fisheries projects.

While the EFP program is an excellent step, the current proposed costs for experimental permits may be prohibitive for certain interested participants and, therefore, may make it challenging for some members of coastal fishing communities to participate without collaborators to help support the work. Staff discussions with industry members have shown that for this program to be a strong mechanism for exploring adaptation, the program may require a degree of flexibility to lower barriers to entry. Options for reducing costs under certain circumstances are being explored through the development of the rulemaking.

While new approaches and fishing opportunities could be be explored through EFPs, the Commission will need to consider the policy implications if tested approaches are implemented as long-term opportunities. Existing policies will need to be assessed for compatibility with the potential broader application and implementation of successful projects.

III. Potential Commission Role

The role of the Commission in this process will vary depending on the approach used. While the Commission has the ability to adopt regulations to allow new approaches in fisheries,

regulation development requires more time and lacks the uniform, defined structure per project of the EFP program. The EFP program provides the Commission a pathway to grant EFPs for fisheries within its purview upon adoption of regulations defining the program. The Commission has influence over how the EFP program is developed through the regulations it adopts, though implementation of the program in under the authority of the Department. The Commission will also play a role in determining which potential projects are granted permits. As the program is still in development, the Commission is positioned to provide guidance related to considerations of cost and structure for program participation.

Considering the potential for prohibitive costs, one indirect pathway to explore is collaboration among the Commission, potential permittees, and OPC or other funders. OPC's recently-released strategic plan for 2020-2025 includes a target to "implement pilot projects statewide to increase fishing communities' resiliency and adaptation to climate impacts by 2025", indicating it would be investing in the types projects envisioned in this recommendation. For projects the Commission deems valuable to explore for community resilience, but the permit costs make the project infeasible, the Commission could direct staff to seek to partner with OPC or other funders or assist potential permittees in applying for funding. For example, OPC recently funded experimental gear testing for commercial crab pop-up gear in partnership with the Department.

IV. Costs and Benefits

Adaptability

This recommendation could improve the Commission's ability to support adaptive management by allowing fishing community members to test and gain proof of concept for a wide variety of adaptive options and strategies. It could allow targeting of new species as their ranges change in response to climate, and allow for testing of new and more effective or sustainable gear types as they become available. If testing is successful, this could lead to longer term implementation of concepts through regulations adopted by the Commission. However, success hinges on a given community or community members testing options. Costs involved and time needed to procure a permit may be a limiting factor for how effective this can be at increasing adaptability. Options to assist with barriers to entry should be discussed.

Consistency

The Commission would need to be cautious about which projects it selects for testing under the auspices of this recommendation, and be mindful of those projects that explore options inconsistent with current fishery management structure, especially with respect to restricted access fisheries. For example, EFPs are not purely intended for research or to test new ideas; they are also designed to establish proof of concept for fishery strategies for potential long-term implementation. The Commission will need to be mindful of which projects it supports and approves for testing, as approving a project for a given fishery suggests that the Commission is willing to consider changes to the existing management structure for that fishery, including potentially restricted access fisheries. Such projects could raise concerns for those stakeholders whose livelihoods depend upon the fisheries as structured; those stakeholders should be active participants in discussions about any proposed projects. Reviewing the restricted access policy to see where there may be room for flexibility without undermining the

intent behind the policy, or investment by current fishery participants, should be considered before any testing relevant to restricted access species is granted.

Accessibility

This recommendation has the potential to increase accessibility. The fisheries for which accessibility is increased will depend upon the permits and tests approved, and impacts to species will be variable. The current EFP pathway accounts for this, as assessing those impacts is intended to be part of the scoping and research process inherent to EFPs. In terms of fishery participants, this recommendation has the potential increase accessibility on a number of levels. At the individual and community level, fishery participants would be able to pursue emerging gear types which may make access to existing fisheries more feasible when compared to a regulation change. The EFP program may allow exploration of new ways to allocate access to existing fisheries in new areas and potentially allow participants to pursue previously unexplored species as targets. Communities in southern California have been able to explore box crab as a new target species under EFPs. In general, this is likely to affect fishing communities positivily by diversifying their new portfolios via new access or new opportunities. In the short-term, the increase in accessibility would only be for EFP participants, but long-term changes resulting from the EFP program or other approaches to this recommendation may affect whole communities in a similar way.

Manageability

This recommendation would increase the management burden of the Department; this has already been observed in the development of the EFP approach. Under the EFP program as currently proposed, the increase in required management capacity depends upon the “tier” of the permit. Various “tiers” are proposed to be based on the different levels of oversight required, and some require direct oversight from the Department. Any expansions to the EFP program or additional pursuits under this recommendation outside of the EFP vehicle are likely to require the same. Testing of new gear needs to be verified and supervised in some way, and this responsibility would fall to the Department.

This recommendation may also introduce the potential for management changes that would cause concern among partners. For example, testing new methods in established restricted access fisheries is likely to cause concern to those who depend upon the existing restrictions. Additionally, introducing new gear types for testing may be a cause for concern for those invested in limiting the risk of potential bycatch and other gear impacts relative to California’s fisheries, yet provide a controlled environment for evaluating bycatch levels and gear impacts.

Affordability

Affordabilty/cost will depend on the approach pursued and the audience – whether Department, prospective participants, collaborators, or communities. Because the EFP program is the approach that is currently best defined, it is also the one for which costs are most predictable. If different approaches are developed or defined, affordability will need to be assessed for each of them.

The cost of Department and Commission staff admistering the EFP program will be significant, largely in the form of staff time investment. Commission staff will need to collaborate with the

Department to review and approve issuance of permits. Significant Department investment of both time and money is already required under the EFP program as proposed, especially for those permit tiers which require its direct oversight.

Further investment would be required from partners or fishing industry members, who will their own perspectives about affordability. The Department most recently presented details of the EFP program currently under development at the Marine Resources Committee's July 2020 meeting, where Department staff outlined a series of fees, as well as a technical evaluation, reporting, and review requirements, which will necessitate investment from interested partners. Investment in an experimental-scale project to test new approaches may lead to longer term financial productivity should the project be implemented into fisheries management.

Regulations establishing the EFP program are expected to be adopted this year (2021). Any changes or expansions to the program will likely come after, as the initial program will have to prove to be functioning before we can invest in potentially expanding its application. Any changes or expansions may require additional resource allocation as well, though the exact details of that are beyond the scope of this analysis.

Resilience

Long-term, this recommendation has significant potential to contribute to resilience, as testing new approaches may introduce ways by which fisheries and communities can increase resilience. As the EFP program is currently the best-defined approach, it is the approach for which potential impacts to resilience are most easily projected. The EFP program would initially affect accessibility on a small, permit-by-permit basis. Over time, that may scale up to introduction of new approaches on a broader fishery or geographic scale that would enhance resilience for both fisheries and fishery participants.

However, for the EFP program to have an initial impact on a given community, that community would need to obtain access to an experimental permit. This requires a great deal of initial investment in money, time, and work. That investment requirement means it will take time for this recommendation to build to a level where it can effectively improve resilience. Allowing adaptation to emerging species as climate changes shift ranges, granting communities new access, and testing gear could lead to programs that better support resilient fishing communities.

California Fish and Game Commission
Coastal Fishing Communities Project

DRAFT Analysis of Staff Recommendation 4
"Engage legislative staff to pursue adjustments to laws as ideas are refined, if warranted to support fishing communities."

March 5, 2021 Draft

Background

In 2019, the California Fish and Game Commission (Commission) Marine Resources Committee (MRC) received a final *Staff Synthesis Report on Coastal Fishing Communities Meetings, 2016-2018*, which included a list of ten staff-recommended options for potential Commission action in response to input received during the meetings. The staff recommendations were advanced as initial concepts, which MRC directed staff to more fully develop and evaluate to help guide the Commission in determining which, if any, to pursue in support of coastal fishing community needs. Each staff recommendation (SR) is being evaluated using a draft standardized analytical approach that was presented to MRC in July 2020, and which focuses evaluation around four categories: I. *Basic informational needs*; II. C*urrent regulatory and policy context*; III. P*otential Commission role*; and IV. C*osts and benefits*.

Overview of Staff Recommendation 4

This evaluation is for SR 4, to "engage legislative staff to pursue adjustments to laws as ideas are refined, if warranted to support fishing communities." As contextualized in the 2019 staff synthesis report, recognizing that some possible desired actions may be outside of Commission authority, the Commission may direct staff to partner with stakeholders, the Department, and non- governmental organizations (NGOs) to find appropriate issues and means of engaging with legislative staff.

I. Basic Informational Needs

This recommendation is intended to be one way in which the Commission could collaborate on issues that are outside the scope of its authority and was prompted in part by the recognition that, as the Commission charts its path to define actions to support fishing communities, it may discover there are certain desired options for which it does not have authority. Thus, Commission staff may be asked to reach out to legislative staff to explore options for obtaining an authority through legislation. This recommendation is for a long-term and ongoing qualitative course of action. The chief investment that will make implementation of this recommendation feasible is staff time, as it will redirect staff efforts to engage with the legislature and build engagement with outside parties interested in coordinating with the Commission on these efforts.

There are up-front information needs that must be met in order to provide the analysis necessary to define the Commission context for action. The Commission or its staff will need to define the terms and course of action: What statutes is/are the Commission trying to amend? Is the Commission going to be attempting to introduce bills, or supporting modifications to already-proposed bills? With which legislative staff should Commission staff coordinate? With which non-governmental organizations and other state agencies should the Commission work

to support the legislation? This recommendation will be subject-specific and triggered by specific circumstances, so each question would need to be answered each time a need is identified.

This recommendation will also require initial information-gathering from fishing community members in order to determine where there are statutory barriers to coastal fishing communities becoming more resilient. Staff would then be able to build our understanding of how they might need to be changed. Commissioners and staff consult with our legal counsel or the California Department of Fish and Wildlife's (Department) office of legislative affairs to determine which adjustments are feasible.

This recommendation is linked to SR 5 (coordinate with sister agencies), as both are ways in which the Commission could collaborate on issues that are outside the scope of its authority, and this recommendation will require engagement with sister agencies in addition to other outside entities. In addition, SR 3 (approve small-scale projects) will be facilitated through an experimental fishing permit (EFP) program, a result of legislation directly addressing issues relevant to this project.

Staff is not aware of any current efforts by other agencies to adjust state legislation relevant to coastal fishing communities. The Commission may wish to begin conferring with other agencies invested in coastal communities, such as the California Ocean Protection Council or the California Coastal Commission, to determine which may be interested in exploring pursuit of legislative changes in concert.

A legislative pathway would optimally only be explored by the Commission if other remedies are not available, and should be narrowly focused on those items for which there is broad and diverse support; this will minimize concerns from stakeholders and help limit the risk of extensive amendments while under legislative review. Thus, an important informational need for each topic is to gauge support for the potential changes from the vantage points of the Commission, Department, other agencies, tribes, stakeholders, and the legislature.

II. Current Regulatory and Policy Context

The Commission has an existing policy on legislation, which indicates that the Commission only takes a position on proposed legislation under extraordinary circumstances, so this staff recommendation will need to be pursued cautiously.

Issue-specific information-gathering as described above will be necessary to provide topic-specific regulatory and policy context. Even when the Commission can act without constraint, many of its stakeholders rely on existing policy, statutory, regulatory, and management structures, and count upon the Commission to act to the broadest extent possible within its existing authorities. The Commission will need to be cautious in any amendments it pursues and should apply legislative pursuit only when other options are limited and there is a broad base of support.

There is precedent for individual commissioners and staff to engage with legislative staff on the Commission's behalf for educational purposes, but limited precedent for staff directly pursuing legislative amendments in recent history. Commission engagement with legislators or

legislative staff in recent years has generally focused on helping identify the pros and cons as well as the costs and benefits of proposed legislation.

Commission staff currently engages in Joint Committee on Fisheries and Aquaculture hearings, including its Annual Zeke Grader Fisheries Forum, as a way of identifying areas of mutual interest that legislation may help support or facilitate; staff also confers with the committee's chief consultant and the Commission president often joins the Department's director at the committee meetings to give remarks. The Commission may wish to seek more active engagement in this committee and even suggest topics for hearings or forum agendas that would benefit from the mutual engagement of industry, the Department, the Commission, and legislators.

There are some tools in place that allow the Commission to modify laws indirectly. For example, the Marine Life Management Act (MLMA) gives Commission authority to override fisheries statutes through adoption of individual fishery management plans (FMPs) that adhere to standards set forth in the MLMA. Thus, FMPs are a powerful, existing tool that can be used on a fishery-specific basis.

There are specific instances of Commission-relevant projects that have been pursued through legislation, the first being the EFP Program (Phase II, currently in development; see SR 3 update) that was authorized through the Fisheries Innovation Act of 2018 (Assembly Bill 1573; Chapter 477, Statutes of 2018). The Commission was granted authority to approve EFPs, upon adoption of regulations, under a more flexible and comprehensive program than was otherwise possible under the previous experimental gear permit provisions. This legislation is an example of new law intended to provide the Commission and Department flexibility to authorize more broad experimental ventures, and is scheduled to be established through a rulemaking in 2021.

An additional example of identified needs being met through legislation is related to California halibut trawl vessel permits, which were previously only allowed to be transferred under narrow circumstances, until the Commission could adopt a restricted access program. In 2017, fishery participants raised concerns about difficulty upgrading or selling their vessels because of constraints on transferability. MRC hosted a discussion at the industry's request, and recommended that the Commission direct staff to work with the chief consultant to the Joint Committee on Fisheries and Aquaculture on a bill to ease transfer provisions until the adoption of a halibut fishery management plan by the Commission. Discussions led to the inclusion of specific provisions in the 2018 Fisheries Omnibus Bill (Senate Bill 1309; Chapter 985, Statutes of 2018) which repealed limitations on the circumstances under which a transfer may be authorized, among other provisions to increase flexibility. While small, this is an example of increasing flexibility within a state-managed restricted access fishery and reflecting legislative responsiveness to industry needs.

III. Potential Commission Role

While the Commission does not have authority to change legislation, except in limited circumstances, this recommendation identifies an avenue of influence. Asking Commission staff to engage with legislative staff is well within the Commission's authority.

The Commission has potential influence with partner organizations or sister coastal resource agencies. A coalition of agencies would be useful in lending weight to the pursuit of legislation, if interests are aligned. In fact, as the original 2019 staff synthesis report identifies, the Commission may direct staff to seek to partner with stakeholders, the Department, and non-governmental organizations (NGOs) under this recommendation. It is likely that staff would pursue these adjustments primarily by identifying statutory barriers and coalition-build with other entities and with the legislature, rather than the direct on-the-ground work of amending statute. Involvement from fishing community stakeholders will be particularly key for taking action under this recommendation. These individuals are the most likely to already be aware of areas that may require adjustment to benefit their communities. Consultation with them will may guide the Commission to issues which are affected be statute.

It is important to keep in mind that the Commission's limited role in legislation introduces risks to pursuing topics in this way. Once a bill is introduced in the legislature, it is subject to revisions during the course of a legislative session, which can lead to outcomes that either don't match the original intent, or add unforeseen burdens on the Commission or Department. The Commission can minimize the risks by only applying this recommendation to topics for which it has determined there is a broad and diverse base of support.

IV. Costs and Benefits

In this section, we evaluate necessary staff resources, scale of stakeholder investment, and time commitment, identify who generally may benefit from a given recommendation and consider what specific benefits are anticipated to fishing communities. To that end, assessment of costs and benefits of this SR, which is primarily qualitative in nature, is considered across six broad goals: adaptability, consistency, accessibility, manageability, affordability, and resilience.

Adaptability

Depending on the specific laws and amendments pursued, this recommendation would ideally improve the Commission's ability to put forward pathways to adapt management, thereby giving coastal fishing communities more options for flexibility.

Consistency

In the past, the Commission has not directly sponsored any bills, even ones which it strongly supports (for example, establishing the Tribal Committee in statute as a standing committee). Historically, the Commission has focused on draft bills introduced by other entities as opposed to working with legislators to initiate new bills. That said, staff have in the past met with interested legislative aids wanting to explore solutions jointly with Commission and Department leadership, usually based on stakeholder-prompted issues, especially when economic implications are at play. Directly pursuing amendments to legislation, even as part of a coalition or in concert with other agencies, would indicate a change in how the Commission addresses topics of interest. This could raise concerns with stakeholders who depend on existing legislative status. This is another reason why the Commission would need to carefully consider which topics it chose to pursue in this way, and may wish to only pursue issues through legislation when there is broad support or the topic is not controversial.

Accessibility

Any increases in accessibility to specific fisheries resulting from this recommendation would depend on the amendments to laws that are pursued. Front-end information gathering efforts will help illuminate to what extent statutory amendments could address accessibility, and pursuing increased accessibility could be defined as a priority by the Commission. However, this recommendation in itself does not address accessibility, so effects to specific communities or fisheries are not predictable.

Manageability

Depending on the laws and amendments pursued, this recommendation is most likely to affect the Department's management burden. To help ensure successful legislative efforts, the Department should continue to be consulted on any actions the Commission wishes to take under the auspices of this recommendation. If changes are made to any legislative proposals once they are before the legislature, the management burdens added to the Department and Commission may be greater than estimated here.

Pursuing management changes through legislature may cause concern among partner agencies and NGOs. Changes to existing laws and, therefore, existing programs and management structures may be perceived as a threat by those stakeholders who rely upon them. There is also the possibility that NGOs may view this as a form of de-regulation, which might raise concerns about existing conservation measures. To reiterate, this is another reason why the Commission may wish to only pursue issues through legislation when there is broad support.

Affordability

Acting on this recommendation could require considerable Commission staff time investment, both to engage with the legislature and to engage with outside entities as a part of legislative efforts. Legislative efforts are typically conducted by the executive director and the marine advisor; the soon-to-be-hired tribal advisor may also contribute. Further additional staff may be necessary to make both this recommendation feasible, as the workload of current staff is such that any new tasks associated with this recommendation would be difficult to act on without additional hands. Commission staff time investment would include external tasks such as meeting with legislative staff, stakeholders, and outside partners, and internal tasks such as defining desired amendments and potentially drafting language. However, the time investment may be unpredictable and, if bill proposals are amended in the legislature, the resulting burdens might be more than estimated here.

Commission effort on this recommendation is most likely to be successful if the Department is conferred with throughout. It is therefore important to consider affordability through the lens of their staff time as well, as they may have to allocate staff hours to the process of pursuing legislative amendments. Consultation with the Department should include discussions of this aspect, adjustments pursued may vary in the impact to their workload and therefore the investment required on their part.

A specific timeline and budget are undefined for this recommendation. This recommendation is intended to be a course of action that may be triggered at any point in time based upon

specific circumstances, rather than a single action, so it is difficult to assign a concrete timeline. Budgeting is a slightly different question. As noted above, for this recommendation to be effective, additional staff could be necessary, which would be a considerable monetary investment. However, through the service-based budgeting process, Commission leadership has already identified the additional staff members necessary to meet the Commission's mission; as such, this recommendation may become more feasible as staff are added, without requiring discrete additional funding.

Resilience

Similar to accessibility, any impact that this recommendation may have on resilience of coastal fishing communities depends on the laws and amendments pursued. Front-end information gathering efforts may show to what extent legislative amendments could promote resilience. Specific changes will need to be defined before socioeconomic impacts to communities or ecologically resilient fisheries can be determined. In some cases, legislative changes to Commission authorities could ultimately lead to improving economic prospects of individual fishing communities

California Fish and Game Commission
Coastal Fishing Communities Project

DRAFT Analysis of Staff Recommendation 5
"Direct staff to increase engagement and coordination with sister agencies when feasible on management decisions affecting California."

March 8, 2021 DRAFT

Background

In 2019, the California Fish and Game Commission (Commission) Marine Resources Committee (MRC) received a final *Staff Synthesis Report on Coastal Fishing Communities Meetings, 2016-2018*, which included a list of ten staff-recommended options for potential Commission action in response to input received during the meetings. The staff recommendations were advanced as initial concepts, which MRC directed staff to more fully develop and evaluate to help guide the Commission in determining which, if any, to pursue in support of coastal fishing community needs. Each staff recommendation (SR) is being evaluated using a draft standardized analytical approach that was presented to MRC in July 2020, and which focuses evaluation around four categories: I. *Basic informational needs*; II. C*urrent regulatory and policy context*; III. P*otential Commission role*; and IV. C*osts and benefits*.

Overview of Staff Recommendation 5

This evaluation is for SR 5, to "direct staff to increase engagement and coordination with sister agencies when feasible on management decisions affecting California." As contextualized in the 2019 staff synthesis report, Commission-related actions in isolation cannot meet all needs of coastal fishing communities, and decisions made by different coastal management authorities have a combined influence on the health of a coastal community.

Community members have requested deeper Commission engagement with coastal management agencies to urge them to consider potential impacts to California's coastal fishing communities in their decision-making. Sister agencies that fishing community members emphasized include the Pacific Fishery Management Council (PFMC) related to federal fisheries management decisions for the West Coast, and the California Coastal Commission, related to coastal development permit approvals to facilitate awareness and coordination on relevant topics and projects.

I. Basic Informational Needs

Commission regulations largely can shape what happens on the water, or the direct activities of fishermen and processors in pursuing, landing, and transporting catch in state fisheries under its authority. However, the viability and persistence of a coastal fishing community is not just dependent on those activities it is also dependent on federally managed fisheries, and on shoreside offloading, docking, mooring, storage, and infrastructure, which are governed by different agencies or authorities. Stakeholders have identified a preference that the Commission engage with other agencies that have specific laws requiring them to consider the needs of coastal fishing communities in their decision making, permitting, consideration of projects, and so forth.

The information needed to evaluate increasing engagement with sister agencies is qualitative in nature. There are certain agencies that the Commission works with regularly, and it is aware of shared concerns and how those agencies operate, though it may be useful to explore expanding on that understanding in this specific context, such as establishing regular discussions with those organizations about coastal fishing community-related initiatives. The Commission should also consider with which agencies it does not currently engage regularly, and where it could initiate or increase engagement. It would be worthwhile to seek out agencies with which the Commission does not have a history of engaging, but that are involved in these communities, and explore current projects and objectives that may be enhanced by Commission actions.

Avenues for increased engagement with existing and new sister agency partners could include writing letters, participating in board meetings, joining or fostering interagency workgroups, participating in workshops or other public-driven initiatives, attending stakeholder meetings relevant to coastal fishing communities, or joining standing committees. The Commission may also wish to investigate turning to partner organizations with greater resources, such as the California Ocean Protection Council (OPC), to convene discussions with groups of previously unengaged agencies, a strategy that has been used for other subjects.

This recommendation is closely linked to SR 4 (engage legislative staff), as both are ways in which the Commission could engage with other agencies on issues that are outside the scope of its authority. Coordination with sister agencies has occurred as part of actions taken on almost all other recommendations (SRs 1-4, 6-8). A policy under SR 1 could provide additional context for more specificity in what to pursue under this recommendation.

II. Current Commission Context

Previous Commission engagement with sister agencies has largely focused on fishery-specific management development per the Marine Life Management Act (MLMA) or based on legislative policy or directives in statute; the Commission has a history of partnering with multiple agencies in this context. The California Department of Fish and Wildlife (Department), most notably, is the Commission's closest partner and efforts between the two agencies are often synchronized. For example, the Department developed and the Commission adopted a master plan for fisheries in 2018. Chapter 11 ("Adapting to Climate Change") of the master plan focuses on how climate change may impact California's fisheries and management strategies for preparing to maintain resilient ecological and socioeconomic systems; this is just one lens through which the two agencies can continue to build cooperative efforts on projects relevant to coastal fishing communities.

This recommendation would focus engagement efforts at the coastal fishing communities scale. While the Commission has already begun additional engagement in response to the coastal fishing communities project, an example of an agency the Commission had not regularly and directly engaged relevant to this project is the California Coastal Commission (CCC). To justify protecting and prioritizing harbor infrastructure in coastal planning and development decisions, stakeholders have cited the California Coastal Act (Public Resources Code, Section 30000 et seq.), which has specific provisions for maintaining commercial fishing infrastructure in ports and harbors. In 2017, the Commission directed staff to draft and send a letter to CCC in response to requests from fishing community stakeholders who participated in the Commission's coastal fishing communities meetings. The letter urged CCC to consider fishing community infrastructure and economic needs when considering coastal development

projects. Further coordination between CCC and the Commission would enhance clarity on shared objectives.

Stakeholders have also previously sought increased coordination with federal efforts. PFMC is one of the key agencies with whom stakeholders have expressed a desire to see the Commission more actively engage. PFMC's Climate and Communities Initiative is an ongoing ecosystem-based management initiative contained within the *PFMC Fishery Ecosystem Plan* and is particularly relevant to this project.

In 2018, Commission staff participated in a scoping workshop for PFMC's Climate and Communities Initiative where an ad hoc committee of staff from the Commission, the Department, OPC, and the California Ocean Science Trust (OST) conferred about how best to engage each agency's specialized knowledge in climate change topics; the ad hoc committee also discussed how to leverage and influence federal momentum such that it could meet the needs of state-managed as well as federally-managed fisheries. The committee could be reconvened as this project moves forward to keep the four agencies updated on each other's work and identify areas for potential synergy. Commission staff has continued to meet with Department representatives to PFMC to find ways to harmonize PFMC's and the Commission's efforts, but Commission staff could further engage by sending staff to PFMC meetings.

As illustrated, the Commission has set precedent both for initiating new contact concerning coastal fishing communities and for building coastal fishing community interests into existing partnerships and projects.

III. Potential Commission Role

Initiating new outreach and building on existing relationships are both ways in which the Commission could effectively extend its support for coastal fishing communities to new avenues by leveraging engagement with partner agencies. The Commission has complete authority to act on this recommendation, as it has the prerogative to direct its staff at its discretion. To better understand what the Commission's role might be in new partnerships, it could direct staff to seek information about areas where partners see the opportunity to dovetail efforts or topics in which the Commission is not engaging but should.

The potential role of the Commission could be both direct (e.g., Commissioners or staff attending meetings of specific agencies, or sending letters) and indirect (directing staff to forge partnerships with staff of other agencies to elevate community-scale needs and interests in planning and decision-making contexts).

Several organizations with whom the Commission already engages have identified inter-agency collaboration as a priority, indicating that this recommendation is consistent with their priorities for their own work; the groundwork is therefore set for the Commission to increase its level of engagement with these organizations. Several documents released or supported by OPC call for interagency collaboration to meet its goals of sustainable fisheries and climate change mitigation. An OST report from a July 2019 workshop summarized concerns and potential management strategies to assist with coastal fishing community resilience under climate change, emphasizing the need to collaborate and increase coordination at a local level.

IV. Costs and Benefits

In this section, we evaluate necessary staff resources, scale of stakeholder investment, and time commitment, identify who generally may benefit from a given recommendation, and consider what specific benefits are anticipated to fishing communities. To that end, assessment of costs and benefits of this SR, which is primarily qualitative in nature, is considered across six broad goals: adaptability, consistency, accessibility, manageability, affordability, and resilience.

Adaptability

This recommendation could improve the Commission's ability to support adaptive management by providing a method for the Commission to have a greater voice in adaptive management measures not directly within its purview. It would also allow the Commission to advance strategies that are supported through the actions of other agencies and are, therefore, potentially more comprehensive.

Consistency

This recommendation aligns with previous actions and Commission stance. The Commission has previously taken small-scale actions that conform with this recommendation, so expanding these efforts would not reflect a shift in the Commission's actions.

In terms of formal policies or management structures, increased engagement with sister agencies does not run counter to any existing policy and is unlikely to lead to direct changes in existing, stable, management structures. There is always the possibility that the Commission could pursue policy or management changes in partnership with other agencies and could provide more direct input on courses of action for fisheries outside the Commission's purview that may impact California's coastal fishing communities. Based on direction to staff to date, it is more likely that synchronization of efforts would be used in areas of concern other than management structure (such as working with CCC on infrastructure needs or working with Sea Grant on encouraging new entrants into commercial fishing).

Accessibility

Increased engagement with sister agencies is unlikely to directly affect accessibility of a given fishery and, therefore, any impact to specific fisheries, species, or communities is not predictable. However, increasing access could be an effort pursued through increased coordination. In fact, any increases in access that the Commission may feel worthwhile to pursue may be more effectively pursued in partnership with other agencies. For example, increasing access to shore fishing areas valuable to underserved communities would be bolstered by partnerships with CCC, California State Parks, or local harbor districts.

Manageability

Increasing coordination efforts with sister agencies in itself is unlikely to directly affect the management burden of the Commission. Ideally, this recommendation would lead to long-term coordination efforts that would ease the regulatory and policy load for the Commission and management challenges for its partners. However, there is also the possibility that changes

pursued in partnership with other agencies may increase their management challenges, so open discussions will be a necessary piece of all new and existing partnerships.

On a case-by-case basis there may be specific management changes pursued in partnership with sister agencies that could cause concern for stakeholders; it will be important that the Commission become aware of those concerns by actively engaging stakeholders. At the same time, stakeholders have requested this course of action and, therefore, it seems unlikely that this action would raise significant concerns.

Affordability

This recommendation would require considerable Commission staff and/or commissioners' time investment. Any effort will fall to those commissioners and staff who regularly work in support of marine items. Most Commission staff already have a considerable workload that cannot be accomplished with existing resources. Constraints on available staff time to dedicate to sustained engagement with sister agencies, such as attending PFMC meetings, will determine what scale of engagement is feasible.

This recommendation will also require time investment from partners, which could be a considerable investment depending on staff and other resources they have available and the workload required for a feasible partnership. Topics pursued may also affect the staff time allocation of other entities in the long-term, and it is therefore important to consider affordability from that lens as well.

This recommendation will also require time investment from fishing community members, who are most likely to have a strong understanding of their own concerns and the agencies involved in addressing them. The Commission should consult with community members to reaffirm with which agencies they would like to see the Commission engage, recognizing it will change over time depending on the issue or concern at hand.

Budget and timeline are somewhat open-ended on this question. This recommendation is intended to be a course of action that may be triggered at any point in time based upon specific circumstances, rather than a single action, so it is difficult to assign a concrete timeline. Coordination is ideally a process that would start immediately and be ongoing. Budgeting is a slightly different question. For this to be effective, additional staff could be necessary, which would require considerable investment. However, through the service-based budgeting process, Commission leadership has already identified the additional staff members necessary to meet the Commission's mission; as such, this recommendation may become more feasible as staff are added, without requiring discrete additional funding.

Resilience

This recommendation would not have a direct effect on adaptability and socioeconomic resilience of coastal fishing communities, as this recommendation affects how actions are pursued and by whom more than which actions are pursued. Any indirect impact to adaptability and socioeconomic resilience is difficult to predict. Ideally, depending on the topics pursued and the agencies with which the Commission works, this recommendation will allow the Commission to pursue broader subjects and outcomes in partnership with sister agencies, which will more effectively help make communities adaptable and resilient.

California Fish and Game Commission
Coastal Fishing Communities Project

DRAFT Analysis of Staff Recommendation 8
"Survey communities, commercial and recreational fishers, and processors about their priorities for Commission focus."

March 8, 2021 DRAFT

Background

In 2019, the California Fish and Game Commission (Commission) Marine Resources Committee (MRC) received a final *Staff Synthesis Report on Coastal Fishing Communities Meetings, 2016-2018*, which included a list of ten staff-recommended options for potential Commission action in response to input received during the meetings. The staff recommendations were advanced as initial concepts, which MRC directed staff to more fully develop and evaluate to help guide the Commission in determining which, if any, to pursue in support of coastal fishing community needs. Each staff recommendation (SR) is being evaluated using a draft standardized analytical approach that was presented to MRC in July 2020, and which focuses evaluation around four categories: I. *Basic informational needs*; II. C*urrent regulatory and policy context*; III. P*otential Commission role*; and IV. C*osts and benefits*.

Overview of Staff Recommendation 8

This evaluation is for SR 8, to "survey communities, commercial and recreational fishers, and processors about their priorities for Commission focus." As contextualized in the 2019 staff synthesis report, this strategy could help refine understanding about the issues facing coastal fishing communities and priorities from their perspectives. Some stakeholders have criticized this idea as being too similar to the coastal fishing communities public meetings held in 2016-2018.

I. Basic Informational Needs

The first informational need for this recommendation is to understand options for how to survey community members. This evaluation focuses on a formalized survey with standardized questions, informed by how to design an effective survey for this audience. Consultation with an organization that has expertise in survey design and format would be necessary.

The Commission has had limited experience surveying stakeholders. In 2019, with feedback and guidance from California Department of Fish and Wildlife (Department) outreach experts, the Commission designed and conducted an online public survey regarding development of an updated strategic plan and input on Commission priorities. The online survey was combined with one-on-one interviews with select participants to dig more deeply into perspectives they represented. Similarly, in early 2013, the Commission conducted a survey of its stakeholders regarding updates to its website. In both cases, approximately three dozen individuals provided feedback via the online surveys that was helpful in advancing the projects.

A survey would be both a qualitative and a quantitative interest, depending on the questions the Commission wishes to answer and how the survey is designed. Numerical data could be statistically analyzed and may be useful for developing a baseline of knowledge or addressing certain concerns. Quantitative responses would also be informative, especially in comparison

to the initial information on community needs garnered from the coastal fishing community meetings held in 2016-2018.

The most recent work surveying fishing communities was during the 2016-2018 meetings, and through public comments solicited on the staff synthesis report findings and recommendations for potential Commission action. Some of the primary concerns and priorities highlighted by fishing community members during those meetings have been accounted for and addressed through other recommendations, notably concerns about the constraints of restricted access to adapting fishing (SR 2), the ability to respond to and engage in emerging fisheries (SR 3), and adaptable fishing permitting structures (SR 6). This recommendation is also tied to SR 10 (continue to develop an understanding of climate change impacts on fisheries and fishing communities) as surveying communities would assist in building a better understanding of their needs in response to climate change.

A survey could be either a short-term or a long-term effort, depending on how the Commission wishes to pursue it. A one-time survey may be more feasible as a short-term effort, but a recurring survey as a long-term tool might provide more in-depth data, which could better identify trends and needs over time.

There has been work by external agencies relevant to this recommendation. Some of the work has been active surveying, and some has been in support of outreaching, including surveying community members. At the state level, the California Natural Resources Agency's 2018 *Safeguarding California* report contains several next steps relevant to state-managed fisheries, including outreach to marine resource users. Staff at the state and regional water quality control boards have compiled a variety of shore-based subsistence angler fishing surveys conducted by several agencies over the past 20 years; while a report is not available at this time, Commission staff have been given access to the data. It would be worthwhile to reach out to other agencies with similar priorities to share information about any recent outreach survey work. Potential agencies to discuss surveys with are the California Ocean Protection Council, California Coastal Commission, and California Coastal Conservancy.

In the state but outside of government agency work, Humboldt State University researchers, Ecotrust, and Strategic Earth Consulting are currently conducting a study to assess port community well-being and socioeconomic conditions. The study will include outreach and surveying to collect qualitative data from fishing community leaders.

In the federal sphere, the Pacific Fishery Management Council (PFMC) has conducted directly-relevant outreach work related to its Climate and Communities Initiative. A January 2020 workshop developed in conjunction with The Nature Conservancy, Oregon, detailed a set of climate scenarios and potential fishery impacts. From mid-December 2020 to early February 2021, PFMC conducted four regionally-focused online workshops (https://www.pcouncil.org/climate-change-scenario-planning-series-of-online-workshops-various-dates-december-2020-through-february-2021/) to explore the potential fishery impacts under each climate change scenario developed in 2020 and to identify potential actions that PFMC and other stakeholders could take in response. The results, reported at the March 2021 PFMC meeting, are likely to provide a wealth of information that may satisfy portions of the inquiries intended by this staff recommendation (see PFMC meeting Agenda Item I.1, https://www.pcouncil.org/march-2021-briefing-book/#I).

II. Current Regulatory and Policy Context

Current policies, regulatory structures, and management plans are unlikely to affect or constrain this particular recommendation, as it is intended to be an outreach and information-gathering effort. This effort will likely inform the Commission of constraints and effects from existing structures, depending on the extent and depth of feedback received from community members.

Relevant to this project, the 2016-2018 statewide coastal fishing community meetings were a first step in what this recommendation suggests; this recommendation could be considered an extension of those initial efforts. It may be useful to note that the Commission's justice, equity, diversity, and inclusion (JEDI) work plan also calls for a survey of stakeholders, so it may be possible to synergize survey design or implementation consultation efforts. Furthermore, extending the survey efforts to a broader range of stakeholders may complement the Commission's current JEDI initiative.

III. Potential Commission Role

The Commission can choose to direct its staff to undertake information-gathering efforts. This could be an effort exclusively conducted by Commission staff and is therefore directly within the Commission's jurisdiction. Alternatively, if the Commission wishes, this is a recommendation that could be explored for opportunities to work with sister agencies and other potential partners to help design and distribute materials or conduct virtual and online surveys. For example, the Department or the California Ocean Protection Council may have an interest in the information that could be gathered in such surveys; their efforts may also allow efforts to reach a broader range of stakeholders. Additionally, the Department has experience conducting surveys and is likely to have prior expertise or lessons learned that may be useful in this effort.

IV. Costs and Benefits

Adaptability

An information-gathering effort such as this would not have a direct impact on the Commission's ability to support adaptive management measures; however, it would keep the Commission better informed about management needs, which potentially could then be addressed with adaptive solutions. This recommendation is one method by which coastal fishing communities can make the Commission aware of management options they would like to have available to them, allowing the Commission to investigate its ability to act on those options.

Consistency

An information-gathering effort would not directly lead to changes in management structures. However, it may make the Commission aware of concerns with current management structures and adjustments that could be made that may lead to long-term change. This recommendation is also consistent with existing Commission policies and previous Commission actions, and could be considered an extension of previous outreach efforts. While the recommendation reflects a consistency in effort and an expansion to this project that

stakeholders may appreciate, it could also be perceived as never-ending gathering of information without action.

Accessibility

Similar to adaptability, this recommendation does not in itself affect accessibility. However, the results of this effort may make the Commission aware of ways in which accessibility could be improved, and areas in which stakeholders might wish to see access increased. The potential effect to fisheries, species, or communities is not predictable and will depend on responses received from community members.

Manageability

In terms of management burden, this recommendation is unlikely to have a direct effect on the Department, except that the Commission may seek the Department's consultation in outreach effort and survey design and implementation. Depending on the feedback received from coastal fishing communities, changes resulting from what the Commission learns may increase management burden long-term. This recommendation in itself will not introduce or change any management structures that will cause concern with sister agencies or other partners, though the feedback received may lead to proposals for change.

Affordability

This recommendation would require considerable Commission staff time investment. Whether this action ultimately includes a virtual survey, or active visits to communities to discuss concerns with community members, outreach design, distribution, analysis, and so forth would all require staff time. Any effort would likely fall to staff who regularly work in support of marine items. For this recommendation to be feasible on a large scale in the near-term, additional resources would likely be necessary.

This recommendation would not necessarily require a great deal of investment from the Department, though its assistance would be invaluable in a number of ways. In general, investment from sister agencies and partners could be extremely valuable and desirable for this recommendation. The Commission should seek input from sister agencies and partner organizations with experience in this kind of effort in order to capture the information and feedback that will be most useful collectively. The Commission may also wish to engage sister agencies and partners in reaching a broader audience, consistent with the Commission's current JEDI initiative. Staff have re-engaged with some invested stakeholders on the fishing communities project, and the Commission may wish to explore interest and potential further engagement with them on this recommendation.

In addition to staff time investment, the budget for this recommendation would ideally include hiring a consultant for outreach and/or survey design, implementation, and analysis, which would clearly require funding. Furthermore, if the Commission wishes to reach a broader stakeholder audience, this project would benefit from consultation with outdoors organizations that focus on non-traditional participants. These considerations add up to what could be a substantial budget. If the Commission chooses to avoid more substantial costs and not pursue a significant breadth of survey work, this recommendation would likely be repetitious of the 2016-2018 survey effort.

Depending on the type of surveying conducted and the breadth of outreach desired, the timeline for this recommendation will be variable. Similar to the initial statewide meetings, this recommendation could take up to two years to be conducted with maximal depth and breadth. If staff are directed to undertake this recommendation at a less intensive level and an increased budget is not allocated, the timeline could be extended due to the already considerable staff workload, and likely with limited benefit beyond what was captured through the 2016-2018 effort.

Resilience

Similar to adaptability and accessibility, this recommendation would not have a direct effect on resilience itself. Ideally, this effort would allow communities to voice concerns about adaptability and socioeconomic resilience and allow staff to explore and discuss options for building resilience with community members. It would assist in making the Commission aware of community economic concerns and how communities see themselves improving their economic prospects. While this particular recommendation might not promote ecologically resilient fisheries on its face, resilience requires adaptation and balance, and this recommendation would inform the Commission of how and where adaptation is desired and needed.

Item 6

Staff Recommendation
February 16, 2021

Consideration of Authorization to Disburse Funds for Marine Protected Area (MPA) Long-Term Monitoring and Data Analysis in Support of the 2022 Adaptive Management Review

Lindsay Bonito, Marine Protected Areas Program Manager
Matthew Warham, Marine Protected Areas Sea Grant Fellow

RECOMMENDED ACTION: Authorization to disburse up to $5,805,500 to support marine protected area (MPA) long-term monitoring and data analysis in support of the 2022 adaptive management review.

6.a. Up to $5,305,500 to the Regents of the University of California San Diego/California Sea Grant to fund statewide academic research consortiums for continued ecological monitoring in 2021-2022, as described in 6.a.1- 6.a.4 below. Up to $90,000 of this total will support Sea Grant's administration of these monitoring projects.

6.a.1 Up to $843,500 to the University of California (UC) Santa Cruz for rocky intertidal habitats;

6.a.2 Up to $1,835,500 to UC Santa Cruz for kelp forest/shallow rocky reef habitats;

6.a.3 Up to $1,735,500 to San Jose State University for deep rocky reef habitats;

6.a.4 Up to $801,000 to UC Santa Barbara for sandy beach/surf zone habitats;

6.b. Up to $500,000 to the National Center for Ecological Analysis and Synthesis (NCEAS), based at UC Santa Barbara, to conduct analysis and synthesis of MPA monitoring data.

LOCATION: Statewide

STRATEGIC PLAN OBJECTIVE(S): Goal 3: Enhance Coastal and Marine Biodiversity; Target 3.3.1 and associated actions.

EXHIBITS:
Exhibit A: Letter(s) of Support

FINDINGS AND RESOLUTION:

Staff recommends that the Ocean Protection Council (OPC) adopt the following findings:

> "Based on the accompanying staff report and attached exhibit(s), OPC hereby finds that:
>
> 1) The proposed projects are consistent with the purposes of Division 26.5 of the Public Resources Code, the Ocean Protection Act; and
> 2) The proposed projects are not 'legal projects' that trigger the California Environmental Quality Act (CEQA) pursuant to Public Resources Code section, section 15378."

Staff further recommends that OPC adopt the following resolution pursuant to Sections 35500 *et seq.* of the Public Resources Code:

"OPC hereby approves the disbursement of up to $5,805,500 to the following amounts to the following grantees to continue long-term marine protected area (MPA) monitoring projects and data synthesis and evaluation:

- Up to $5,305,500 to the Regents of the University of California San Diego/California Sea Grant to fund statewide academic research consortiums for continued ecological monitoring in 2021-2022, as described below. Up to $90,000 of this total will support Sea Grant's administration of these monitoring projects.
    - Up to $843,500 to the University of California (UC) Santa Cruz for rocky intertidal habitats
    - Up to $1,835,500 to UC Santa Cruz for kelp forest/shallow rocky reef habitats
    - Up to $1,735,500 to San Jose State University for deep rocky reef habitats
    - Up to $801,000 to UC Santa Barbara for sandy beach/surf zone habitats
- Up to $500,000 to the National Center for Ecological Analysis and Synthesis to conduct data synthesis and integrative analyses of MPA monitoring data.

This authorization is subject to the condition that prior to disbursement of funds, the grantees listed above shall submit for the review and approval of the Executive Director of the OPC detailed work plans, schedules, staff requirements, budgets, and the names of any contractors intended to be used to complete the projects, as well as discrete deliverables that can be produced in intervals to ensure the projects are on target for successful completion. All projects will be developed under a shared understanding of process, management and delivery."

EXECUTIVE SUMMARY:

Staff recommends that OPC approve funding for continued ecological monitoring of California's marine protected area (MPA) network in four key habitats: sandy beach/surf zone, rocky intertidal, kelp forest/shallow rocky reef, and deep rocky reef. Consistent with Target 3.1.1 of OPC's Strategic Plan[1], this work will ensure continued data collection through the first decadal management review of California's MPA network in 2022, and will

[1] Strategic Plan to Protect California's Coast & Ocean (2020-2025)

minimize gaps in the long-term time series for MPA monitoring data. Building on previous funding from OPC, monitoring groups will continue to track priority ecological metrics (e.g. indicator species abundance, biomass, and diversity) both inside and outside MPAs. Additional support to California Sea Grant is recommended to continue the administration of the long-term monitoring projects.

Staff further recommends that the Council approve an MPA monitoring data analysis and synthesis project. Long-term monitoring project teams are currently working to address MPA performance evaluation questions outlined in California's MPA Monitoring Action Plan[2]; however, these efforts are largely focused on individual habitats. This project will integrate datasets and analyses to address broader-scale MPA performance evaluation questions. This work will be guided by the MPA Monitoring Action Plan and the recommendations of the Decadal Evaluation Working Group[3], and will be undertaken in close coordination with long-term MPA monitoring PIs.

These projects will identify data gaps within the current monitoring framework in the near-term to inform the decadal review, as well as provide recommendations for the future of MPA monitoring and performance evaluation beyond the 2022 review. Together, these efforts will provide the state with critical information on MPA performance that will inform adaptive management of California's MPAs into the future, helping to ensure a successful management review of the MPA network in 2022 and contributing to broader state priorities such as sustainable fisheries and climate resilience.

PROJECT SUMMARY:

Acknowledging the importance of California's marine resources to the state's economy and ecological systems, the California Legislature passed the Marine Life Protection Act (MLPA) in 1999. This legislation required the state to design and implement a network of MPAs to meet the following six goals:

1. Protect the natural diversity and abundance of marine life, and the structure, function and integrity of marine ecosystems.
2. Help sustain, conserve and protect marine life populations, including those of economic value, and rebuild those that are depleted.
3. Improve recreational, educational and study opportunities provided by marine ecosystems that are subject to minimal human disturbance, and to manage these uses in a manner consistent with protecting biodiversity.
4. Protect marine natural heritage, including protection of representative and unique marine life habitats in CA waters for their intrinsic values.
5. Ensure California's MPAs have clearly defined objectives, effective management measures and adequate enforcement and are based on sound scientific guidelines.
6. Ensure the State's MPAs are designed and managed, to the extent possible, as a network.

[2] https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=161748&inline

[3] https://opc.ca.gov/webmaster/ftp/pdf/agenda_items/20190523/Item3d_OPC-SAT-Working-Groups-focusing-on-MPA-Science-Needs_FINAL.pdf

Guided by these goals, California has established a globally significant MPA network that consists of 124 individual MPAs and spans the state's entire 1,100-mile coastline. Management of the statewide MPA network is guided by the 2016 Master Plan for Marine Protected Areas[4] (Master Plan), which establishes a decadal, network-wide management review cycle for MPAs. The first such review is currently scheduled for December 2022. This review will evaluate MPA performance against the six goals of the MLPA and will be informed by a variety of data and information streams including both baseline and long-term MPA monitoring.

To guide long-term MPA monitoring, CDFW has created an MPA Monitoring Action Plan[5] (Action Plan) that lays out priority metrics, habitats, sites, and species to focus on for long-term monitoring. The Action Plan underwent a simultaneous peer review and public comment process during summer 2018 and was formally adopted by OPC and the California Fish and Game Commission (FGC) in fall 2018. In the spring of 2019, OPC funded several long-term MPA monitoring projects[6] that are grounded in the Action Plan. These monitoring projects are currently underway, but some have concluded field-based data collection due to funding constraints. In an effort to minimize gaps in time series data and ensure that the 2022 review process is informed by best available science, staff recommends four of the habitat monitoring projects be extended to allow for data collection in 2021 and 2022. These four projects are described in more detail below.

The primary goal of the recommended MPA analysis and synthesis project is to perform analyses that address critical MPA performance evaluation questions, guided by the Action Plan and the recommendations of two OPC Science Advisory Team Working Groups, and working in close coordination with long-term MPA monitoring PIs. Beginning in 2019, OPC and CDFW have supported two Working Groups of the OPC SAT: (1) 2022 MPA Management Review Scientific Guidance and (2) MPAs and Climate Resilience Science Synthesis and Data Needs. The goal of the 2022 MPA Working Group is to translate the goals of the MLPA into scientifically tractable questions and associated analytical approaches, building on the Action Plan (in particular Appendix B). The aim of the Climate and MPAs Working Group is to assess the role of MPAs in providing climate resilience. The recommendations of both Working Groups are anticipated by Spring 2021, with key findings being shared with OPC at this February meeting. The Working Group reports will provide a strong foundation for NCEAS to identify relevant data sources, develop an analysis plan, prioritize analyses to be addressed, conduct analyses, and develop products for inclusion in the 2022 review. The project will also collaborate with an MPA communications contractor to develop appropriate messaging, written materials, talking points, and visuals to share with stakeholders and decision-makers.

The extension of long-term monitoring projects in key habitats is critical to inform and evaluate MPA network performance, particularly in light of the decadal review. The integrative analysis across habitats, systems, and the MPA network will provide essential

[4] https://wildlife.ca.gov/Conservation/Marine/MPAs/Master-Plan

[5] https://wildlife.ca.gov/Conservation/Marine/MPAs/Management/Monitoring/Action-Plan

[6] www.opc.ca.gov/webmaster/ftp/pdf/agenda_items/20190523/Item3a_MPA_Longterm_Monitoring_Projects_FINAL.pdf

synthesis of varying data streams and provide the best science-based understanding of MPA performance. These projects will continue OPC's support for the long-term success of California's MPAs and will ensure that the state is prepared for the MPA network's first management review in 2022 and beyond. Individual project summaries follow below.

Project Timeline (for all projects)
February 2021 - March 2023

Projects 6.a.1 - 6.a.4: $5,305,500 to Regents of the University of California San Diego, California Sea Grant to fund statewide academic research consortiums for continued habitat-based ecological monitoring priorities for 2021-2022

Background

California's MPA monitoring program supports a partnership-based approach to leverage existing capacity and collect data statewide. Staff is recommending that additional funding for ecological monitoring be awarded to statewide research consortiums of PIs from multiple institutions or organizations, organized around the following important coastal and marine habitat types: rocky intertidal, sandy beach/surf zone, kelp forest/shallow rocky reef (0-30 meters depth), and deep rocky reef (> 30 meters depth). Monitoring teams for each of the following two-year projects will collect data at Tier I MPA sites[7] and associated reference sites for two field seasons (2021 and 2022), unless otherwise specified, as well as Tier II and III MPA sites as capacity and budget permit. Staff also recommends that the habitat monitoring teams be funded at a level similar to previously awarded amounts[8] for the upcoming 2021 field season, with a reduced budget for sampling in 2022. The reduced sampling effort in 2022 will be informed by 2021 field season results and will allow for critical ongoing data collection while future long-term monitoring priorities are identified. For the purposes of this staff recommendation, "biological data," "environmental data," and "human use data" should be interpreted to mean data collected to address the priority measures and metrics listed in the Action Plan. Examples of such data include organism counts, organism sizes, pH/dissolved oxygen measurements, etc.

In July 2018, California Sea Grant was selected to administer a competitive process to solicit and fund MPA monitoring and data analysis projects. In May 2019, OPC approved the selection of seven long-term MPA monitoring projects that are grounded in the state's MPA Monitoring Action Plan and were selected through a competitive grant process administered by California Sea Grant. A subset of these long-term monitoring projects have concluded field-based data collection. By extending the previously funded grant with California Sea Grant, monitoring programs can continue to collect critical data during the 2021-2022 field seasons.

About the Grantee

[7] The Action Plan prioritizes long-term MPA monitoring sites by identifying tiers: required (Tier I), secondary (Tier II), and tertiary (Tier III). These monitoring priority tiers, which are based on best available science, will enable efficient data collection by researchers while still allowing for a broad evaluation of network performance by CDFW

[8] www.opc.ca.gov/webmaster/ftp/pdf/agenda_items/20190523/Item3a_MPA_Longterm_Monitoring_Projects_FINAL.pdf

California Sea Grant has an established, highly respected process for evaluating, prioritizing, and administering research grants related to coastal and ocean resources and has a proven track record of supporting state agencies' research efforts. California Sea Grant is experienced at managing large contracts and grants, has excellent knowledge of and familiarity with the state's scientific community, and has successfully managed other solicitation and award efforts on behalf of OPC.

Project 6.a.1: $843,500 to UC Santa Cruz for rocky intertidal habitat monitoring

Background
California's rocky intertidal habitats are highly biodiverse, hosting a variety of ecologically and economically important plants and animals. The rocky intertidal also provides significant recreational, cultural, and economic value to the people of California, including California's tribes. However, rocky intertidal habitats are also seriously threatened by a variety of local and regional anthropogenic disturbances, including overexploitation, pollution, habitat destruction, and invasive species; they are also particularly susceptible to climate related impacts. These disturbances are especially concerning given the extreme rarity of rocky intertidal habitat in California (less than 5 square kilometers total statewide). Because of these concerns, rocky intertidal habitats were targeted for protection in the Marine Life Protection Act Master Plan and are listed as a priority in the Action Plan.

Project Summary
Specific objectives include:

- Collect additional biological and environmental data in Tier I MPAs and at associated reference sites, according to standardized protocols established by the Multi-Agency Rocky Intertidal Network (MARINe), which has been monitoring rocky intertidal habitats on the U.S. west coast since the 1980s. Conduct analyses using both historical and new data to assess individual MPA effects as well as network-wide effects in intertidal communities.

About the Grantee
This project is a collaboration between UC Santa Cruz (lead institution), MARINe, UC Santa Barbara, Cal Poly Pomona, Cal State Fullerton, and the National Park Service. This team has several decades of experience conducting research in rocky intertidal systems both in California and around the world; the PIs are global leaders in designing, implementing, and managing long-term rocky intertidal monitoring programs.

Project 6.a.2: $1,835,500 to UC Santa Cruz for kelp forest/shallow reef habitat monitoring

Background:

Kelp forests and shallow rocky reefs (0-30 meters depth) represent some of California's most iconic nearshore marine ecosystems. They support ecologically, economically, and culturally important native species. They also provide valuable ecosystem services to millions of Californians, including tourism and nearshore recreational and commercial fisheries. For these reasons, kelp forest and shallow rocky reef habitats were targeted for protection in the Marine Life Protection Act Master Plan and are listed as a priority in the MPA Monitoring Action Plan. Continued monitoring of kelp forest ecosystems is especially important to the state given the recent dramatic declines in both bull kelp (*Nereocystis luetkeana*) on California's north coast, and giant kelp (*Macrocystis pyrifera*) on California's central and south coasts, which have resulted in significant adverse ecological and economic impacts.

Project Summary:
This project will accomplish the following objectives:

- Collect biological data via SCUBA transect surveys in Tier I MPAs and at associated reference sites, according to standardized protocols established by the Partnership for Interdisciplinary Studies of Coastal Oceans (PISCO), a long-term ecosystem-based scientific monitoring program involving marine scientists from four U.S. west coast universities, as well as Reef Check California (RCCA), a citizen science program that trains volunteer SCUBA divers to collect biological data. Conduct integrative analyses using historical and new data to assess trends in kelp forest and shallow rock communities

About the Grantee:
This project is a collaboration between UC Santa Cruz (lead institution), UC Santa Barbara, UC Los Angeles, PISCO, RCCA, the Vantuna Research Group/Occidental College, the Monterey Bay Aquarium Research Institute, and Humboldt State University. This project team includes researchers with significant experience in kelp forest research, including long-term monitoring. This group has been involved with California's MPA network since the passage of the Marine Life Protection Act in 1999 and includes experts in related disciplines (remote sensing, ocean acidification/hypoxia, and citizen science) to further enhance the scope of data collection and analysis.

Project 6.a.3: $1,735,500 to San Jose State University for deep rocky reef habitat monitoring

Background
Deep rocky reef habitats (> 30 meters depth) represent at least 75% of all marine habitats in California state waters by area. Deep rocky banks and outcroppings, underwater pinnacles, and submarine canyons support a high diversity of ecologically and economically important fish and invertebrate species, including many species that CDFW has determined are likely to benefit from MPA establishment. These habitats also experience a much greater likelihood of habitat alteration than nearshore habitats due to the heavy use of trawls, longlines, and gillnets in deep water. However, despite the prevalence of these habitats, their ecological and economic importance, and their

threatened nature, little is known about them due to the difficulties associated with sampling in deeper water.

Project Summary:
This project will accomplish the following objectives:

- Conduct ROV and drop camera surveys to collect biological data in Tier I MPAs and associated reference sites.
- Synthesize analyses of historical data with analyses of newly collected data to provide a comprehensive assessment of deep rocky reef ecosystem health across the MPA network.

About the Grantee
This project is a collaboration between San Jose State University (lead institution), California State University Monterey Bay, Humboldt State University, UC Santa Barbara, and Marine Applied Research and Exploration. The PIs on this project are experts in the design, monitoring, and evaluation of California's MPAs. They bring over 100 years of cumulative experience sampling in deepwater habitats both in California and around the world.

Project 6.a.4: $801,000 to UC Santa Barbara for sandy beach/surf zone habitat monitoring

Background:
Sandy beaches and their associated surf zones are significant components of California's coastline. These habitats host a variety of native species, including fishes, invertebrates, and birds. Sandy beaches are also ecologically linked to offshore habitats, especially kelp forests and shallow rocky reefs. Finally, these habitats are heavily used by millions of Californians each year for recreation. Therefore, although soft-bottom habitats were not prioritized for monitoring in the Action Plan, sandy beaches and surf zones are important systems for the state to consider in long-term MPA monitoring and adaptive management of the MPA network.

Project Summary:
Specific objectives include:

- Conduct standardized transect surveys at beaches inside Tier I MPA sites and associated reference sites to collect key biological and environmental data, including the following:
    - Abundance, species composition, and size structure of birds, macrophyte wrack, and surf zone fishes
    - Physical characteristics of beach and surf zone habitats
    - Human uses, including shore-based fishing

About the Grantee
This project is a collaboration between UC Santa Barbara (lead institution), the Greater Farallones Association Beach Watch Group, Humboldt State University, Point Blue

Conservation Science, and San Jose State University. This research team includes 13 highly qualified PIs and affiliated researchers who have extensive experience leading active field research programs focused on sandy beach and surf zone habitats, as well as prior experience with MPA baseline monitoring in these systems.

Project 6.b: $500,000 to the National Center for Ecological Synthesis and Analysis to conduct data synthesis and integrative analyses of MPA monitoring data

Background
Significant investment has been made on behalf of the state to implement and support both baseline and long-term monitoring efforts statewide. To best assist the Fish and Game Commission, California Department of Fish and Wildlife and OPC for the upcoming 2022 MPA network management review, analyses are needed to integrate baseline and long-term datasets, explicitly incorporate influencing factors (e.g. climate change) into MPA performance evaluation, and address network evaluation questions not currently being addressed by monitoring groups or the state.

Project Summary

This project will integrate existing analyses and perform new analyses as needed to provide answers to MPA performance evaluation questions outlined in Appendix B of the Action Plan and refined by the Decadal Evaluation Working Group (DEWG), a working group of the OPC Science Advisory Team. In support of adaptive management, the project will also evaluate and provide updated recommendations to the MPA design criteria established during the creation of the MPA network. This project will also coordinate with state MPA program staff and an MPA communications contractor to help develop products for the 2022 MPA management review.

Specific objectives include:

- Identify patterns and trends emerging from existing data streams and analytical products, including baseline and long-term MPA monitoring projects.
    - Integrate across habitats
    - Integrate across the statewide network
    - Integrate across social-ecological systems
- Incorporate influencing factors (e.g. climate change, environmental conditions, historical fishing pressure) into analyses related to MPA performance evaluation.
- Explore MPA performance evaluation questions that are not currently being addressed, but for which sufficient data exist to conduct analyses.
- Evaluate MPA design criteria using best available science and cutting-edge analytical approaches.

About the Grantee
The National Center for Ecological Analysis and Synthesis (NCEAS) is an independent research affiliate of the University of California Santa Barbara. NCEAS applies a solutions-oriented approach through synthesizing existing data sources, facilitating scientific

collaborations among researchers with diverse expertise, and advancing transparent science that is accessible to both the scientific community and the greater public.

Project Timeline
February 2021 - March 2023

PROJECT FINANCING:

Staff recommends that the Ocean Protection Council (OPC) authorize encumbrance of up to $5,805,000 to grantees listed above to conduct the projects summarized above.

Ocean Protection Council	$5,805,500
Regents of the University of California San Diego, California Sea Grant	$5,305,500
• *Regents of the UC San Diego, California Sea Grant - administrative costs*	*$90,000*
• *UC Santa Cruz – rocky intertidal habitat monitoring*	*$843,500*
• *UC Santa Cruz – kelp forest/shallow rocky reef habitat monitoring*	*$1,835,500*
• *San Jose State University – deep rocky reef habitat monitoring*	*$1,735,500*
• *UC Santa Barbara – sandy beach/surf zone habitat monitoring*	*$801,000*
National Center for Ecological Synthesis and Analysis - data synthesis and integrative analyses of MPA monitoring data	$500,000
TOTAL	**$5,805,500**

Funding for these projects aggregates funds from three sources designated to support continued MPA monitoring and analyses. The anticipated source of funds will be:

- FY 19/20 MPA General Fund - $450,000
- FY 20/21 MPA General Fund - $811,885.50
- FY 21/22 MPA General Fund - $2,050,000
- FY 20/21 OTC - $1,246,807.25
- FY 18/19 Prop 68, Ch. 9 - $1,246,807.25

General Fund Appropriation. In 2015, the California state legislature allocated a $2.5 million annual General Fund appropriation to the Secretary for Natural Resources to support the Statewide MPA Monitoring Program. The monitoring and analysis projects are consistent with the goals of the state's MPA monitoring program by continuing monitoring efforts and subsequent data analyses.

Once-Through Cooling Interim Mitigation funds. These funds are derived from payments made by power plants still using OTC technology as mitigation until they come into

compliance as mandated by the State Water Resources Control Board's Water Quality Control Policy on the Use of Coastal and Estuarine Waters for Power Plant Cooling. This project aligns with OTC Policy since MPAs have the potential to offset some negative ecological impacts caused by OTC systems.

Proposition 68, Chapter 9 funds. These funds are reserved for projects that "conserve, protect, and restore marine wildlife and healthy ocean and coastal ecosystems with a focus on the state's system of marine protected areas and sustainable fisheries". These recommended projects directly contribute to conserving California's marine resources, specifically within MPAs, by collecting and analyzing monitoring data to support adaptive management.

CONSISTENCY WITH THE OPC'S STRATEGIC PLAN:

These projects implement Objective 3.1: Protect and Restore Coastal and Marine Ecosystems. Specifically, by supporting one of the core components of the Statewide MPA Monitoring Program, this project will address two key action items under Objective 3.1: 1) Fund and manage statewide ecological and socioeconomic monitoring of the MPA network in preparation for the ten-year MPA management review in 2022, and 2) With partners, identify and fund cost-effective strategies to continue MPA monitoring beyond 2022.

COMPLIANCE WITH THE CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA):

The proposed project is categorically exempt from review under the California Environmental Quality Act ("CEQA") pursuant to 14 Cal. Code of Regulations Section 15306 because the project involves only data collection, research and resource evaluation activities that will not result in a serious or major disturbance to an environmental resource.

MARINE REGION

2020 YEAR IN REVIEW

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CDFW diver Thomas Reviea holding abalone shells in 1963. CDFW diver Jenny Hoffmeister holding captive raised white abalone in 2020.

150 YEARS

CDFW scientific aid Dane McDermott dock sampling in 2019. CDFW warden talking with fishermen decades ago.

Message from the Regional Manager

2020 was a very difficult year. The COVID-19 pandemic turned our personal and professional lives upside down, we endured the worst fire season in California's history, and we experienced a politically divided culture and period of social unrest that rivals anything we have seen in a generation. While many suffered through extended periods of fear, grief, and hardship, the events of 2020 also brought out amazing feats of achievement, perseverance, unity, and success.

Time and time again, we heard about acts of heroism by our medical frontline workers, fire and law enforcement personnel, and those at the forefront of the fight against racial inequality and social injustice. At the same time, we observed heroic acts of our colleagues, friends, and family as we Zoomed our kids to school, helped others in need, and made sacrifices to curb the spread of COVID-19. I wish to specifically thank and acknowledge the heroic work of those who heeded the call to serve as contact tracers to help stem the spread of COVID-19, especially Marine Region staff *Loni Adams, Tracey Farrelly-Sims, Cindy LaFontaine, Brian Owens, Elizabeth Pope, Mike Prall, and Kim Walker.* I also wish to thank our dedicated administrative team who remained in the office as essential workers – often by themselves in empty buildings – to literally keep the lights on, keep our packages and mail moving, and ensure our remote workforce was able to continue to do their jobs.

The unique events of 2020 shaped much of our work in Marine Region. We closely tracked and responded to the dramatic shifts in commercial and recreational fishing activity as behavior changed in response to the pandemic. We curtailed our field work and sampling programs to only focus on the most essential needs and developed new protocols and procedures to ensure the critical work could continue in a COVID-safe manner. In response to passage of the federal CARES Act, we quickly mobilized leadership across all commercial sectors to develop a spend plan and allocate the $18.3 million of Fisheries Relief funds allocated to California.

Despite much of our workforce relocating to home offices, we accomplished a tremendous amount. We initiated a buyout program for the California drift gillnet fishery in partnership with the Ocean Protection Council and developed and implemented several new regulatory programs, including the Risk Assessment and Mitigation Program (RAMP) and the lost or abandoned commercial Dungeness crab gear retrieval program to further reduce the risk of whale and turtle entanglement. On the outreach front, we refreshed the Marine Region home page, launched the new Marine Species Portal, and published an article in Outdoor California magazine titled Guarding the Deep - A Brief History of the Marine Region to help commemorate our sesquicentennial, a celebration of 150 years of the Department and Fish and Game Commission working to achieve our missions.

Much will be said and written about the events of this past year and the term "20/20 hindsight" will forever take on new meaning. While we must not forget the sorrow, loss, and adversity of this past year, we can take pride in knowing that we joined together to persevere and will forever be stronger because of the hardships we overcame.

Dr. Craig Shuman

150 YEARS

COVID-19 Impacts

The impacts of the COVID-19 pandemic were felt throughout the California Department of Fish and Wildlife (Department) and among our constituents statewide. Beyond the direct impacts on individuals, COVID-19 affected the ability of some fisheries to operate, the supply chains that people rely on, the markets where California marine resources are bought and sold, and the Department's ability to achieve our mission.

In mid-March 2020, the majority of Department staff were redirected to home offices. Overnight, the Department was forced to rethink the way we work, how we communicate, and how work plans must change. In early summer, staff were notified of a salary reduction and associated leave program that further reduced capacity. This was compounded by staff participation in emergency leave programs to care for family members and the redirection of nearly 5% of the Marine Region workforce to contact tracing. These combined factors significantly reduced capacity throughout most of 2020, but staff rose to the occasion, developing effective solutions to the ever-changing challenges of the COVID-19 pandemic.

2020 CDFW work fashion trends left to right, top to bottom: Environmental scientist Trung Nguyen at the docks. CRFS sampler Jennaca Hajek. Scientific aid Hannah Brown conducting Pismo clam outreach. CRFS sampler Terrance Manila with post sampling hand sanitizer. Environmental scientist Chelsea Protasio in the tidepools. Environmental scientist Derek Stein ready for masked Pismo clam outreach.

COVID-19 and the California Recreational Fisheries Survey

State and county health advisories and Stay Home Orders impacted the ability of California Recreational Fisheries Survey (CRFS) staff to conduct sampling. These orders varied by date and location creating a patchwork of rules until the initial statewide Stay Home Order was issued on March 19th. Although outdoor recreational activities, including recreational fishing, were allowed in most locations, CRFS interviews with anglers were initially discontinued until more information about COVID-19 transmission vectors was obtained and safety procedures developed.

In an effort to stay aware of trends in recreational activities, CRFS implemented state-wide effort checks at fishing sites. More than 500 sites were surveyed at a distance to document status (open or closed to the public) and to gauge relative effort. In May, when California's party/charter boat fleet began operating under new COVID-19 health guidelines, CRFS resumed tracking the fleet's activities. While April through June monthly estimates were not produced, CRFS resumed sampling in July under newly developed sampling guidelines to comply with all state, county, and Department COVID-19 health advisories and best practices. The new guidelines reduced CRFS efficiency at intercepting anglers, but methods were

Morning light at Asilomar State Beach overlooking Asilomar State Marine Reserve during the River, Carmel, and Dolan fires in Monterey.

Offshore near San Francisco a fishing vessel at noon during September 2020 wildfires.

CDFW scientific aid Bill Doo wearing PPE while interviewing a crab hoop netter on the Fort Point Pier in San Francisco.

employed to compensate for the loss including doubling the number of party/charter boat dockside surveys and streamlining the angler interview process at launch ramps, piers, breakwaters, and jetties. The development of new sampling guidelines allowed CRFS to resume production of monthly estimates and meet its mission.

In November 2020, CRFS resumed sampling beaches and banks under the new COVID-19 safety protocols. This marked the first time CRFS was at full coverage since 2017. This sampling was made possible through additional funding received through the Modernizing Marine Recreational Fisheries Act. CRFS also resumed the Angler License Directory Telephone Survey to collect recreational fishery information. This technique is used where field intercept surveys are impractical, such as nighttime fishing and effort originating from private marinas or slips.

Changes in Licensing Trends

At a time when commercial fisheries, businesses, and recreational anglers would normally be planning for an upcoming 2020/2021 season (April 1, 2020 – March 31, 2021), there was uncertainty about what the season would look like. Markets were severely impacted by restaurant closures, export restrictions, declining foreign markets, and, in some locations, recreational anglers were restricted from accessing ports or launch ramps.

This uncertainty can be seen in patterns of license sales. In March, there was a large drop in the number of commercial fishing and business licenses and vessel registrations. This was followed by a large surge in April. Overall, the yearly total of 6,566 ($1,137,916.50) commercial fishing licenses sold represents only a 0.8% decrease over the 2011 to 2019 average. Twenty three percent (1,517) of licenses were purchased by first-time licensees. This effect is also seen in sport fishing license sales, but with a longer delay. Sales were much reduced in the months of March and April, followed by a large surge May through July, as compared

to previous years. Unlike commercial licenses, the total yearly sales of 1,943,315 ($69,596,854.50) sport fishing licenses represents a 9.7% increase over the 2011 to 2019 average.

As a result of market trends, some commercial permittees pivoted towards selling fish directly to the public. There was a large increase in the number of new Fisherman's Retail Licenses issued by the Department, which allow commercial license holders to sell to the end consumer. 586 Fisherman's Retail Licenses were sold for the 2020 calendar year. In the prior decade, an average of 353 retailers were licensed each year.

Yelloweye rockfish caught in 2020 and processed by CRFS.

A fishing boat selling halibut directly to the public.

CDFW wardens checking tidepooler buckets as they leave Pillar Point.

Increased Recreational Intertidal Collecting

COVID-19 resulted in a loss of income for many Californians and forced many to seek new outdoor recreational activities. This led to a significant increase in people visiting tidepools and beaches and harvesting animals along the coast, which in turn led to public concerns for marine resources. The Department observed an extreme increase in tidepool visitation and collecting. Unfortunately, many tidepoolers did not know or follow take regulations. For example, in one Southern California location, wildlife officers issued 130 citations between March and October for tidepool take violations. Fewer than 10 citations were issued in the same area in 2019.

In response, the Marine Region worked with partners to create several new materials to educate the public about intertidal harvesting regulations, including flyers, posters, and new permanent signage. Marine Region staff coordinated multiple coastal outreach events in Los Angeles, San Luis Obispo, Monterey, and San Mateo counties during

Easy to collect mussels in the tidepools.

From top to bottom: New sign at Pillar Point describing tidepool take regulations. New Tidepool collecting sign to be posted. Aquarium leopard sharks getting ready to be released into the wild. Former Cabrillo Aquarium flatfish now gets to fend for itself in the wild. Cabrillo aquarium staff Jeff Landesman grants ocean freedom to another of the many recently released aquarium sharks.

low tide series. All COVID-19 safety protocols were followed, and members of the public were contacted from a safe distance and educated on species and regulations. These Department outreach efforts, along with partner agencies and organizations, educated large numbers of people and helped reduce unintentional violations in key intertidal areas.

Aquaria Impacts

Like all other businesses, aquariums throughout California experienced challenges with staffing and the ability to continue normal operations. This led to a need to relocate animals to ensure they were properly cared for. Staff aided six aquariums with the transfer of 41 animals to other aquariums and the release of 221 animals into the wild that could no longer be maintained. The species moved ranged from anemones, sea urchins, and hermit crabs to rockfish, flatfish, rays, and juvenile sharks. All requests for relocation or release into the wild required a health inspection by the Department's Shellfish Health Pathologist to ensure the health of the captive animals and protect wild animals from introduced disease.

COVID-19 Effects on Commercial Fisheries

Commercial fisheries were impacted by COVID-19 infections among crews, changes in markets, the ability to obtain fisheries observers, and more. The changes were felt

in fisheries from squid and lobster – which rely heavily on exports – to tuna – which includes high-seas fisheries with foreign crews. The following examples from the California groundfish, salmon, and lobster fisheries show how the impacts were felt differently by different sectors. The federal government also responded to COVID, providing direct financial relief through the Coronavirus Aid, Relief, and Economic Security (CARES) Act.

Groundfish

When the State's first shelter in place order went into effect, commercial fisheries and processors were deemed essential businesses, meaning they could continue operations. According to California groundfish industry representatives and regional media reports, temporary restaurant closures and ongoing restrictions on indoor and outdoor dining resulted in a reduction in demand for fish supplied to restaurants. This included several species of California groundfish that are frequently purchased for sale in restaurants. Additionally, demand for exports continued to be lower in 2020. Cumulative monthly average ex-vessel revenue for all non-whiting groundfish sectors across all West Coast states through September 2020 was significantly less than the 2015-2019 averages.

Sablefish, historically California's most valuable commercial groundfish species, experienced a 21% decline in pounds landed and 43% decline in revenue

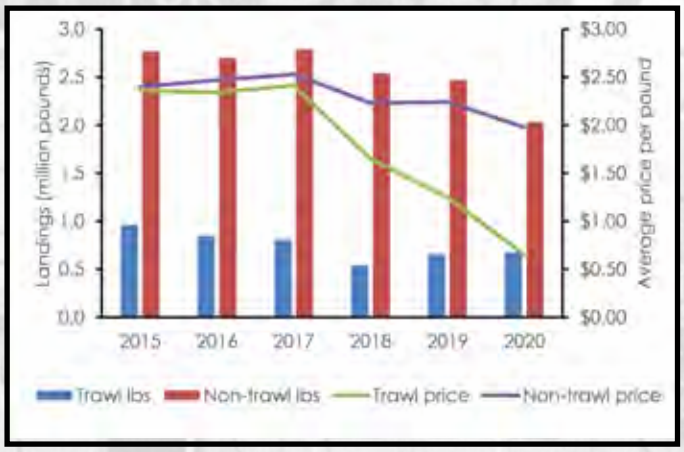


Figure 1. Sablefish landings and value, 2015-2020.

generated in 2020 compared to the previous five-year average (2015-2019). The sablefish trawl sector incurred the most significant impacts, with the volume landed in 2020 11% lower than the five-year average, yet the average price paid falling to $0.66 per pound which was 68% lower than the five-year average of $2.08 (Figure 1). Industry leaders attributed the drop to increased catch as stocks increase coupled with trade issues with China and restaurant closures locally and abroad due to COVID-19.

In 2020, the number of Fisherman's Retail licensees selling groundfish doubled compared to 2019, with more than half of those being first time license holders. Direct sales of groundfish pounds to the consumer were up slightly in 2020, continuing a trend that began in 2019 when direct sales doubled over previous years. Although

CDFW John Fitch and assistant. CDFW scientific aid Benson Chow dissects and prepares white seabass ovaries for a maturity study in the San Carlos lab.

the greater San Francisco Bay Area had the most groundfish sales by Fisherman's Retail licensees in 2020, sales there dropped 20% compared to 2019. By contrast, Southern California groundfish sales more than doubled in 2020.

In response to California industry requests for near-term COVID-19 relief, commercial trip limit measures were successfully fast-tracked, and implemented in season in June 2020. Also, commercial fishing seasons for some sectors were extended past normal closure dates. These actions were recommended by the Department and made possible by the intensive efforts of Marine Region staff serving on the Pacific Fishery Management Council's Groundfish Management Team.

Salmon

COVID-19 also affected commercial salmon fisheries, buyers, and reliant businesses due to widespread impacts on the restaurant industry, which is usually a major consumer of fresh California Chinook salmon. Some salmon trollers adapted by pursuing new market opportunities - most notably, 2020 was marked by an unprecedented level of direct-to-consumer sales of salmon. Nearly 70,000 pounds were offloaded and sold at farmers markets, via door deliveries, and at the dock, more than double the average number of pounds documented over the past decade. Charter operators also adapted to the year's circumstances and generally ran with smaller passenger loads at all ports along the coast, to ensure compliance with local Health Department requirements.

Lobster

In the final months of the 2019-2020 commercial lobster fishing season, the average price per pound significantly decreased from $13.92 during the first week of January 2020 to a closing average price of $10.62 on March 18, 2020. This decrease was a direct result of the impact of the COVID-19 pandemic and the closing of international seafood markets. Though concern was raised about a depressed market and continued low price, when the 2020-2021 season opened in October 2020 spiny lobsters sold for an average of $14.88 per pound during the first week of the season. By the end of December 2020, spiny lobsters were selling for a record high average price of $38.70. This dramatic

CRFS sampler Helen Acosta interviewing an angler on a beach south of Humboldt Bay. CDFW scientist Andrew Weltz conducting Rapid Spawn Assessment in San Francisco by sampling Pacific herring eggs on vegetation. Captain Putman joyfully measuring a lobster.

increase in price has been attributed to a trade war between China and Australia that has decreased spiny lobster supply to China, resulting in increased demand for California spiny lobster and subsequently increased price.

CARES Act Relief Funds

In early May the Secretary of Commerce announced allocation of $300 million in fisheries assistance funding provided by the CARES Act. The funding was provided to states, Tribes, and territories with coastal and marine fishery participants, with the allocation for California's fishing industry being more than $18 million.

The Department coordinated with the Pacific States Marine Fisheries Commission (PSMFC) and the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries) to develop the California spend plan consistent with the CARES Act and NOAA Fisheries' guidance. Substantial coordination with the eligible fishery sectors was conducted to equitably and efficiently distribute California's allocation of relief funds. The Department identified more than 11,500 potential applicants comprising commercial fishermen, vessel owners, fish businesses, aquaculture operations, commercial passenger fishing vessel owners, and fishing guides targeting anadromous species. Applications were distributed in September with nearly 1,700 individuals and businesses qualifying for assistance and a minimum payment of $7,200.

Laboratory and Field Research During COVID

White Abalone Restoration

The Marine Region along with its White Abalone Restoration Consortium partners continued the important work to restore the endangered white abalone in Southern California waters. Following the 2019 first ever stocking of captive-bred white abalone into the wild, the consortium conducted a second COVID-19 delayed stocking in 2020. Staff developed safety protocols which allowed a second stocking event in fall 2020. More than 1,100 white abalone were stocked across two Southern California sites. Post stocking monitoring showed continued survival of individuals from both events, hopefully helping to increase the wild white abalone populations.

Salmon Sampling

Acting on advice from the Pacific Fishery Management Council's salmon industry advisors and the Department, NOAA Fisheries delayed the recreational salmon fishery opener. The April delay was a response to physical distancing requirements and widespread closures of launch ramp facilities, charter boat operations and restrictions to harbor and marina access due to the COVID-19 pandemic. Delaying the opener of the fishery was designed to reduce impacts to stocks of concern and provide

CDFW diver Jenny Hofmeister releasing hand raised white abalone into the wild. Luminary scientist Frances Clark carting fish samples.

more fishing opportunity later in the summer months than would otherwise be possible.

The delay challenged Department staff to alter commercial and recreational fishery monitoring protocols to ensure staff were able to safely monitor catch and effort in port locations throughout California. Despite these setbacks, fisheries commenced in early May and staff were authorized to conduct dockside sampling shortly thereafter, with new measures in place to help ensure both the safety of staff and the fishing community.

Coastal Pelagic Species Age Determinations

Staff adapted to logistical challenges for compliance with social distancing and stay home orders that prevented traditional in person trainings, research, and aging workshop collaborations with NOAA's Southwest Fisheries Science Center. To support aging needs for Pacific anchovy, Pacific sardine, and other coastal pelagic species stock assessments, staff incorporated the use of high-definition microscope cameras to catalogue otolith images that could be shared through remote meeting tools, and set up mobile aging labs in their homes that allowed for continued work and collaboration.

Department Diving Safety Program

The Diving Safety Program's core function shifted from diver training and field facilitation to internal administration in 2020. Due to COVID-19 restrictions on travel, field work, and safety concerns, nearly all dives were canceled or postponed in 2020. By the end of December only 300 dives were completed – a nearly 85% decline from the 4-year average of 1,830 dives for fisheries and conservation research and monitoring, enforcement, and light maintenance tasks.

Nonetheless, this limited achievement involved the collaborative efforts of three scientific diving organizations (agencies, and others) that provided approximately 15 visiting divers for work on a collaborative project. With cancellation of the annual Department diver certification course, no new Department divers were qualified this year, and the current roster of 66 active divers were provisionally re-qualified until full operations resume.

Research Vessel Operations

As with other field operations, Marine Region vessel operations were significantly curtailed due to COVID-19 safety concerns. Most of the Marine Region's 15 research vessels were prohibited from working due to limited space onboard and the inability for staff to maintain necessary physical distancing. Staff focused on ensuring the vessels were current on maintenance and repairs and ready to return

Salmon sampled by masked PSMFC contractor Nadia El Adli in Fort Bragg. California Fish and Game divers Jack Carlisle and Jack Schott circa 1960 when short shorts were the height of dive fashion.

to sea when restrictions are lifted.

The Research Vessel (R/V) Garibaldi, the 45-foot-long flagship of the Marine Region, was able to complete one cruise with outside partners to conduct marine protected area (MPA) surveys before the COVID-19 restrictions went into effect. Once she was "grounded" Marine Region staff focused on maintenance, repairs and upgrades. The R/V Garibaldi now has a generator that complies with current emission standards and an electric scuba air compressor to replace the outdated gasoline powered unit. In September, the Garibaldi went back to sea to support white abalone restoration efforts. Due to the COVID-19 pandemic, the R/V Garibaldi and crew was only underway 13 days in 2020 and traveled approximately 650 nautical miles. This is a stark contrast to the vessel's annual average of 126 days at sea and nearly 4,300 nautical miles traveled (previous 4-years).

Clockwise: 1950's CDFW diver Glenn Bickford. CDFW diver Briana Brady in modern dive gear off Catalina. Recovered Dungeness crab trap. CDFW divers aboard the RV Mollusk.

Whale Safe Fisheries

Risk Assessment Mitigation Program

The Marine Region in collaboration with other Department staff developed new regulations (Section 132.8, Title 14, CCR) for the Risk Assessment and Mitigation Program (RAMP), which became effective November 1, 2020 for the commercial Dungeness crab fishery. Under RAMP the Department will evaluate marine life entanglement risk for six Fishing Zones at least monthly from November – June. If risk is elevated, the Director will determine an appropriate management action to minimize entanglement risk by zone.

Conservation Plan and Incidental Take Permit

Marine Region staff submitted a preliminary draft Conservation Plan to address protected species interactions in the commercial Dungeness crab fishery to National Marine Fisheries Service for review on May 15, 2020. Species of concern include humpback whales, blue whales and Pacific leatherback sea turtles. The Conservation Plan is one component of the Department's application for an Incidental Take Permit under Section 10 of the federal Endangered Species Act.

Research, Monitoring, & Management

Young humpback whale breaching.

Commercial Dungeness Crab Trap Gear Retrieval Program

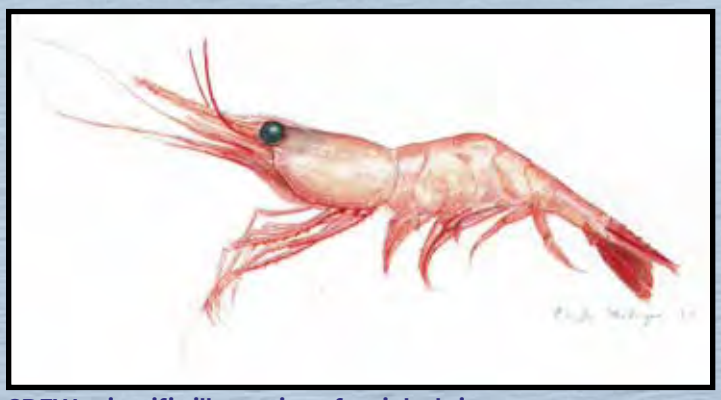
A program to allow retrieval of lost or abandoned commercial crab trap gear was implemented for the first time in 2020. The Department issued Retrieval Permits to qualified entities in seven ports (Crescent City, Trinidad, Eureka, Bodega Bay, San Francisco, Half Moon Bay, Monterey Bay) which allowed retrieval of lost or abandoned commercial Dungeness crab gear in exchange for compensation. More than 500 traps were retrieved, all of which were returned to the original owners.

Recreational Crab Trap Regulations

In December, the Fish and Game Commission (Commission) unanimously approved new regulations governing recreational crab trap fishing that incorporate whale safe fishing practices. In addition, a new validation requirement will allow the Department to identify crab trappers for targeted survey work to collect essential fishery information for the first time for this fishery. Regulations are expected to be effective for the 2021 season.

Marine Life Management Act Master Plan

Implementation of the 2018 Marine Life Management Act (MLMA) Master Plan continued in 2020. Staff provided results on the scaled management process for 15 state-managed finfish to the Commission in early 2020. These results include an exploration into the steps needed to pursue a scaled-management process for California halibut and the development of new regulations for California grunion. Staff also finished the prioritization of 13 key state-managed invertebrate fisheries and presented these results to the Commission's Marine Resources Committee in November 2020. Implementation and development of Fishery Management Plans (FMPs) for several species also continued.



CDFW scientific illustration of a pink shrimp.

Pink Shrimp FMP

Marine Region staff began work on a Basic FMP for Ocean Pink Shrimp. Implementation of the Basic FMP will align management of the species with Oregon and Washington and may lead to the fishery achieving certification as sustainable by the Marine Stewardship Council, a first for California state-managed fisheries.

Pacific Herring FMP

Regulations implementing the California Pacific Herring FMP became effective on March 1, 2020. The Herring FMP establishes a cohesive strategy to guide the sustainable management of California's commercial and recreational Pacific herring fisheries, as required by the MLMA. Staff completed a supplemental Herring FMP rulemaking to address issues relevant to the commercial Herring Eggs on Kelp (HEOK) sector of the herring fishery. These regulations became effective on November 30, 2020.

Recreational limits established by the Herring FMP have been in place since March. The 2020-21 commercial fishery season began in December 2020 with San Francisco Bay HEOK. It is the first season managed under the new permit structure and management strategy established by the Herring FMP. The Director set commercial quotas for the first time under the Herring FMP, establishing 2020-21 season quotas for all management areas of the commercial fishery. Gillnet quotas are set at 133 tons for Tomales Bay and 11 tons each for Humboldt Bay and Crescent City Harbor. In San Francisco Bay, the 2019-20 estimated stock fell below 15,000 tons. This triggered a tier 3 management approach, per the Herring FMP, resulting in a fishery closure (0-ton quota) for San Francisco Bay. The HEOK quota in San Francisco bay is set at 14 tons.

California Halibut Stock Assessment

The Department recently completed an update to the 2011 California halibut stock assessment. It draws on the prior modelling approach and considers recent data as well as recommendations from the 2011 review process. Facilitated by the Ocean Science Trust, an independent scientific peer review of the updated California halibut stock assessment was completed by a panel of experts in 2020. The review focused on whether the technical components, models, and analysis that underpin the stock assessment were applied in a manner that is scientifically sound, reasonable, and appropriate.

The Department is moving into an exploration phase of the scaled-management process for California halibut, which will identify goals and objectives for managing the fishery. This phase includes a scoping process to inform a draft scaled management roadmap and timeline, with community and stakeholder feedback. Additionally, the Department is actively working on a Management Strategy Evaluation (MSE), completing an Enhanced Status Report (ESR), and evaluating ecosystem and bycatch considerations.

150 YEARS

Box crabs feasting in their natural environment. Measuring and counting box crabs aboard a fishing vessel.

Management Strategy Evaluations

Staff led efforts to integrate MSEs into the science and management of our fisheries. MSE is a modeling approach that explores the future performance of fisheries under alternative management scenarios to identify those that achieve our goals despite multiple types of uncertainty. Staff finalized MSEs for eight case study fisheries and started three more. These will be shared with stakeholders and appended to ESRs in 2021. The Marine Region is innovating in this field by implementing MSEs that incorporate multiple stocks and multiple gear types into a single analysis, initially using the approach for California halibut.

1953 tagged and flying halibut. CDFW scientist Kristine Lesyna collecting life history information from a freshly caught halibut in 2020. An abundance of 2020 halibut caught by recreational anglers.

Box Crab Experimental Fishery Permits

The brown box crab experimental fishery program continued into a second year despite challenges faced in 2020 by constraints on fieldwork and shifting to virtual trainings and no-contact electronic data collection methods. Strong interest in commercial harvest of brown box crab led the Marine Region to initiate a collaborative research program in 2019 to evaluate a potential fishery. In 2020, six experimental fishing permits were active in the program, landing 44,400 pounds of brown box crab with an ex-vessel value of nearly $135,000. The Marine Region is working with permittees to gather essential fishery information using logbooks, trap surveys, and a mark-recapture study, while research partners at California Sea Grant are studying brown box crab life history. The California Ocean Protection Council and the PSMFC are supporting the use of electronic monitoring systems to monitor catch and effort. Data analyses will help evaluate the feasibility of a box crab fishery and explore the utility of electronic monitoring for other fixed-gear fisheries.

Below: CDFW wildlife technicians Terrance Manilla and David Astrue sampling a salmon boat at a safe distance. CDFW scientist Kristine Lesyna examines spawning condition of a female California halibut landed by a trawl vessel in Half Moon Bay. Halibut fin clips and otoliths in improvised home lab.

Climate Readiness

Marine Region staff continued to coordinate with various state and federal agencies on climate-related activities. These efforts included participation in a Pacific Fishery Management Council's Climate and Communities Initiative and a series of fisheries-climate scenario planning workshops. Staff also participated on an Ocean Protection Council (OPC) Science Advisory Team workgroup to develop a report describing the current understanding and research needs regarding marine protected areas and climate resilience. In addition, staff contributed to the climate chapter for the update to the Department's Biodiversity Atlas.

Marine Aquaculture

Aquaculture was the focus of increased interest at both the state and federal level as several new initiatives were launched in 2020. At the state level, staff worked with the State Aquaculture Coordinator, Commission staff, other agencies, and constituents on marine aquaculture leasing and permitting activities including lease amendments, consideration of new lease applications, reviewing CEQA documents, conducting lease inspections, and a variety of other administrative and oversight requests. Staff developed an informational report on commercial marine aquaculture in California for the Commission detailing the current status of aquaculture operations statewide. The report will inform the development of a Marine Aquaculture Action Plan initiated by the OPC to serve as a comprehensive, science-based framework for marine aquaculture in California that balances ecosystem health with sustainable development.

The Marine Region advanced the development of a new climate ready Red Abalone FMP that responds to unprecedented climate driven declines in abalone stocks and integrates two draft plans that were submitted to the Commission in late 2019. The integration process is incorporating a number of key features including 1) developing indicators of kelp forest health (Part A), 2) incorporating multiple abalone indicators including abalone density and size from plans one and two (Part B), and 3) translation of indicators into Total Allowable Catches for potential future fisheries following resource recovery (Part C). The new draft FMP has benefited from an extensive 20-year time series of essential fishery information and a multi-stakeholder process.

At the federal level, aquaculture in Southern California was also put in the spotlight this year as NOAA Fisheries selected the region for consideration of an Aquaculture Opportunity Area (AOA) pursuant to an Executive Order on Promoting American Seafood Competitiveness and Economic Growth. The Marine Region coordinated with NOAA and contributed data for their spatial analyses to evaluate the location of the AOA in Southern California. Marine Region staff also responded to a U.S. Army Corps of Engineers Public Notice for comment on

a proposed offshore shellfish and seaweed farm, and a Notice of Intent to prepare an Environmental Impact Statement by NOAA for an offshore finfish farm proposed in federal waters.

California Endangered Species Act

Permitting

After years of coordination and work with CalTrans, Marine Region staff were able to complete the California Endangered Species Act Incidental Take Permit and mitigation for the San Francisco Oakland Bay Bridge East Span Seismic Safety Project.

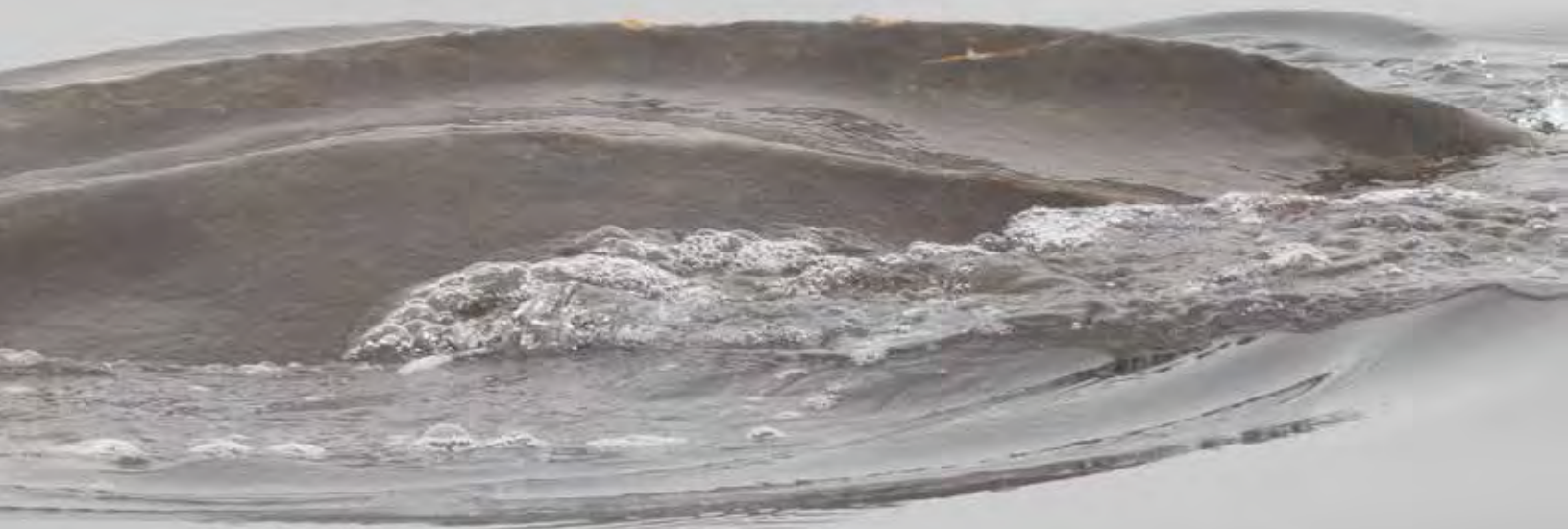
Leatherback Sea Turtle CESA Petition

In January 2020 a petition to protect leatherback sea turtles under the California Endangered Species Act (CESA) was received by the Commission and referred to the Department. Marine Region staff prepared a petition evaluation that found merit to consider CESA listing. The evaluation was presented to the Commission in June and the Commission agreed the petitioned action may be warranted and designated leatherback sea turtles as a candidate species in August. Marine Region staff are preparing a status review report to submit to the Commission in 2021.

Drift Gillnet Transition Program

In 2019, the Department began implementation of California Senate bill 1017 (Allen), which provides for the transition of the large-mesh drift gillnet (DGN) fishery to other gears with lower levels of protected species interactions. This year, the first component of SB 1017, a voluntary buy-back program, was initiated. The program compensates current DGN permit holders for surrendering their permits and nets. Permit holders were grouped into "active" and "inactive" categories based on their past fishing activity as defined by the bill. Of 68 current DGN permit holders, 44 submitted declarations of intent to participate in the program, including 28 of the 32 active participants in the fishery.

The bill required a mix of State and private funding to support the buy-back. In July, having received $1 million from the California Ocean Protection Council and a matching $1 million of non-state funds from Oceana, the Department notified the first 24 approved participants that they could proceed. As of



Background: Leatherback sea turtle breaking the surface for a breath.

February 2021, 14 permit holders (ten active and four inactive) have completed the transition process and relinquished their nets and permits. Additional approved permittees are in contact with Net Destruction Entities, who work directly with participants to receive the nets and recycle them. The remaining participants will be notified they can participate if additional funding becomes available.

Ocean Resources Enhancement and Hatchery Program

Department staff, working with the Ocean Resources Enhancement Advisory Panel, continued to focus on white seabass enhancement while addressing administrative and research priorities for the Ocean Resources Enhancement and Hatchery Program (OREHP). On September 30, 2020, Governor Newsom signed Assembly Bill 1949, which amends the OREHP statute (Fish and Game Code Section 6590). The amendment updates the OREHP's management processes and expands the program's capabilities and public-private partnerships by (1) updating the organizational structure of the OREHP and revising the criteria for membership of the Advisory Panel; (2) establishing an independent scientific advisory committee to prioritize OREHP research and review program findings; (3) mandating an annual public meeting to present OREHP research; and (4) requiring a legislative report by July 1, 2027, to track OREHP progress. As a result of the new amendments, staff began work to solicit Advisory Panel nominations from all interested stakeholders, including sport and commercial fishing industries, aquaculture, and non-governmental interests. The new Advisory Panel will be established in early spring 2021.

White seabass from San Fransisco Bay measured on the dock.

Eelgrass

Despite curtailed field efforts, project staff continued work on eelgrass (*Zostera* spp.). Eelgrass expansion was again noted in Morro Bay, which is a good sign after years of decline for reasons yet identified. In addition, *Zostera pacifica*, a species specific to Southern California, is continuing to be identified in new locations, including Port San Luis and near Vandenberg Air Force Base. These observations will be added to the annual eelgrass surveys conducted by project staff in collaboration with the Nearshore and Bay Management Project.

Eelgrass held by CDFW scientist Frank Henry.

Kelp and Other Marine Algae

The Department partnered with California Sea Grant to hire a Kelp Management Extension Fellow to coordinate key kelp reports and projects, including a Giant and Bull Kelp Enhanced Status Report, and expanded its support for kelp restoration in 2020. Together with Sea Grant and OPC, the Department established a new Kelp Recovery Research Program to guide the allocation of nearly $2 million of kelp restoration research essential to informing kelp management and recovery. Staff are working with OPC, Reef Check California, commercial urchin divers, and Moss Landing Marine Laboratory to implement priority actions in Mendocino County identified in the 2019 Bull Kelp Recovery Plan. Other partners important to the overall effort are the Noyo Center for Marine Science, Watermen's Alliance, Greater Farallones Association, and The Nature Conservancy.

The recovery efforts included removing purple urchins to restore kelp and testing kelp outplanting methods. In addition, staff worked with the recreational dive community evaluating the sport take of urchin as a

tool to promote kelp recovery. To facilitate this, an emergency rule allowing unlimited recreational collection of purple sea urchin in Caspar Cove (Mendocino County) was adopted in March 2020. The rule was adopted as a standard rule at the end of 2020, which also included an area at Tanker Reef (Monterey County) allowing unlimited take of both red and purple sea urchins. Staff are also working with NGO partners to explore urchin trapping as a method to reduce urchin density and promote kelp recovery. Staff are coordinating with OPC to develop a Kelp Action Plan, which will inform the development of a Statewide Kelp Restoration and Management Plan.

Invasive Sargassum in Monterey

Sargassum horneri is a large, annual brown seaweed, native from Japan to the Philippines. *S. horneri* is one of three species of sargassum that have become persistent in California. In 2003, *S. horneri* invaded Long Beach Harbor and rapidly spread to the California Channel Islands and as far south as Todos Santos, Mexico. Because sargassum can be locally very abundant, grow quickly, and potentially displace native algae, there are concerns about its potential to alter nearshore ecosystems.

Invasive algae, *Sargassum horneri.*

In June 2020, a Reef Check California volunteer diver spotted and photographed an individual sargassum plant attached to the seafloor at the Monterey Breakwater within the Edward F. Ricketts State Marine Conservation Area. Due to concerns about the potential spread of this invasive species into a new part of the state and within a marine protected area, the Marine Region deployed two Department divers to search for the algae on June 23, 2020. The one *S. horneri* specimen was located and successfully removed. In more than two hours of searching during two dives, no other sargassum was located. The removed specimen was examined by Department staff and determined to be a non-reproductive juvenile. Any new observations of sargassum in the area should be reported to the Department. Removal of any algae, including invasive species, within a marine protected area is illegal unless specifically allowed in regulation.

White Seabass

As part of the annual review of the White Seabass Fishery Management Plan for the 2018-2019 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 the points of concern had been met. Relative to the 2017-2018 season, commercial pounds of white seabass landed decreased while recreationally caught numbers increased. None of the five main points of concern were met for the season and no further action was needed.

Salmon

The Marine Region completed both the 2016 and 2017 Constant Fractional Marking reports this year. The critical scientific compendiums detail hatchery contributions to Central Valley harvest, escapement, and ocean fisheries, and describe the effects of various hatchery release strategies on survival, contribution to fisheries, and fidelity to their river-of-origin. Constant Fractional Marking results are central to evaluations of hatchery programs, bay and coastal net pen programs, barge studies, restoration

Chinook Salmon being measured in Bodega Bay in 2020.

activities, recovery goals, and salmon lifecycle model calibrations.

Marine Region staff assisted in the development of a risk assessment analyzing the effects of ocean salmon fisheries on federally endangered southern resident killer whales (SRKW). This work resulted in the Pacific Fishery Management Council considering and adopting associated fishery constraints in 2020 to protect SRKW in future years of low salmon abundance.

Pacific Halibut

Marine Region staff continued to actively monitor recreational and commercial Pacific halibut fisheries in 2020, and track attainment of the annual recreational quota. The recreational Pacific halibut fishery was scheduled to be open from May 1 through October 31, or until the quota was met, whichever came earlier. Record breaking numbers of Pacific halibut were caught during 16 days at the end of July and beginning of August with more than 350 encountered by field staff at the docks. Typically, field staff see around 250 fish during an entire season. This unprecedented number of fish resulted in catch projections that rapidly exceeded the quota. The fishery closed for the year on August 11. Since active quota management began in 2015 the fishery has closed in August three times due to quota attainment, but August 11 is the earliest fishery closure on record.

Lingcod and vermilion rockfish hanging out at depth.

Groundfish

Marine Region staff developed and analyzed comprehensive plans for new groundfish management measures that were implemented January 1, 2021. Many of the new measures increase access and opportunities due to the successful rebuilding of many previously overfished groundfish stocks.

Marine Region staff contributed to a number of scientific advancements in 2020. Lingcod fin rays were collected and processed for age and growth rate analysis of lingcod populations along the West Coast. The results will be used to improve future stock assessments and management decisions. Additionally, staff collaborated to develop a method to generate population abundance information from remotely operated vehicles in nearshore surveys, which was validated and approved by the Pacific Fishery Management Council. This is a step forward to incorporate new data streams into stock assessments of some nearshore groundfish stocks. The methodology could also provide information on stock abundance inside areas where extractive surveys or harvest is not permitted (e.g., MPAs) in the future.

2020 otoliths. 1961 Robert Bell examining samples.

CalCOFI

The Marine Region continued as a partner with NOAA Fisheries and the University of California in the California Cooperative Oceanic Fisheries Investigations (CalCOFI) ecosystem monitoring program, which began in 1949. A new program coordinator was hired in 2020 using funds from all three partners to oversee and enhance communications, outreach, and research. The annual CalCOFI Conference was held online due to COVID, which allowed for

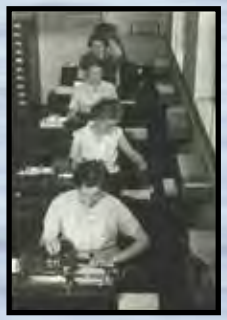
1937 control panel for tabulating.

widespread participation and turned out to be a huge success with a five-fold increase in attendance (more than 500 registered participants). The conference explored our understanding of unprecedented changes in coastal and marine environments of the California Current Ecosystem. CalCOFI was highlighted as the longest marine ecosystem time series of coupled physical, chemical, and biological variables that provides essential information about ocean climate change. Check out the website.

Data Modernization

E-Tix and Marine Landings Data System

2020 marked the first full year of mandatory electronic reporting of commercial landing receipts within 3 business days of landing. In 2020, the average number of business days between the landing and when the record was submitted was 2.34 business days, greatly enhancing our ability to engage in near real-time management. In October 2020, the Marine Landings Data System (MLDS) was fully developed through coordinated efforts between the Department's Data and Technology Division and Marine Region. MLDS is a web-based application allowing Department staff to access a full array of commercial fisheries records and reports needed for fisheries management and law enforcement purposes. Through the combination of MLDS and E-Tix, the 2020 summaries of commercial fishery landings were finalized and made available in early 2021.



CDFW scientists using a variety of statistical equipment over the years. Above: 1952 statistical equipment sorting machine. Clockwise from top right: 1937 tabulator. 1937 statistical equipment key punchers. 1965 IBM 075 sorters.

Interactive Landings Data On The Web

As part of Marine Region efforts to modernize our data systems, current landings information for market squid and several other commercial pelagic fisheries were developed using new interactive tools. The market squid data include both a table and a heat map, showing landings by season. The table and map are updated quarterly on the website, or whenever significant new landings data become available. The commercial pelagic species data include interactive landings graphs for market squid, Pacific sardine, northern anchovy, Pacific mackerel, jack mackerel, and Pacific bluefin tuna. The effort is an important step towards modernizing Department fisheries data sharing on the internet.

Recreational angler with tuna. Vintage tuna research.

Improved Recreational Lobster Catch Estimates

Estimates of California spiny lobster recreational catch and effort rely on information reported on seasonal lobster report cards. However, it was suspected that assumptions of non-reported fishing data were biased, resulting in an overestimation of recreational catch.

A survey of lobster report card holders was conducted in summer 2019 to test the key underlying assumption that reported and non-reported catch and effort are the same. Survey responses indicated that a higher percentage of non-reporters did not fish (40%) compared to those that returned their report cards (20%). The survey, in conjunction with a deeper analysis of past data, also revealed that recreational catch and effort increases with fishing participation level for both reporters and non-reporters, where participation level was determined based on each customer's report card purchasing history. Based on these findings, the Department developed an improved method for estimating the contribution of non-reported recreational catch and effort that accounts for differences in catch rate by participation level. Calculations for the 2019-2020 season revealed that the prior method of estimating non-reported catch would result in an over-estimate of total recreational catch by 27%. Having an accurate idea of recreational spiny lobster catch is important for managing the fishery and understanding the impact of both the commercial and recreational take on spiny lobster populations.

1952 CDFW staff entering data.

California spiny lobster.

Outreach and Data Sharing

New Marine Region Home Page

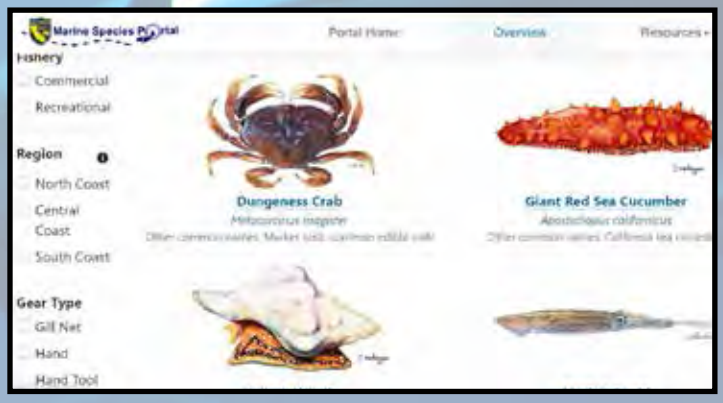
The Marine Region undertook a revamp of its web presence, with a new home page launched in September that makes it easier for the public to quickly find desired information. The new design focuses on four key areas of public interest: Regulations; Marine Protected Areas; Species Information; and Data, Management, and Research. Many Marine Region web pages were edited to increase clarity, and obsolete web pages were deleted. Updates will continue towards the goal of a streamlined and easily accessible website.

New Marine Region home page buttons for Data & Research, Species information, Regulations, and MPAs.

Marine Species Portal

New in 2020, the California Marine Species Portal was unveiled in July. The Portal provides searchable access to basic species information, as well as Enhanced Status Reports (ESRs) for select state-managed fisheries. The Portal is one of the tools described in the 2018 Marine Life Management Act Master Plan for providing information on California fisheries to the public. The Portal, based on a prototype design developed with stakeholder input, was funded by the OPC and constructed by a consultant with the support of staff from the Marine Region and the Data and Technology Division (DTD).

The Portal currently houses 32 ESRs covering 35 species. These ESRs contain information on the natural history of the species and the location, landings, and characteristics of the fishery along with details about bycatch, socioeconomics, research needs, opportunities for management changes, and climate readiness. Through additional modifications to the Portal by DTD and MR staff, the Portal also includes "Species-at-a-Glance" information for 73 non-ESR species, with more being added continuously. The Species-at-a-Glance provides summary information on the key life history aspects for each species.



Screen shots of the new searchable Marine Species Portal.

Marine Protected Areas

The Department manages California's 124 MPAs and 14 special closures as a statewide network using a partnership-based approach through the MPA Management Program. The MPA Management Program is composed of four key focal areas: Outreach and Education, Research and Monitoring, Enforcement and Compliance, and Policy and Permitting.

Staff increased digital outreach efforts to keep stakeholders informed on notable MPA Management Program activities. Staff published more than 20 blogs highlighting California's MPAs and the individual county Collaboratives that make up the statewide MPA Collaborative Network. The new MPA video playlist on YouTube allows viewers to visually explore individual MPAs and the unique species and habitats they protect.

In early spring, all field-based long-term monitoring project activities to inform adaptive management of the MPA Network were halted due to the COVID-19 pandemic. Staff worked closely with monitoring project leads to shift project tasks to analyses of existing data until new data collection could continue. After implementing safety protocols, field-based projects resumed with modified data collection protocols to accommodate physical distancing. New monitoring projects that started in 2020 include a Tribal Stewards Program and the development of a cohesive statewide monitoring program for estuarine MPAs.

Interest in conducting research in MPAs continued in 2020 with 144 scientific collecting permits issued for research and educational activities within 74 MPAs: 31 State Marine Reserves (SMR), 41 State Marine Conservation Areas (SMCA), and 2 State Marine Recreational Management Areas (SMRMA). The total number of projects for each MPA designation are 66 in SMRs, 103 in SMCAs and 8 in SMRMAs.

The MPA Management Project and its partners continue to work towards achieving the goals and requirements of the Marine Life Protection Act (MLPA). Significant attention is now focused on preparing the first decadal management review (DMR) of the MPA Network and Management Program for the Commission, planned for the end of 2022. The DMR will focus on reviewing each of the four focal areas of the MPA Management Program and the evaluation of the MPA Network in meeting the goals of the MLPA, including adaptive management recommendations for the Commission's consideration.

Green anemone and chiton living in an MPA.

MPA collaboratives featured in 2020 CDFW blogs.

Healthy tidepool creatures in the Russian Gulch State Marine Conservation Area.

Fishery Disaster Relief

Dungeness Crab

Mitigation funds from the 2015-16 California Crab Fisheries Disaster totaling more than $3.3 million were awarded for research and testing this year. A portion of the funds were allocated to the California Department of Public Health for the purchase of laboratory supplies to support domoic acid testing of crabs. Research proposals were also solicited in early 2020 that aimed to better understand domoic acid and how the fishery can better respond to future domoic acid events. Three research grants were awarded focusing on the socioeconomic impacts of domoic acid on California crab fisheries and fishing communities, transfer and retention of domoic acid in California crab species, and development of predictive modeling tools to better inform the commercial crab fleet.

Salmon

Marine Region staff assisted with the development and execution of the 2016-17 Klamath River Fall Chinook (KRFC) salmon disaster relief program, which aimed to help members of California's sport and commercial fishing industries who were impacted by the sharp decline in KRFC abundance during the 2016 and 2017 fishing seasons. Staff provided data and technical support to help industry partners develop a spend plan that allocated Congressionally appropriated funds equitably across fishery sectors and participants. Spend plan implementation required collaboration across the Department and with the PSMFC, as well as a dedicated outreach campaign to help raise awareness about individual eligibility and application deadlines. As a result of these efforts, approximately $4.8 million was disbursed as direct payments to 1,181 eligible applicants in December of 2020.

Warden aboard a salmon boat.

Pacific Sardine

Funds for the 2015-2016 Sardine Fishery Disaster were awarded this year with $1.2 million distributed to 36 permittees and 9 businesses affected by the disaster. A portion of the funds ($300,000) went to the nearshore collaborative research with industry partners. The research uses aircraft and industry fish observers to quantify the number of sardines and anchovies in nearshore areas inaccessible to vessel-based surveys.

Marine region staff completed the 2017-2019 Sardine Fishery Disaster proposal and submitted it to PSMFC for NOAA Fisheries approval. Approximately $1.4 million will go to individuals and businesses affected by the disaster and $700,000 will be used to continue the nearshore collaborative research with industry partners.

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CALIFORNIA DEPARTMENT OF FISH & WILDLIFE

CALIFORNIA DEPARTMENT OF FISH & WILDLIFE

MARINE REGION

2020 BY THE NUMBERS

2020 Marine Region:
Area, Staff, and Funding

The Marine Region encompasses approximately 5,767 square statute miles of state waters, including San Francisco Bay and San Pablo Bay to the Carquinez Bridge.

For the 2019-2020 fiscal year, the Marine Region budget was $24,591,697

As of December 31st, 2020, there were 143 permanent staff and 85 temporary staff positions within the Marine Region.

Cover photo of squid boats taken by CDFW environmental scientist Carrie Wilson

Contents

2020 California Commercial Fishing

Weight and Ex-Vessel Value[1] of Commercial Landings by Port Area

Port Area	Pounds	Ex-Vessel Value
Eureka	12,789,986	$ 21,454,133
Fort Bragg	4,443,005	$ 6,502,945
Bodega Bay	3,092,556	$ 10,431,872
San Francisco	10,185,224	$ 18,950,240
Monterey	41,959,017	$ 22,554,718
Morro Bay	1,097,348	$ 3,072,916
Santa Barbara	9,947,424	$ 23,828,552
Los Angeles	17,226,045	$ 16,040,906
San Diego	4,902,630	$ 11,231,695
Total	**105,643,235**	**$134,067,977**

Data as of 02/26/2021
[1]Ex-Vessel Value is the amount paid to the fishermen at the dock.
Data Source: Department's Marine Region, Marine Fisheries Statistical Unit

Top Commercial Fishery Numbers

Total Commercial Landing Fees Collected: **$826,317**

Top Ex-Vessel Value: **Dungeness crab**

Top Weight: **Market squid**

Commercial Vessels and Revenue for 2020

Type	Numbers Sold	Revenue
Resident Vessel	2,885	$ 1,095,579
Non-Resident Vessel	309	$ 352,028
Passenger Fishing Vessel	550	$ 208,863
Total Vessels	3,744	$1,656,470
Resident License	5,897	$ 853,591
Non-Resident License	644	$ 278,691
Total Licenses	6,541	$ 1,132,282

Data as of 02/26/2021
Data Source: Department's License and Revenue Branch

Top 2020 Commercial Fisheries by Ex-Vessel Value

Fishery	Pounds	Ex-Vessel Value
Dungeness crab	8,382,714	$ 30,148,421
Market squid	45,082,311	$ 26,111,917
California spiny lobster	726,199	$ 13,862,174
Chinook salmon	1,915,498	$ 13,848,507
Spot prawn	391,609	$ 5,779,593
Red sea urchin	1,858,076	$ 4,608,001
Sablefish	2,770,465	$ 4,508,704
California halibut	690,015	$ 3,630, 509
Bigeye tuna	967,086	$ 3,142,311
Swordfish	706,589	$ 2,751,411

Data as of 02/26/2021
**Note that landings and value are reported for the calendar year (January 1 – December 31) This may differ from seasonal landings for specific fisheries reported elsewhere.*
Data source: Department's Marine Region, Marine Fisheries Statistical Unit
MLDS Statewide Landings by Pounds/Value Report

Top 2020 Commercial Species Landed by Weight

Fishery	Pounds	Ex-Vessel Value
Market squid	45,082,311	$ 26,111,917
Northern anchovy	12,425,467	$ 652,394
Dungeness crab	8,382,714	$ 30,148,421
Pacific sardine	6,314,120	$ 495,927
Yellowfin tuna	3,770,182	$ 2,584,578
Dover sole	3,564,365	$ 1,353,685
Sablefish	2,770,465	$ 4,508,704
Chinook salmon	1,915,498	$ 13,848,507
Red sea urchin	1,858,076	$ 4,608,001
Chilipepper rockfish	1,410,559	$ 551,270

Data as of 02/26/2021.
**Note that landings and value reported over the calendar year (January 1 – December 31) may differ from seasonal landings for specific fisheries reported elsewhere.*
Data source: Department's Marine Region, Marine Fisheries Statistical Unit

2020 Commercial Landings of Key Groundfish by Species

Species	Pounds	Ex-Vessel Value
Nearshore	326,074	$ 1,579,630
Shelf and slope rockfish	3,338,033	$ 2,060,224
Dover sole, thornyheads, sablefish (black cod)	6,891,943	$ 7,278,246
Remaining Flatfish*	1,461,423	$ 1,418,633
Other	956,497	$ 1,069,667
Totals	12,973,970	$ 13,406,400

**Remaining Flatfish include: arrowtooth flounder (turbot), curlfin sole, English sole, Pacific sanddab, petrale sole, rex sole, rock sole, sand sole, and starry flounder.*
Data Source: Department's Marine Landings Database System

2020 California Recreational Fishing

California Recreational Fisheries Survey Sampling

- Data Collected from: **210,000 angler trips**
- Estimated Recreational Fishing Trips in Marine Waters: **2 million**
- Estimated Total Fish Caught: **7.2 million**
- Data Collected from: **507,000 fish and invertebrates**

Data Source: Department's Marine Region, California Recreational Fisheries Survey

Total Recreational Licenses Sold and Fees Collected in 2020

License Type	Numbers Sold	Value
All Recreational Fishing Licenses	1,959,187	$ 72,069,147
Spiny Lobster Report Card	43,597	$ 414,172
Ocean Enhancement Validation	302,566	$ 1,588,472

Note that recreational fishing licenses are valid for ocean and inland fishing in California.
Data Source: Department's License and Revenue Branch

Top Five Types of Fish Targeted by 2020 Recreational Anglers in California Based on Fishing Trips

Rank	Trip-Type and Top Species Targeted[1]	Estimated Number of Angler Trips (thousands)
1	**Bottomfish:** Rockfish, ocean whitefish, lingcod, basses (kelp/calico bass, and barred sand bass), ocean whitefish, and California scorpionfish	**531**
2	**Inshore:** California halibut, Pacific herring, jacksmelt and spotted sand bass	**405**
3	**Coastal Migratory:** Chub (Pacific) mackerel, Pacific barracuda, Pacific bonito and yellowtail	**170**
4	**Salmon:** Chinook salmon	**59**
5	**Highly Migratory:** Yellowfin tuna, bluefin tuna, skipjack tuna, dolphinfish (dorado) and albacore tuna	**37**

[1]For each trip target, the top species targeted are listed based on the estimated total catch for the species or species group.
The CRFS estimates and data were extracted from RecFin database at www.recfin.org and supplemented by CDFW Fisheries Analytics Project. Highly Migratory effort from Commercial Fishing Passenger Fishing Vessel was summed from Marine Log System.
**Due to COVID-19 restrictions, data excludes April, May and June.*
Data source: Department's Marine Region Fisheries Analytics Project and Ocean Salmon Project

Top 10 Types of Fish Caught by Recreational Anglers in California Based on Pounds of Fish Harvested[1]

Rank	Type of Fish	Estimated Pounds of Fish Caught[1]
1	**Tunas** (bluefin, yellowfin, albacore and skipjack)	**3,088,000**
2	**Rockfish, greenlings and cabezon**	**1,731,000**
3	**Yellowtail**	**751,000**
4	**Lingcod**	**524,000**
5	**Flatfish** (California halibut, sanddabs, soles, Pacific halibut and starry flounder)	**484,000**
6	**Salmon[2]** (Chinook salmon)	**442,000**
7	**Ocean whitefish**	**228,00**
8	**Basses** (kelp/calico bass, barred sand bass, and spotted sand bass	**185,000**
9	**California scorpionfish**	**155,000**
10	**Chub**(Pacific)**mackerel**	**123,000**

*[1]Fish Harvested= fish kept and fish released dead, estimates are preliminary and may differ from what is used for fisheries management. [2] Pacific Fishery Management Council (PMFC) uses numbers of salmon harvested for fishery management, numbers were converted to weight in pounds by the Ocean Salmon Project. The CRFS estimates and data were extracted from RecFin database at www.recfin.org and supplemented by CDFW Fisheries Analytics Project. CPFV tuna catch was summed from Marine Log System. *Due to COVID-19 restrictions, data excludes April, May and June. Data source: Department's Marine Region Fisheries Analytics Project and Ocean Salmon Project*

Permitting and Environmental Review

- Environmental Documents Reviewed (plans, surveys, reports, permits, etc.): 428
- Pre-Project Review: 81
- Aquaculture Registrations Issued: 30
- Live Import, Restricted Species, and Broodstock Collection Permits, and Letters of Authorization Issued: 67
- Scientific Collecting Permits Issued/Renewed: 143
  - Marine Protected Areas with Research Approval: 74
    - State Marine Reserves: 31
    - State Marine Conservation Areas: 41
    - State Marine Recreational Management Areas: 2

Data source: Department's Marine Region, Environmental Review and Water Quality Project

Additional Marine Region Efforts

- 2 Enhanced Status Reports (ESRs)
- 73 Non-ESR Species-at-a-Glance Summaries
- 8 Management Strategy Evaluations Completed
- 44 Articles on the Marine Management News Published by Marine Region staff
- 300 Marine Region Research Dives

Marine Protected Areas information available at https://wildlife.ca.gov/Conservation/Marine/MPAs

Data source: Department's Marine Region

Marine Protected Area Management Project

- Number of MPA Blogs and News Highlights
  - Exploring California's MPAs Published: 10
  - MPA News Highlights Released: 10
- Number of Days on Research and Monitoring Trips: 11
- Number of MPA Underwater Videos Produced: 5
- Number of MPA Monitoring and Research Conferences and Workshops Attended: 12
- Number of Partner Outreach Events Attended: 13
- Number of MPA Management Presentations: 13
- Number of Scientific Collecting Permits Issued for work within MPAs: 54 (allowing research in 74 individual MPAs)
- Number of Long-Term Monitoring Projects Underway: 10
- Number of MPA Outreach Materials Distributed: 5,864

Data source: Department's Marine Region, Marine Protected Area Management Project

Marine Life Management Act Master Plan: Implementation Work Plan

January 29, 2021

Background

The Marine Life Management Act Master Plan (2018 Master Plan) was adopted by the Fish and Game Commission (FGC) in June 2018. The 2018 Master Plan, which updates the original 2001 Master Plan, provides guidance and a toolbox for implementing the Marine Life Management Act (MLMA) goals and objectives. To help ensure that the 2018 Master Plan is implemented effectively, it specifies the development of an Implementation Work Plan (Work Plan).

Structure and Content

To aid in the successful implementation of the 2018 Master Plan, the Work Plan incorporates the following two characteristics:

1. The Work Plan must clearly capture the range of activities that are required to implement MLMA-based management over the next several years. These include fishery prioritization and scaling components from the 2018 Master Plan as well as routine ongoing activities and new statutory mandates.

2. The Work Plan must be adaptable to reflect change as specific tasks reach completion and others are initiated. In many cases, the results from completed tasks will inform the development of new tasks.

The Work Plan incorporates these two characteristics through nine key elements. The tasks listed under these elements within the Work Plan table below reflect current or soon-to-be implemented work. Some completed tasks are listed to provide context for current work; other completed tasks are listed in Appendix A. Planned next steps are provided in Appendix B.

Stakeholder engagement and peer review, as described in the 2018 Master Plan, are crucial to the successful implementation of the MLMA across most of the elements listed below. A variety of partners assist the Department with the implementation of these tasks including: members of the fishing industry; commercial and recreational fishing associations; academics; federal, state and local agencies; Tribes; and non-governmental organizations.

Plan Updates

This is an update to the Work Plan provided to the FGC at their June 2019 and February 2020 meetings. Verbal updates of the MLMA Master Plan implementation will be provided to the FGC's Marine Resources Committee (MRC) and, as needed or requested, to the FGC Tribal Committee and FGC at their scheduled 2021 meetings.

Work Plan

Time Frame: Completed, Annual, Ongoing, EC (Estimated Completion, Month and Year), In Progress (no estimated completion date), TBD (To Be Determined), or as specifically described.

I. MLMA Framework - Prioritization

Topic	Tasks	Time Frame
Fisheries Set #2: Remaining key invertebrate fisheries	Conduct Bycatch ERA and Habitat ERA; conduct Target ERA and combine with PSA; combine Bycatch, Habitat, and PSA + Target results	Completed Oct 2020
Fisheries Set #2	Present prioritized list to FGC (see Appendix D)	Completed – FGC Nov 2020

II. MLMA Framework – Scaling*

Topic	Tasks	Time Frame
Prioritized Fisheries (Set #2)	Conduct evaluation (degree of management change needed; fishery complexity) to determine appropriate management scale; as possible, include socioeconomic and climate considerations	Completed Nov 2020

* Information on how these species fit within Scaled Fishery Management is provided in Appendix E

III. Scaled Fishery Management: Document Development

Topic	Tasks	Time Frame
ESRs	Develop ESRs for remaining 5 species (see Section IV and V for more information on CA Halibut, Pacific Herring, and Bay Shrimp)	EC CA Halibut – Jun 2021; Pacific Herring and Pismo Clam – Jun 2021; Red Abalone – Dec 2021; Bay Shrimp – TBD
Completed ESRs	Update completed ESRs with 2019 landings and catch, research and monitoring results, and regulation changes	Feb 2021
Completed ESRs	Update completed ESRs as needed	Ongoing
New ESRs	Develop additional finfish ESRs (Yellowfin Croaker, Yellowtail, and Surf Smelt) and invertebrate ESRs (Gaper Clam)	Yellowtail completed Dec 2020; EC Yellowfin Croaker and Surf Smelt – Jun 2021; Gaper Clam – TBD
Red Abalone Fishery Management Plan (FMP)	Conduct a management strategy integration process for Red Abalone to determine the suite of indicators that provide the best management strategies for reopening a fishery and for managing an open fishery	EC Jun 2021
Red Abalone FMP	Further develop the management strategy and harvest control rules developed during the management strategy integration process for Red Abalone to complete the draft FMP	EC Dec 2021
Red Abalone FMP	Complete Draft FMP	EC 2022

Topic	Tasks	Time Frame
Ocean Pink Shrimp FMP	Complete draft basic FMP	EC Fall 2021

IV. Scaled Fishery Management: Key Actions for Priority Species without FMP

Topic	Tasks	Time Frame
CA Halibut	Develop CA Halibut stock assessment	Completed Sep 2020
CA Halibut	Conduct formal peer view of CA Halibut stock assessment	Completed Sep 2020
CA Halibut	Complete CA Halibut stock assessment report	EC Spring 2021
CA Halibut	Complete ESR	EC Jun 2021
CA Halibut	Evaluate bycatch in commercial fishery	In progress, EC Apr 2022
CA Halibut	Conduct scoping effort as part of scaled management development process	EC Jun 2021
CA Halibut	Explore incorporation of Management Strategy Evaluation (MSE) Data Limited Methods toolkit (toolkit) results into management	TBD
Grunion	Develop ESR	Completed Nov 2020
Grunion	Develop regulation package for recreational fishery	TBD
Kelp (Giant and Bull Kelp)	Develop ESR	EC Apr 2021
Kelp	Develop a suite of priority projects (Statewide Kelp Restoration Toolkit and coordinate with Ocean Protection Council (OPC) on the Statewide Kelp Recovery Research Program) for kelp recovery and restoration	EC Apr 2022
Kelp	Continue to work with partners to manage urchin removal with commercial divers on north coast	EC May 2022

Topic	Tasks	Time Frame
Kelp	Coordinate with OPC on development of a statewide Kelp Action Plan	EC Jan 2022
Kelp	Continue to work with partners and recreational divers to evaluate in-water urchin crushing as a kelp restoration tool at Caspar Cove (Mendocino County) and Tanker Reef (Monterey County)	EC Jan 2024
Kelp	Develop a statewide Kelp Restoration and Management Plan	TBD
Kelp	Develop Bull Kelp commercial regulations	EC Dec 2021
Marine Algae	Develop other marine algae commercial regulations	TBD
Barred Sand Bass	Develop stock assessment	TBD
Barred Sand Bass	Evaluate immediate management needs	TBD
Barred Sand Bass	Explore incorporation of MSE toolkit results into management	TBD
Kelp Bass	Develop stock assessment	TBD
Kelp Bass	Explore incorporation of MSE toolkit results into management	TBD
Barred Surfperch	Conduct MSE using toolkit	TBD
Barred Surfperch	Explore incorporation of MSE toolkit results into management	TBD
Barred Surfperch	Identify most accurate ageing techniques using an age validation analysis	EC Jun 2021
Barred Surfperch	Conduct a latitudinal analysis of fecundity and parturition timing	EC Jun 2021
CA Barracuda	Conduct MSE using toolkit	EC Dec 2021
CA Barracuda	Explore incorporation of MSE toolkit results into management	EC Spring 2022
CA Barracuda	Evaluate bycatch in commercial fishery	In progress, EC Apr 2022
Bay Shrimp	Complete ESR	TBD

Topic	Tasks	Time Frame
Bay Shrimp	Evaluate bycatch in commercial fishery	TBD
Pacific Angel Shark	Evaluate bycatch in commercial fishery	In progress EC Apr 2022
Brown Smoothhound Shark	Monitor stock status as outlined in the ESR	Ongoing
Dungeness Crab	Consider potential follow-up rulemaking for Risk Assessment and Mitigation Program (RAMP)	EC Fall 2021
Ridgeback Prawn	Conduct fleet gear survey; work with NOAA observers to collect additional essential fisheries information	In progress
Warty Sea Cucumber	Consider potential expansion of data collection	TBD
Rock Crab	Monitor entanglements (now possible with new buoy marking requirement)	In progress
Spot Prawn	Monitor entanglements (now possible with new buoy marking requirement)	In progress
Gaper Clam	Develop ESR	TBD
Gaper Clam	Develop emergency rulemaking regarding hydraulic pump use for taking clams	EC Feb 2021
Gaper Clam	Develop rulemaking regarding hydraulic pump use for taking clams	EC Aug 2021

V. Scaled Fishery Management: Key Actions for Priority Species with FMP

Topic	Tasks	Time Frame
White Seabass	Complete maturity study	EC Dec 2021
White Seabass	Evaluate bycatch in commercial fishery	In progress EC Apr 2022
Pacific Herring	Implement FMP	Effective Mar 2020
Pacific Herring	Complete ESR	EC Jun 2021

Topic	Tasks	Time Frame
Pacific Herring	Develop Herring eggs on Kelp rulemaking	Completed Nov 2020, effective Nov 30, 2020
CA Sheephead	Evaluate bycatch in commercial fishery	TBD
Market Squid	Reconvene Fishery Advisory Committee	EC Fall 2021
Market Squid	Evaluate need for short and long-term regulatory changes	EC 2022
CA Spiny Lobster	Scope tailing options and regulatory cleanup regulations	TBD

VI. Managing Fisheries**

Topic	Tasks	Time Frame
Monitoring/Research	Long-term fishery–dependent and –independent data collection	Ongoing
Monitoring/Research	Collaborative study investigating climate change impacts on the sustainability of CA Spiny Lobster, Market Squid, and Pacific Sardine within the CA Current System	EC Sep 2021
Monitoring/Research	Socioeconomics of recreational fishery including target species choices	TBD
Data Analysis and Stock Assessments	Conduct MSE through the Data-Limited Methods (DLM) Toolkit on eight state-managed species/species groups (Barred Sand Bass, CA Halibut, Kelp Bass, Redtail Surfperch, CA Spiny Lobster, Red Sea Urchin, Rock Crab [3 species], and Warty Sea Cucumber)	Completed Jun 2020
Data Analysis and Stock Assessments	Generate reports for the DLM Toolkit MSE results	EC Apr 2021
Data Analysis and Stock Assessments	Incorporate MSE reports as appendices to applicable ESRs	EC Jul 2021

Topic	Tasks	Time Frame
Data Analysis and Stock Assessments	Expand MSE DLM Toolkit to include multiple gears/sectors and test using CA Halibut	EC Jun 2021
Data Analysis and Stock Assessments	Identify process for characterizing bycatch in commercial fishery	EC Apr 2021
Review Analytical Results and Develop Management Options	White Seabass, Pacific Herring, and CA Spiny Lobster status as determined through process outlined in FMPs	Annual
Review Analytical Results and Develop Management Options	CA Sheephead, Kellet's Whelk and Sheep Crab landings against TACs	Annual
Review Analytical Results and Develop Management Options	Northern CA Red Abalone status	Ongoing
Review Analytical Results and Develop Management Options	Dungeness Crab meat quality evaluation	Annual
Review Analytical Results and Develop Management Options	Dungeness Crab, Rock Crab, Razor Clam, and CA Spiny Lobster domoic acid level evaluation	Ongoing
Identification of Management Measures and Development of Regulations	Recreational crab trap bycatch of whales and turtles	Proposed adoption Nov 2020
Identification of Management Measures and Development of Regulations	Kelp recovery and urchins	Ongoing

**In addition to tasks already covered in Sections IV and V

VII. Outreach

Topic	Tasks	Time Frame
ESR Accessibility	Upload 30 final ESRs onto Marine Region website until imported into CA Fisheries Portal	Completed Feb 2020
CA Marine Species Portal Phase 2	Build website for CA Marine Species Portal, add ESRs, and launch Portal	Completed Jul 2020
CA Marine Species Portal - enhancement	Modify Portal to include non-ESR species	Completed Oct 2020
CA Marine Species Portal - enhancement	Addition of other non-ESR species	Ongoing

Topic	Tasks	Time Frame
CA Marine Species Portal Phase 3	Implement mechanism to include data updates in ESRs within Portal	EC Jul 2021
Marine Region Website	Update Marine Home Page	Completed Sep 2020
Marine Region Website	Renovate website	Ongoing
FGC Updates	Provide regular updates at FGC Marine Resource Committee and Tribal Committee meetings	Ongoing
Partnerships and Stakeholder Engagement	Participate on formal and informal fishery task forces and workgroups	Ongoing
Partnerships and Stakeholder Engagement	Outreach to fishermen and stakeholders through formal and informal discussions	Ongoing
Partnerships and Stakeholder Engagement	Outreach to Tribes per guidance provided in the 2014 CDFW Tribal Communication and Consultation Policy	Ongoing
Partnerships and Stakeholder Engagement	Build partnerships to support implementation	Ongoing

VIII. Implementing New Programs

Topic	Tasks	Time Frame
California Fisheries Innovation Act of 2018 (AB 1573)	Phase II: Implement Experimental Fishing Permit Program	EC Jun 2021
SB 1309	Implement Risk Assessment and Mitigation Program (RAMP)	Effective Nov 2020
SB 1309	Implement Standardized Gear Marking Program	Effective May 2020
Experimental Fisheries	Initiate Experimental Box Crab fishery	Started Apr 2019
Experimental Fisheries	Collect Box Crab catch information	Ongoing
Fisheries Disaster Relief Programs	Implement as required	Ongoing

IX. Improving MLMA Fisheries (Ecological, Social, and Management Systems)

Topic	Tasks	Time Frame
Data Modernization and Review	Review and evaluate logbooks and potential use of E-logs	In progress
Data Modernization and Review	Develop and implement a public marine fisheries data explorer tool linked to the Marine Data Warehouse	EC Jul 2021
New Data Collection Methods	Evaluate use of electronic monitoring for vessels participating in Box Crab experimental fishing program	Ongoing
Ocean Resources Enhancement	Administer Ocean Resources Enhancement and Hatchery Program (OREHP)	Ongoing
FMP Planning	Lessons learned evaluation for FMP planning	Completed Aug 2020
Restricted Access Evaluation	Evaluate the performance of restricted access programs for several CA commercial fisheries	EC Dec 2021
Fisheries Adaptive Capacity	Support the climate change scenario planning efforts being conducted by the Pacific Fishery Management Council as part of their Fishery Ecosystem Plan Climate and Communities Initiative	EC 2021
Fisheries Adaptive Capacity	Support the investigation of other ways for improving fisheries management responsiveness and fishing communities' resilience to changing ocean conditions	Ongoing
Fisheries Adaptive Capacity	Support development of 13 port profile descriptions	EC May 2021
Fisheries Adaptive Capacity	Develop guidance for analyzing Department commercial fisheries data to address key socioeconomic questions	EC Dec 2021

Topic	Tasks	Time Frame
Fisheries Adaptive Capacity	Build upon port profile descriptions to include other ports and/or more fisheries/fisheries characteristics	TBD
Fisheries Adaptive Capacity	Support development of socioeconomic tools	Ongoing

Appendix A: Completed Tasks

A-I. MLMA Framework – Prioritization

Topic	Tasks
Fisheries Set #1: Key finfish plus Bay Shrimp, CA Spiny Lobster, and Market Squid	Bycatch Ecological Risk Assessment (ERA) and Habitat ERA, Target ERA conducted and combined with Productivity & Susceptibility Analysis (PSA); Bycatch, Habitat, and PSA + Target results combined
Fisheries Set #1	Update on production of prioritized list presented to MRC
Fisheries Set #1	ERA + PSA prioritization results presented to stakeholders
Fisheries Set #1	Present prioritized list to FGC (see Appendix C)

A-II. MLMA Framework - Scaling

Topic	Tasks
Prioritized Fisheries (Set #1)	Conduct evaluation (degree of management change needed; fishery complexity) to determine appropriate management scale; as possible, include socioeconomic and climate considerations

A-III. Scaled Fishery Management: Document Development

Topic	Tasks
Enhanced Status Reports (ESRs)	Develop 30 ESRs for 33 species

A-IV. Scaled Fishery Management: Key Actions for Priority Species without FMP

See IV. Scaled Fishery Management: Key Actions for Priority Species without FMP for current status of tasks.

A-V. Scaled Fishery Management: Key Actions for Priority Species with FMP

Topic	Tasks
Pacific Herring	FMP completed

A-VI. Managing Fisheries

Topic	Tasks
Monitoring/Research	Collaborative research on habitat use and population monitoring of the Warty Sea Cucumber completed
Identification of Management Measures and Development of Regulations	Regulations for Pacific Hagfish traps permitted on single vessel adopted

A-VII. Outreach

Topic	Tasks
CA Fisheries Portal Phase 1	Design for CA Fisheries Portal developed; includes layout for ESR text

A-VIII. Implementing New Programs

Topic	Tasks
Fisheries Disaster Relief Programs	Program for Dungeness Crab fisheries disaster payout developed
California Fisheries Innovation Act of 2018 (AB 1573)	Phase I: Implement Box Crab EFP
SB 1309	Implement Gear Retrieval Program for Dungeness Crab Traps

A-IX. Improving MLMA Fisheries (Ecological, Social, and Management Systems)

Topic	Tasks
Data Modernization and Review	Transition from paper commercial landing receipts to electronic receipts
New Data Collection Methods	Evaluation of use of remote operating vehicles for collecting sea cucumber data inside and outside of MPAs
New Fishery Management Protocols and Tools	Characterize use of restricted access in several CA fisheries and provide recommendations for reviewing CA restricted access programs

Appendix B: Longer-term Tasks

B-I. MLMA Framework – Prioritization

Topic	Tasks
Future Prioritization Process	Develop socioeconomic assessment tool for use in prioritization process as noted in MLMA-based Management Framework
Future Prioritization Process	Develop oceanographic and climate assessment tool to include in the prioritization process

B-II. MLMA Framework – Scaling

No new tasks identified at this time.

B-III. Scaled Fishery Management: Document Development

Topic	Tasks
Update ESRs	Enhance sections of management documents for priority fisheries including socioeconomics and climate

B-IV. Scaled Fishery Management: Key Actions for Priority Species without FMP

No new tasks identified at this time.

B-V. Scaled Fishery Management: Key Actions for Priority Species with FMP

No new tasks identified at this time.

B-VI. Managing Fisheries

Topic	Tasks
Monitoring/Research	Conduct research to address the use of marine protected areas in MLMA-based management
Monitoring/Research	Conduct research to address socioeconomic information gaps
Monitoring/Research	Conduct research to address climate-related information gaps
Review Analytical Results and Develop Management Options	Identify management options to address fisheries concerns (e.g., ecological and socioeconomic) highlighted through monitoring/research and assessments
Review Analytical Results and Develop Management Options	Identify management options for addressing risks to fish stocks and fishing communities from climate change

B-VII. Outreach

No new tasks identified at this time.

B-VIII. Implementing New Programs

Topic	Tasks
New Mandated Programs	Implement any new marine fisheries programs as mandated through new legislation
Experimental Fisheries	Identify emerging fisheries that might benefit from inclusion in an experimental gear program

B-IX. Improving MLMA Fisheries (Ecological, Social, and Management Systems)

Topic	Tasks
Data Modernization and Review	Centralize fisheries independent data sets
New Fishery Management Protocols and Tools	Test methods for reducing bycatch
Fisheries Adaptive Capacity	Identify management approaches that increase adaptive capacity for responding to climate change

Appendix C: Fisheries Prioritization Set #1

Commercial Fisheries

Species	Gear	Total	PSA Rank	Bycatch Rank	Habitat Rank
Pacific Angel Shark	Gill Net	4	1	1	2
CA Halibut	Trawl	5	2	2	1
CA Halibut	Gill Net	5	2	1	2
White Seabass	Gill Net	6	3	1	2
CA Bay Shrimp	Trawl	7	3	3	1
Pacific Herring	Gill Net	8	3	3	2
CA Sheephead	Trap	8	2	4	2
CA Barracuda	Gill Net	10	3	2	5
Pacific Hagfish	Trap	11	4	4	3
Shiner Perch	Trap	11	4	4	3
Market Squid	Purse Seine	11	4	3	4
CA Halibut	Hook-and-Line	12	3	4	5
Pacific Bonito	Purse Seine	13	4	4	5
Redtail Surfperch	Hook-and-Line	13	4	4	5
Night Smelt	A Frame	13	4	4	5
Jacksmelt	Hook-and-Line	13	4	4	5

Recreational Fisheries

Species	Gear	Total	PSA Rank	Bycatch Rank	Habitat Rank
Brown Smoothhound	Hook-and-Line	9	1	4	4
CA Sheephead	Hook-and-Line	9	2	4	3
Kelp Bass	Hook-and-Line	9	2	4	3
Ocean Whitefish	Hook-and-Line	9	2	4	3
Spotted Sand Bass	Hook-and-Line	10	2	4	4
Barred Sand Bass	Hook-and-Line	10	2	4	4
CA Halibut	Hook-and-Line	11	3	4	4
Barred Surfperch	Hook-and-Line	11	3	4	4
White Seabass	Hook-and-Line	12	4	4	4
CA Barracuda	Hook-and-Line	12	3	4	5
CA Corbina	Hook-and-Line	12	4	4	4
White Croaker	Hook-and-Line	12	4	4	4
Pacific Bonito	Hook-and-Line	13	4	4	5

Appendix D: Fisheries Prioritization Set #2

Species	Sector	Gear	PSA Rank
Warty Sea Cucumber	Comm	Dive (Hand)	1
Red Abalone	**Rec**	Dive (Hand/Iron)	1
Giant Red Sea Cucumber	Comm	Trawl	2
Spiny Lobster	Comm	Trap	2
Ocean Pink Shrimp	Comm	Trawl	3
Spiny Lobster	**Rec**	Hoop net	3
Pacific Geoduck Clam	**Rec**	Shovel	3
Kellet's Whelk	Comm	Trap	4
Spot Prawn	Comm	Trap	4
Red Sea Urchin	Comm	Dive (Hand/Rake)	4
Ridgeback Prawn	Comm	Trawl	4
Rock Crab	Comm	Trap	5
Dungeness Crab	Comm	Trap	5
Pismo Clam	**Rec**	Clam Fork	5
Dungeness Crab	**Rec**	Trap	5

Species	Sector	Gear	Ecological Rank	ERA Rank Bycatch	ERA Rank Habitat
Ridgeback Prawn	Comm	Trawl	3	2	1
Giant Red Sea Cucumber	Comm	Trawl	3	2	1
Ocean Pink Shrimp	Comm	Trawl	4	3	1
Dungeness Crab	Comm	Trap	5	2	3
Spot Prawn	Comm	Trap	5	3	2
Rock Crab	Comm	Trap	5	3	2
Spiny Lobster	Comm	Trap	5	3	2
Kellet's Whelk	Comm	Trap	5	3	2
Dungeness Crab	**Rec**	Trap	6	3	3
Spiny Lobster	**Rec**	Hoop net	7	4	3
Pacific Geoduck Clam	**Rec**	Shovel	8	4	4
Warty Sea Cucumber	Comm	Dive (Hand)	9	4	5
Red Sea Urchin	Comm	Dive (Hand/Rake)	9	4	5
Red Abalone	**Rec**	Dive (Hand/Iron)	9	4	5
Pismo Clam	**Rec**	Clam Fork	9	4	5

Appendix E: Scaled Fishery Management

Scaled Fishery Management along a continuum from Enhanced Status report (ESR) to a complex Fishery Management Plan (FMP) [Adapted from the 2018 MLMA Master Plan, Figure 2]

What scale of management is appropriate?
FGC §7056(a-m)
ESR ⟶ ESR & Rulemaking → ESR & Basic FMP → ESR & Complex FMP

ESR	ESR & Data/Scoping	ESR & Rulemaking	ESR & Basic/Complex FMP
Spotfin Croaker*	Barred Sand Bass	Grunion**	California Halibut***
Yellowfin Croaker*	Kelp Bass	Kelp**	Red Abalone****
Yellowtail*	Barred Surfperch	Dungeness Crab	Ocean Pink Shrimp****
Surf smelt*	California Barracuda	Gaper Clam**	
	Bay Shrimp		
	Pacific Angel Shark		
	Brown Smoothhound Shark		
	Ridgeback Prawn		
	Giant Red Sea Cucumber		
	Warty Sea Cucumber		
	Red Sea Urchin		
	Spot Prawn		
	Rock Crab		

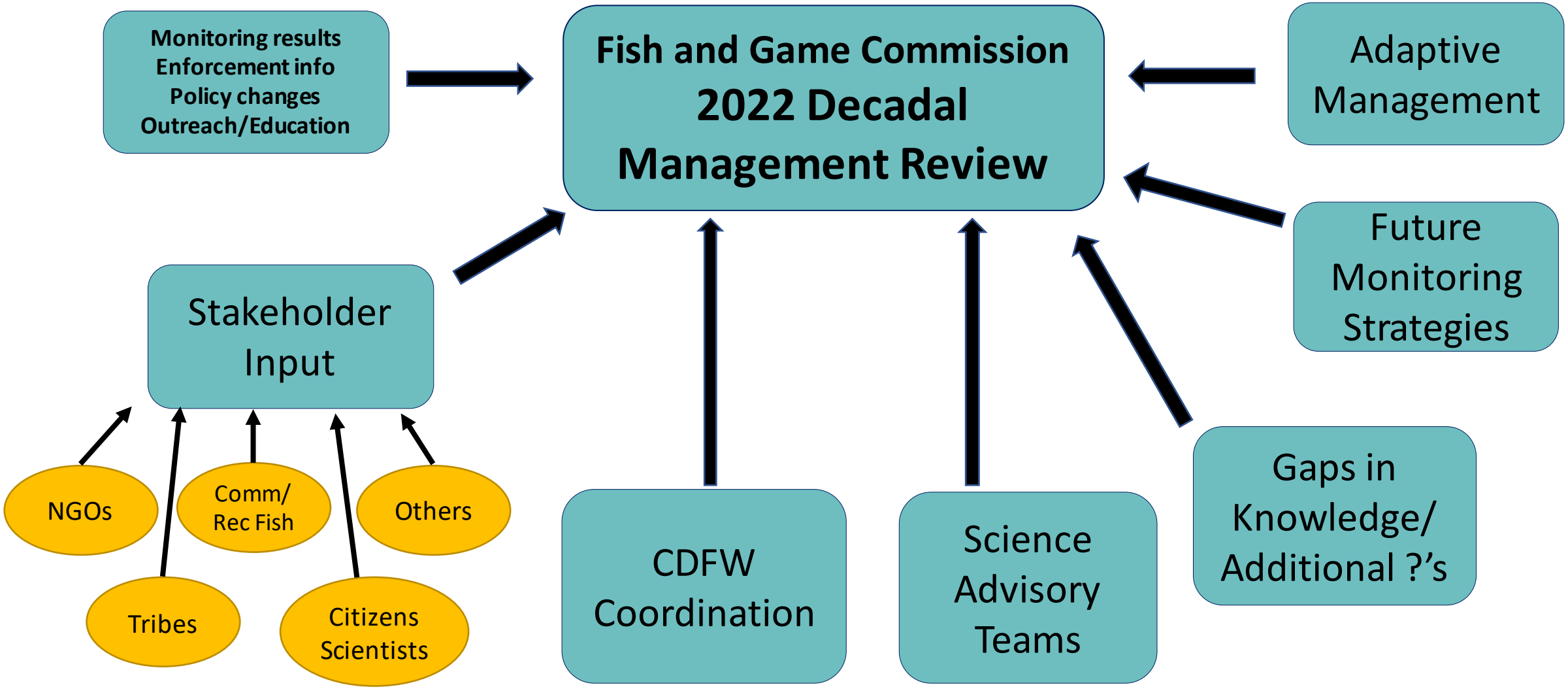
* Species not included in prioritization process, but identified as needing ESR.

** Species not included in prioritization process, but identified as needing ESR and rulemaking in accordance with criteria listed in the MLMA Master Plan, Chapter 2, regarding emerging issues.

*** The scale of management for this species is still under evaluation.

**** FMP currently being developed.

Decadal Management Review: 2022



COMMITTEE STAFF SUMMARY FOR MARCH 17, 2020 MRC

For background purposes only

6. REGULATIONS FOR COMMERCIAL HARVEST OF KELP AND ALGAE

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

Discuss DFW-proposed regulation changes concerning commercial harvest of wild kelp and algae and consider potential committee recommendation.

Summary of Previous/Future Actions

• FGC approved 3-phase approach for wild kelp and algae regulation review	June 20, 2012; Mammoth Lakes
• FGC adopted Phase 1 kelp regulations	Nov 6, 2013; La Quinta
• MRC reviewed approach to next regulation phases	Nov 4, 2015; MRC, Ventura
• FGC approved revised 3-phase approach	Dec 9, 2015; San Diego
• DFW updated MRC on new Phase 2 regulation review	Nov 15, 2016; MRC, Los Alamitos
• DFW provided updates on regulation review	2018-2019; MRC, various
• **Today's discussion and potential recommendation**	**Mar 17, 2020; MRC, Santa Rosa**
• Notice hearing	August 19-20, 2020; Fortuna
• Discussion/adoption hearing	October 14-15, 2020; Oakland

Background

Kelp, an important biogenic habitat, is managed with other marine algae through DFW's kelp management program. In Jun 2012, FGC and DFW agreed to revise antiquated commercial kelp regulations over several years through a three-phase approach, to improve management and enforceability. Phase 1 was completed in 2013 and implemented in 2014; DFW commenced with Phase 2 in late 2016.

Phase 2 has focused on both regulatory clean-up and broader management and regulation overhaul in consultation with kelp and algae harvesters, which DFW highlighted through updates to MRC in Mar 2018 and Jul 2019.

During phase 2, DFW conducted direct outreach to kelp and algae harvesters, solicited feedback from stakeholders at MRC meetings, and engaged directly with individual tribes and tribal communities and through the FGC Tribal Committee. Concerns raised during public and tribal engagement focused, in part, on the extensive loss of bull kelp on the north coast, and how the recent impacts should be incorporated into DFW's kelp harvest management. DFW has integrated additional management proposals intended to be responsive to the ecosystem changes and public input received, which will be described at today's meeting.

COMMITTEE STAFF SUMMARY FOR MARCH 17, 2020 MRC

For background purposes only

In Nov 2019, DFW presented an overview of the types of regulatory changes proposed for the Phase 2 rulemaking and highlighted a potential rulemaking timeline for consideration. In Feb 2020, FGC approved an updated rulemaking timeline as proposed.

Today MRC will receive a presentation from DFW staff on specific proposed regulatory changes in seven management categories (Exhibit 1) and discuss possible recommendations.

Significant Public Comments

A non-governmental organization expressed support for the proposed statewide closure of bull kelp harvest; in conjunciton with the bull kelp closure, it recommends that harvest provisions associated with bull kelp be removed and that administrative kelp beds within the bull kelp range be changed to a closed status to avoid public confusion (Exhibit 2).

Three edible seaweed harvesters do not believe they have had adequate time to fully engage in the regulation development process following DFW's harvester survey, and request 1) a delay in the rulemaking timeline until autumn*; 2) time to present at the Mar MRC meeting; 3) accommodation for participation via webinar; and 4) access to DFW survey results (Exhibit 3). (**Note that in Feb 2020, FGC adjusted the rulemaking timeline to Aug/Oct, which may satisfy this request.)*

Recommendation

FGC staff: Consider public input and develop a recommendation to support advancing draft regulations to a rulemaking stage with proposed changes recommended by DFW.

Exhibits

1. DFW presentation
2. Email from Gillian Lyons, Pew Cheritable Trusts, received Feb 18, 2020
3. Email from Terry D'Selkie, Ocean Harvest Sea Vegetables, Larry Knowles, Rising Tide Sea Vegetables, and James Jungwirth, Naturespirit Herbs, received Feb 14, 2020

Committee Direction/Recommendation

The Marine Resources Committee recommends that the Commission support proposed regulation measures for commercial kelp and algae harvest as recommended by the Department and discussed today.

OR

The Marine Resources Committee recommends that the Commission support proposed regulation measures for commercial kelp and algae harvest as recommended by the Department and discussed today, except _____.

California Fish and Game Commission
Marine Resources Committee (MRC) Work Plan
Scheduled Topics and Timeline for Items Referred to MRC
Updated for the March 16, 2021 meeting

TOPIC	CATEGORY	NOV 2020	MAR 2021	JUL 2021
Planning Documents & Fishery Management Plans (FMPs)				
MLMA Master Plan (MP) for Fisheries – Implementation Updates	MP Implementation	X	X	X
Red Abalone FMP / ARMP Update	FMP	X	X	
California Halibut FMP	FMP		X	
California Pink Shrimp FMP	FMP		X	
Marine Protected Areas Network – 2022 Decadal Management Review	Management Review		X	
Review market squid fishery management (* proposed)	Management Review			X
Regulations				
Kelp and Algae Commercial Harvest	Kelp	X	X	X/R
California Spiny Lobster FMP Implementing Regulations Review (a*dded Feb 2019; timing TBD*)	FMP Implementing Regulations			
Review emergency regulation prohibiting use of hydraulic pump gear to take clam, and future rulemaking (* proposed)	Recreational take			X
Aquaculture				
Aquaculture Program Planning (Information Report, Action Plan)	Planning Document	X	X	X
Aquaculture State Water Bottom Leases: Existing & Future Lease Considerations	Current Leases / Planning			X
Moratorium on New Aquaculture Lease Applications	New Leases	X/R	X/R	
Aquaculture Lease Best Management Practices (BMP) Plans (On hold, TBD)	Regulations			
Emerging Management Issues				
Kelp Restoration and Recovery Tracking	Kelp		X	
Invasive Non-native Kelp and Algae Species	Kelp / Invasive Species	X		
Special Projects				
California's Coastal Fishing Communities	MRC Special Project	X	X/R	X

Key:
X Discussion scheduled
X/R Recommendation developed; topic may be moved to FGC
* Proposed for referral to MRC

California Fish and Game Commission: Perpetual Timetable for Anticipated Regulatory Actions

Updated March 5, 2021

Regulatory Change Category	Title 14 Section(s)	MRC Webinar/Teleconference Mar16, 2021	TC Webinar/Teleconference Apr 13, 2021	FGC Webinar/Teleconference Apr 14, 2021	FGC Webinar/Teleconference May 11, 2021	WRC Webinar/Teleconference May 11, 2021	FGC Webinar/Teleconference Jun 16, 2021	FGC Webinar/Teleconference Jun 17, 2021	MRC Webinar/Teleconference Jul 20, 2021	TC Webinar/Teleconference Aug 17, 2021	FGC Webinar/Teleconference Aug 18, 2021	FGC Webinar/Teleconference Aug 19, 2021	WRC Webinar/Teleconference Sep 16, 2021	FGC Webinar/Teleconference Oct 13, 2021	FGC Webinar/Teleconference Oct 14, 2021	MRC Webinar/Teleconference Nov 9, 2021	TC Webinar/Teleconference Dec 14, 2021	FGC Webinar/Teleconference Dec 15, 2021	FGC Webinar/Teleconference Dec 16, 2021	WRC Jan 2022 TBD	FGC Feb 2022 TBD	FGC Feb 2022 TBD	MRC Mar 2022 TBD	FGC Apr 2022 TBD
Recreational Clam, Sand Crab, and Shrimp Gear Emergency [6]	29.20, 29.80	E 3/8																	EE 12/31					
Central Valley Sport Fishing (Annual)	7.40(b)(4), (43), (66), (80)			D	A				E 7/16									N						
Klamath River Basin Sport Fishing (Annual)	7.40(b)(50)			D	A					E 8/15								N						
Waterfowl (Annual)	502			A					E 7/1									N						
Mammal Hunting - Deer and antelope tag adjustments, and big game license tag drawing	360, 363,**708.19**			E 4/1																				
Western Joshua Tree Renewable Energy 2084 EM	749.10	EE 4/28/21 without Governor's Executive Order								EE 8/26/21 with Governor's Executive Order														
Western Joshua Tree Renewable Energy 2084 EM Extension [1]	749.10											EM 8/17/21				EE 11/24/21								
Western Joshua Tree Renewable Energy 2084 EM Extension [2]	749.10													EM 1124/21										
Western Joshua Tree Dead Hazard Trees 2084	749.11															EE 11/9/21								
Western Joshua Tree Local Government 2084	749.12															EE 11/9/21								
Groundfish	27.30, 27.35, 27.45, 28.27, 28.28, 28.54, 28.55, 28.65, 150.16																							
Simplification of Statewide Inland Fishing Regulations [3]	3.00, 4.00, 5.00, 5.41, 5.84, 5.86, 5.89, 7.00, 7.40, 7.50, 8.10	E 3/1																						
Recreational Crab Marine Life Protection Measures	29.80, 29.85, 701	E 3/1																						
Recreational Take of Red Abalone	29.15			E 4/1																				
Recreational take of Sea Urchin at Caspar Cove and Tanker Reef [5]	29.06		E 4/1																					
Recreational Purple Sea Urchin emergency (120 + 90 day extensions)	29.06									EE 8/2														

Rulemaking Schedule to be Determined	Title 14 Section(s)	MRC Webinar/Teleconference Mar16, 2021	TC Webinar/Teleconference Apr 13, 2021	FGC Webinar/Teleconference Apr 14, 2021	FGC Webinar/Teleconference May 11, 2021	WRC Webinar/Teleconference May 11, 2021	FGC Webinar/Teleconference Jun 16, 2021	FGC Webinar/Teleconference Jun 17, 2021	MRC Webinar/Teleconference Jul 20, 2021	TC Webinar/Teleconference Aug 17, 2021	FGC Webinar/Teleconference Aug 18, 2021	FGC Webinar/Teleconference Aug 19, 2021	WRC Webinar/Teleconference Sep 16, 2021	FGC Webinar/Teleconference Oct 13, 2021	FGC Webinar/Teleconference Oct 14, 2021	MRC Webinar/Teleconference Nov 9, 2021	TC Webinar/Teleconference Dec 14, 2021	FGC Webinar/Teleconference Dec 15, 2021	FGC Webinar/Teleconference Dec 16, 2021	WRC Jan 2022 TBD	FGC Feb 2022 TBD	FGC Feb 2022 TBD	MRC Mar 2022 TBD	FGC Apr 2022 TBD
Marine Protected Areas (MPAs), Marine Managed Areas (MMAs), and Special Closures	632																							
CA Grunnion (FGC Petition #2019-014)	TBD																							
Commercial Kelp and Algae Harvest Management	165, 165.5, 705																							
Santa Cruz Harbor Salmon Fishing (FGC Petition #2016-018)	TBD																							
European Green Crab (FGC Petition #2017-006)	TBD																							
Wildlife Areas/Public Lands [4]	TBD																							
Experimental Fishing Permit (EFP) Program Phase II	TBD																							
Possess Game / Process Into Food	TBD																							
American Zoological Association / Zoo and Aquarium Association	671.1																							
American Zoological Association / Zoo and Aquarium Association	671.1																							
Night Hunting in Gray Wolf Range (FGC Petition #2015-010)	474																							
Shellfish Aquaculture Best Management Practices	TBD																							
Ban of Neonicotinoid Pesticides on Department Lands (FGC Petition #2017-008)	TBD																							
Commercial Pink Shrimp Trawl	120, 120.1, 120.2																							
Ridgeback Prawn Incidental Take Allowance	120(e)																							

KEY

FGC = California Fish and Game Commission MRC = FGC Marine Resources Committee WRC = FGC Wildlife Resources Committee TC = FGC Tribal Committee

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

3 = Includes FGC Petition #2018-008 4 = Includes FGC Petition #2018-003 5 = Includes FGC Petition #2020-001 6 = Includes FGC Petition #2019-012