

# California Fish and Game Commission

## Marine Resources Committee

### Meeting Binder



July 20, 2023

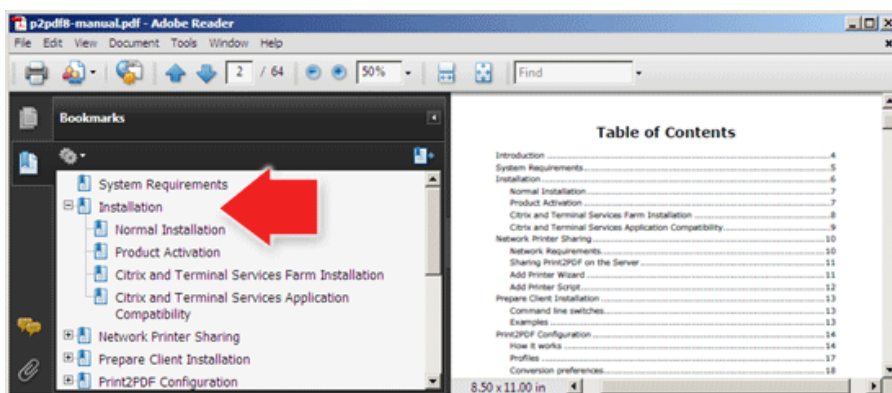
Petaluma, CA


## **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 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).

# Introductions for California Fish and Game Commission Marine Resources Committee Meeting

---

## California Fish and Game Commissioners

Eric Sklar	MRC Co-chair (Saint Helena)
Samantha Murray	MRC Co-chair (La Jolla)

## Commission Staff

Melissa Miller-Henson	Executive Director
Susan Ashcraft	Marine Advisor
Cynthia McKeith	Staff Services Analyst
Maurene Trotter	Regulatory Analyst
David Haug	Regulatory Analyst
Kinsey Mathews	Sea Grant State Fellow

## California Department of Fish and Wildlife

Eric Kord	Assistant Chief, Law Enforcement Division
Randy Lovell	State Aquaculture Coordinator
Craig Shuman	Regional Manager, Marine Region
Becky Ota	Environmental Program Manager, Marine Habitat Conservation, Marine Region
Kirsten Ramey	Environmental Program Manager, State Managed Finfish and Nearshore Ecosystem, Marine Region
Todd Neahr	Environmental Program Manager, Resource Assessment Marine Region
Steve Wertz	Senior Environmental Scientist Supervisor, Marine Region

## Invited Guests

Noah Ben-Adaret	Sustainable Fisheries and Aquaculture Program Manager, OPC
-----------------	--

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

---

---

**Commissioners**  
**Eric Sklar**, President

Saint Helena

**Erika Zavaleta**, Vice President  
Santa Cruz

**Jacque Hostler-Carmesin**, Member  
McKinleyville

**Samantha Murray**, Member  
La Jolla

**Anthony Williams**, Member  
Huntington Beach

STATE OF CALIFORNIA  
Gavin Newsom, Governor

## Fish and Game Commission



*Wildlife Heritage and Conservation  
Since 1870*

**Melissa Miller-Henson**  
**Executive Director**  
P.O. Box 944209  
Sacramento, CA 94244-2090  
(916) 653-4899  
[fgc@fgc.ca.gov](mailto:fgc@fgc.ca.gov)  
[www.fgc.ca.gov](http://www.fgc.ca.gov)

### MARINE RESOURCES COMMITTEE

Committee Chairs: Commissioner Sklar and Commissioner Murray

**REVISED\*** Meeting Agenda  
July 20, 2023; 8:30 a.m.

**Petaluma Elks Lodge**  
**2105 South McDowell Boulevard**  
**Petaluma, CA 94954**

and

**Webinar and Teleconference**

***To participate in the meeting remotely, you may join the webinar directly at <https://wildlife-ca.gov.zoom.us/j/88400760183>. For complete instructions on how to join via Zoom or telephone, [click here](#) or visit [fgc.ca.gov/meetings/2023](http://fgc.ca.gov/meetings/2023).***

**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.

**\* This agenda is revised to add a sub-item to item 6(B)II.**

Call to order

**1. Approve agenda and order of items**

**2. General public comment for items not on the agenda**

The Committee may not discuss or take action on any matter raised during this item, except to consider whether to recommend that the matter be added to the agenda of a future meeting [Sections 11125, 11125.7(a), Government Code].

**3. Evaluation of bycatch in the California halibut set gillnet fishery in support of the fishery management review**

Receive and discuss Department report summarizing its evaluation of fisheries bycatch and acceptability in the California halibut set gillnet fishery, provide committee direction on next steps, and potentially develop committee recommendation.

**4. Aquaculture leasing in California – public interest determination**

Receive and discuss proposed public interest criteria, evaluation framework, and process options to support Commission determination whether a new lease application is in the public interest; receive public input, and potentially develop committee recommendation.

**5. Marine protected areas (MPA) decadal management review**

Receive Department proposed prioritization of the adaptive management recommendations for California's MPA network and management program, contained in the MPA decadal management review, and develop potential committee recommendation.

**6. Staff and agency updates**

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

*Note: To enhance meeting efficiency, the Committee intends to receive updates primarily in writing. The public will be given an opportunity to provide comment, although the level of in-meeting discussion will be at the discretion of the Committee.*

**(A) California Ocean Protection Council**

- I. Statewide aquaculture action plan development

**(B) Department**

- I. Law Enforcement Division
- II. Marine Region
  - a. Marine Fisheries Data Explorer
  - b. Red abalone recovery plan for the north coast
  - c. Market squid fishery management and fishery management plan review
  - d. California halibut bag limit regular rulemaking, including statewide option

**(C) Commission staff**

**7. Future agenda items**

**(A) Review work plan agenda topics and timeline**

**(B) Potential new agenda topics for Commission consideration**

Adjourn

## California Fish and Game Commission 2023 Meeting Schedule

**Note:** As meeting dates and locations can change, please visit [www.fgc.ca.gov](http://www.fgc.ca.gov) for the most current list of meeting dates and locations.

Meeting Date	Commission Meeting	Committee Meeting
August 21		<b>Tribal</b> River Lodge Conference Center 1800 Riverwalk Drive Fortuna, CA 95540
August 22-23	River Lodge Conference Center 1800 Riverwalk Drive Fortuna, CA 95540	
September 21		<b>Wildlife Resources</b> Chico area
October 11-12	San Jose area	
November 16		<b>Marine Resources</b> San Diego area
December 12		<b>Tribal</b> San Diego area
December 13-14	San Diego area	

### Other Meetings of Interest

#### Association of Fish and Wildlife Agencies

- September 23-27; 2023 – Calgary, Alberta, Canada

#### Pacific Fishery Management Council

- September 7-14, 2023 – Spokane, WA
- October 31 – November 8, 2023 – Garden Grove, CA

#### Pacific Flyway Council

- August 25, 2023 – Winter Park, Colorado

#### Wildlife Conservation Board

- August 24, 2023 – Sacramento, CA
- November 16, 2023 – Sacramento, CA

## Important Committee Meeting Procedures Information

Welcome to a meeting of the California Fish and Game Commission's Wildlife 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](mailto: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](mailto: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, 715 P Street, 16<sup>th</sup> floor, Sacramento, CA 95814; or **hand-deliver** to a Committee meeting.

### Comment Deadlines

The **Written Comment Deadline** for this meeting is 5:00 p.m. on **July 7, 2023**. 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 **July 17, 2023**. 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:

- You will be given instructions during the meeting for how to be recognized by the Committee co-chair(s) to speak.
- Once recognized, please begin by giving your name and affiliation (if any) and the number of people you represent.
- Time is limited; please keep your comments concise so that everyone has an opportunity to speak.
- If there are several speakers with the same concerns, please try to appoint a spokesperson and avoid repetitive comments.
- 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 **Written 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](mailto: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 JULY 20, 2023

**2. GENERAL PUBLIC COMMENT****Today's Item****Information** ☒**Action** ☐

Receive public comment regarding topics that are not included 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 regulatory change must be submitted to the Commission on petition form FGC 1, *Petition to the California Fish and Game Commission for Regulation Change* (Section 662). However, MRC may, at its discretion, request that staff follow up on items of potential interest for possible recommendation to the Commission.

**Significant Public Comments**

Giant Kelp Restoration advocates for the ability to cull urchins within marine protected areas. The organization believes that culling urchins protects and restores kelp with minimal impacts, in addition to providing valuable data for marine resource managers, and shares the locations of the next proposed sites.

**Recommendation**

Staff recommends any new agenda items—based on issues raised and within the Commission's authority—be held for discussion under Agenda Item 7, Future Agenda Items.

**Exhibits**

1. [Email and presentation from Keith Rootsaert](#), received July 6, 2023

**Committee Direction/Recommendation (N/A)**

## COMMITTEE STAFF SUMMARY FOR JULY 20, 2023 MRC

### 3. EVALUATION OF BYCATCH IN THE CALIFORNIA HALIBUT SET GILLNET FISHERY IN SUPPORT OF THE FISHERY MANAGEMENT REVIEW

#### Today's Item

Information ☐Action ☒

Receive and discuss Department report summarizing its evaluation of fisheries bycatch and acceptability in the California halibut set gillnet fishery, provide committee direction on next steps, and potentially develop committee recommendation.

#### Summary of Previous/Future Actions

- |  |                               |
|--|-------------------------------|
| • Commission referred California halibut management review to MRC  | Aug 19-20, 2020               |
| • Commission referred bycatch evaluation for California halibut management review to MRC   | Dec 15-16, 2021               |
| • MRC received updates on bycatch evaluation for California halibut  | Mar 24, 2022 and Jul 14, 2022 |
| • MRC received bycatch evaluation report from Department; MRC recommendation for initial priorities in bycatch acceptability inquiry | Nov 17, 2022                  |
| • MRC received Department updates on bycatch inquiries for the California halibut gill net fishery                                   | Mar 14 & 16, 2023             |
| • <b>Today receive and discuss Department report on bycatch acceptability; potential MRC recommendation</b>                          | <b>Jul 20, 2023</b>           |

#### Background

Management review of the California halibut fishery commenced in late 2020, consistent with the requirements of the Marine Life Management Act (MLMA) and using the framework outlined in the *2018 Master Plan for Fisheries, A Guide for Implementation of the Marine Life Management Act* (master plan) for meeting those requirements. Steps taken by the Department have included pursuing stock assessments for the northern and southern stocks (2020-2021), exploring a scope and potential process for the multi-sector California halibut management review (2021), and, following Commission direction in December 2021, conducting an evaluation of bycatch in the California halibut fishery.

The California halibut fishery management review has presented the first opportunity to use the four-step framework for evaluating bycatch laid out in [Chapter 6](#) of the master plan, to: collect information on the type and amount of catch (Step 1); distinguish target, incidental, and bycatch species (Step 2); determine “acceptable” types and amounts of bycatch (Step 3); and address unacceptable bycatch (Step 4).

At the November 2022 MRC meeting, the Department presented a report completed by a contracted academic scientist that evaluated and summarized catch and bycatch data compiled for the California halibut sectors with greatest bycatch concern: commercial trawl and set gillnet halibut fisheries. Utilizing federal observer data provided by the National Marine

## COMMITTEE STAFF SUMMARY FOR JULY 20, 2023 MRC

Fisheries Service (NMFS), the Department and the contracted scientist used fishery expertise along with logbook and landings data to differentiate the subsets of observed sets targeting California halibut from other observed trawl and gillnet fishery sets. The report summarized target catch, top incidentally-caught species landed, top incidentally-caught species discarded, and discard mortality, fulfilling the information needs for steps 1 and 2 of the bycatch evaluation framework. See Exhibit 1 for additional background and context.

MRC supported relying on the Department-presented report as the foundation for completing Step 3 – evaluating acceptability of bycatch types and amounts. MRC discussed priorities for completing the detailed bycatch inquiries based on the new evaluation report, favoring an initial focus on top bycatch species from set gill nets targeting California halibut. In December 2022, the Commission approved an MRC recommendation to request the Department to (1) commence the step 3 evaluation of acceptability of bycatch in the *California halibut set gillnet fishery*, using the inquiries outlined in the master plan; (2) focus on completing bycatch inquiries for the *top ten species*; (3) engage stakeholders (halibut gillnet fishermen and stakeholder groups); and (4) bring results back to MRC in March 2023 for discussion and potential committee recommendation.

### **March MRC**

In March 2023, the Department reported that it had completed Step 3 bycatch inquiries for 12 top bycatch species, as requested by the Commission, to help assess acceptability of bycatch types and amounts against the four criteria specified in the MLMA for determining acceptability: (1) legality of the take of bycatch species; (2) degree of threat to the sustainability of the bycatch species; (3) impacts on fisheries that target the bycatch species; and (4) ecosystem impacts (Fish and Game Code Section 7085(b)). The Department presented a summary of the inquiry results during the meeting, and committed to preparing a written report documenting its responses to inquiries and articulating its findings.

Discussion also centered around a separate evaluation conducted by two non-governmental organizations (NGOs), Oceana and Turtle Island Restoration Network (TIRN), in which they evaluated bycatch acceptability in set nets for all gillnet gear combined, in contrast to the subset of halibut sets analyzed by Department. The MRC co-chairs noticed discrepancies between the NGO and Department approaches, reporting and conclusions, and asked questions to help clarify differences in the differing analyses, and sources of divergent data and findings.

Following public discussion, MRC made four requests of the Department.

1. Look more closely at discrepancies between the NGO bycatch data and the Department data, including in relation to marine mammal and leatherback sea turtle entanglement.
2. Create a more comprehensive list of species that are retained and sold as incidental catch, including:
  - (a) the percentage of fish that are caught and marketed, and
  - (b) the percentage of species caught and discarded.

## COMMITTEE STAFF SUMMARY FOR JULY 20, 2023 MRC

3. Clarify the bycatch percentage relative to pounds and number of individuals, to help reconcile the differences between the percentages reported by the NGOs and fishermen.
4. Provide a written report of the Department's evaluation of 12 top bycatch species that were summarized in the presentation, and return to today's MRC meeting with sufficient information to support a recommended determination regarding acceptability of bycatch types and amounts, to allow the process to advance to Step 4 (*addressing unacceptable bycatch types and amounts*) in the bycatch evaluation framework.

MRC also asked that Commission staff, the Department, and the two NGOs work together to reconcile differences in data and interpretations, where possible, to further advance discussions today.

### ***Update***

Since March, Commission and Department staff have strived to meet the MRC requests.

### ***Commission, Department, and NGO Meetings***

From April to July 2023, staff from the Commission, the Department, Oceana, and TIRN invested significant time through several meetings, covering multiple hours, to discuss and seek a shared understanding of bycatch within the California halibut set gillnet fishery and an analysis on the set gillnet fishery in general. Oceana and TIRN shared their raw data and methodology for several components of their report, including a description of how they extrapolated the combined California halibut and white seabass observer data to obtain fleetwide estimates. The Department summarized its raw observer data to share overall catch and bycatch rates of California halibut-only set gill nets. Each entity independently followed up with NMFS staff, researchers, and the literature to vet conclusions or interpretations or to clarify inconsistencies or uncertainty.

Commission staff completed an in-depth analysis of the NGO report (formally released in April), which included replicating analyses, evaluating assumptions, and reviewing key conclusions. Commission staff verbally shared with the NGOs where it disputed their conclusions due to inconsistencies with what the cited literature stated, flagged areas where there appeared to be erroneous information, and offered potential recommendations that would allow for a more conducive dialogue.

Overall, there was a collective exploration of respective findings and conclusions and, although there remain disagreements in interpretations, the discussions helped to expose limitations with the various sources of data, highlighted areas of concern related to particular species, and facilitated a deeper understanding of the potential impacts of the fishery. In addition, the dialogue identified areas where it may be possible to move forward with potential management measures; although the potential measures have not yet been formally vetted with fishermen – a crucial step in the overall process – staff have discussed potential management measures that could improve understanding of the impacts of this fishery through increased data collection and monitoring, and options intended to reduce bycatch impacts.

## COMMITTEE STAFF SUMMARY FOR JULY 20, 2023 MRC

*Discussions and Opportunities with Fishermen*

Several fishermen in the set gillnet fishery who attended the last two MRC meetings reached out to Commission and Department staff to share their knowledge and expertise of the fishery. They are interested in helping shape future management measures and are offering new ideas to explore. In addition, they invited the MRC co-chairs, and Commission and Department staff to join them on the water to observe fishery operations first-hand. To date, staff from the Department has joined one set gillnet fishing trip, while the MRC co-chairs and Commission staff are scheduling potential dates.

***Today's Meeting***

The Department prepared a bycatch evaluation report that summarizes the information presented in March (Exhibit 2). The report summarizes the methods and results of the California halibut bycatch evaluations in Step 1 (species type and amount of catch) and Step 2 (distinguish target, incidental and bycatch species), as well as the outcomes of completing Step 3 (determine acceptable types and amounts of bycatch) bycatch inquiries from the master plan for 12 species (spreadsheet copies in report appendix). The report offers movement toward considering management measures under Step 4, to help fill significant data gaps that limit information about the actual impacts of gill nets used in the California halibut fishery, and explores others to minimize bycatch types and amounts found to be unacceptable.

In addition, the Department has shared a table with six years of cumulative observed catch data from the NMFS California Set Gill Net Observer Program filtered for California halibut-targeted sets (447 sets of 1,258 observed sets) (Exhibit 3). The data are in the same format as the summary table of unfiltered set gill net observed catch, prepared by Oceana and shared with the Commission in June, derived from the publicly available observed catch data for all set gill net (1,258 sets) for the same years. Together, these tables assist in differentiating between observed catch data attributable to the California halibut set gillnet fishery specifically.

The Department report acknowledges that "...there are significant data limitations and knowledge gaps to determine amounts and types of bycatch and potential risks to sustainability, fisheries, and ecosystems. Lack of data to understand the total amount of bycatch in an individual fishery may potentially be considered 'unacceptable' under the MLMA and could lead to discussions with industry, stakeholders, and managers to address the insufficient and uncertain sources of data. Regardless of an acceptability determination, Department staff continue to move forward towards solutions and have identified potential management measures to address information gaps related to data limitations and interactions with some bycatch species in the set gill net fishery" (from Exhibit 2, page 23).

Staff believes that the Department's analyses of the top bycatch species types and amounts as requested by MRC support responding to provide a solid foundation for addressing bycatch in the California halibut fishery through potential management measures, as well as to set additional goals for enhanced understanding of sustainability in the fishery. MRC may wish to clarify what knowledge gaps remain, and identify areas of uncertainty to pursue (e.g., further partitioning incidental catch species to identify those to be managed by target species standards and those to be managed under bycatch management standards, defining what constitutes bycatch "types" and "amounts" for purposes of bycatch acceptability evaluations, etc.).

## COMMITTEE STAFF SUMMARY FOR JULY 20, 2023 MRC

The Department's presentation for today's meeting (Exhibit 4) will highlight species that are caught and landed in the fishery, species that are caught and discarded in the fishery, and potential management measures for MRC and the Commission to consider if they support advancing to Step 4 without additional analyses.

### **Significant Public Comments**

The Commission received nine comment letters related to bycatch with California set gillnet fisheries. General themes of the comments are summarized below; see Exhibit 5 for all comment letters combined.

#### ***Comments about the Department's California Halibut Bycatch Report***

1. Oceana and TIRN express appreciation for the amount of work Department and Commission staff and MRC have dedicated to addressing the concerns arising from California set gill nets, including understanding data complexities, listening to stakeholder concerns, and undertaking California's first bycatch acceptability determination. However, they critique several aspects of the Department's recent bycatch evaluation report for California halibut set gill net (in Exhibit 2), expressing concern that it deviates from the MLMA standards and falls short on appropriate and precautionary management actions to reduce unacceptable bycatch. They also recommend three alternatives for potential comprehensive management pathways, which include specific management actions such as full observer coverage, hard bycatch caps, reduced soak time, and temporary or long-term phase-out of permits (see comment letters 3 and 8 in Exhibit 5).

#### ***Comments Regarding Bycatch Concerns in Set Gillnet Fisheries (All Targets)***

2. Oceana completed a white paper with analysis on bycatch within the set gill net fishery (all targets) using publicly available federal observer data. The report investigates soak time, catch composition, discard mortality, and post-release mortality, and suggests bycatch mitigation measures as options to reduce overall bycatch and discard mortality. In addition, for incidentally caught and retained species, it highlights those species most commonly retained as 'secondary targets' and evaluates which target species have or lack management measures to ensure sustainability. The analysis includes appendices of observer data and extrapolates total estimates of catch, discard, and discard mortality for all observed species across 15 years combined. See comment letter 3 in Exhibit 5.
3. An academic research scientist expresses concern over take with set gill net of two protected species: giant sea bass – a species he actively studies – and juvenile white sharks. He underscores the importance of having management plans and stock assessments that can inform catch limits and sustainable harvests (comment letter 1 in Exhibit 5). An individual also expressed concern over set gill net impacts on highly impaired giant sea bass in Santa Barbara, is concerned that recent observer coverage has been minimal, and would like to see a transition away from this gear type (comment letter 2).
4. A joint letter from 5 California senators and 14 assembly members expresses concern about the types and rates of bycatch in California's set gillnet gear fishery, and urges the Commission and Department to follow the approach and criteria laid out in the MLMA

## COMMITTEE STAFF SUMMARY FOR JULY 20, 2023 MRC

regarding determining acceptable bycatch. They acknowledge the management measures taken thus far in the fishery but believe further management measures are needed to protect California's biodiversity (comment letter 6).

5. Four comments letters coalesce around similar key points, such as the historical and global threat of set gill nets to regional population levels; the effects of set gill nets on the health and biodiversity of southern California's unique ecosystem; the high discard rate and discard mortality recorded by federal observers; and a request to the Commission to formally determine that the types and amounts of bycatch in set gill nets are unacceptable. One commenter is specifically concerned about the threat to pinnipeds, cetaceans, and elasmobranchs (comment letter 5), while another expresses that ecosystem-based fisheries management should take a precautionary approach (comment letter 4). Two commenters contrast set gill net gear with the lower bycatch rate of California halibut caught with hook and line gear (comment letters 7 and 9).

### Recommendation

**Commission staff:** Initiate discussions about potential management measures that may improve set gill net data collection and fill data gaps, and aid in reducing impacts of bycatch types and/or amounts that the Commission finds to be potentially unacceptable in the California halibut fishery. Request that the Department continue exploring possible management options with fishery participants and stakeholders, and provide an update for discussion at the November 2023 MRC meeting.

**Department:** Discuss potential improvements to data collection and fill information gaps, and support Department to continue stakeholder discussions and prioritize management actions.

### Exhibits

1. [Staff summary from November 17, 2022 MRC meeting, Agenda Item 5](#) (for background purposes only)
2. [Department bycatch evaluation report](#), dated June 2023
3. [NMFS observed catch in the set gill net sets targeting California halibut, 2007-2017](#)
4. [Department presentation on its evaluation of bycatch in the California halibut set gill net fishery](#), received July 7, 2023
5. [Compilation of comment letters received between June 20 and July 7, 2023](#)

### Committee Direction/Recommendation

The Marine Resources Committee recommends that the Commission support the Department exploring potential management measures with fishery participants and stakeholders to improve set gill net data collection, fill information gaps, and aid in reducing unacceptable bycatch impacts in the California halibut set gillnet fishery; and schedule the topic for discussion at the November 2023 MRC meeting.

## COMMITTEE STAFF SUMMARY FOR JULY 20, 2023 MRC

**4. AQUACULTURE LEASING IN CALIFORNIA – PUBLIC INTEREST DETERMINATION****Today's Item**Information ☐Action ☒

Receive and discuss proposed public interest criteria, evaluation framework, and process options to support Commission determination of whether a new lease application is in the public interest; receive public input, and potentially develop committee recommendation.

**Summary of Previous/Future Actions**

- MRC recommended developing public interest criteria for new aquaculture leases Mar 16, 2021, MRC
- Commission approved MRC recommendation to develop public interest criteria for new lease applications Apr 14, 2021
- Received Department updates on developing criteria Jul 21, 2021 and March 24, 2022, MRC
- Received and discussed initial draft criteria Jul 14, 2022, MRC
- Received and discussed revised Department draft criteria and guidance on next draft Nov 17, 2022, MRC
- Received update on draft criteria and discussed next steps March 14 and 16, 2023, MRC
- **Today's update on draft criteria and process; potential MRC recommendation Jul 20, 2023, MRC**

**Background**

The Commission 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 the Commission and the lessee. Prior to approving and issuing any new lease, the Commission must determine that the lease is in the public interest (California Fish and Game Code Section 15400(a)). However, there are no established standards in statute or regulation to guide the determination.

Since 2021, MRC has been facilitating development of formalized criteria that could be used by the Commission to evaluate and determine whether future proposed aquaculture leases are in the public interest. The Department committed to developing draft criteria for MRC consideration. Throughout 2022, the Department developed initial and second draft criteria through an iterative and deliberative public process with significant input from agency partners, industry members, and environmental non-governmental organizations (NGOs).

In March 2023, MRC was scheduled to receive a third iteration of the draft criteria as a final proposal. However, in preparing to release the third draft, staff became aware of procedural concerns regarding when and how to employ the criteria to make a public interest determination within the overall leasing process, particularly in relation to conducting a formal environmental evaluation as mandated under the California Environmental Quality Act (CEQA), and in relation to avoiding potential “underground regulations” according to the Administrative Procedures Act

## COMMITTEE STAFF SUMMARY FOR JULY 20, 2023 MRC

if applied prior to CEQA. In lieu of presenting the third draft, staff presented an overview and analysis of the concerns. Staff also proposed options for adjusting the timing of an evaluation in two stages followed by Commission determination, and for adjusting the format of the criteria document itself to better support enhanced transparency, governance, and public input throughout the process. See Exhibit 1 for additional details regarding the criteria development process.

Following discussion and additional MRC guidance, MRC directed Commission staff to work with the Department to:

1. Restructure the draft public interest criteria considerations into an evaluation framework to support Commission determination; and
2. develop potential process options for (a) the timing for evaluating “requirements” and “considerations” and (b) a broader governance and leasing process.

### ***Update***

#### ***Criteria***

As requested, Commission and Department staff have revised the public interest criteria into an inquiry-based framework with an initial evaluation and a final evaluation. The initial evaluation is guided by the “requirements,” framed under a single criterion, while the final evaluation is guided by “considerations” criteria. Note that the criteria have not been weakened from prior drafts, but rather reframed as inquiries, or questions, that will provide a structure for staff and Department review and recommendations. In addition, specific concerns identified by the public and MRC were addressed and incorporated into the criteria, such as including compatibility with the upcoming state aquaculture action plan currently under development and measures to avoid and/or minimize the risk of marine life entanglements. Staff vetted the further changes to the criteria and process concepts with several NGOs, industry representatives, and permitting agencies. The proposed public interest criteria and related evaluation inquiries are provided for consideration today in Exhibit 2.

To facilitate public understanding and awareness of how the new proposed criteria and related inquiries/questions were developed, staff created a crosswalk document to show how the criteria have evolved from the second draft to the third draft (Exhibit 3).

#### ***Process***

In addition, Commission staff worked with the Department to explore three potential process options for the timing of the public interest determination within the overall leasing process, relative to the process constraints discussed in March, and selected what it believes to be the best to present today. The two alternative options explored how to keep a public interest determination prior to CEQA in a manner that would comply with the Administrative Procedure Act, by either (1) omitting all criteria except requirements, or (2) adopting regulations with definitive thresholds for each of the considerations criteria. Staff instead recommends the third option, which places an initial review of requirements prior to CEQA review, and evaluation of considerations after CEQA analyses and socio-economic evaluation are available for a project-specific public interest determination. Figures depicting steps in the recent versus the proposed leasing process option, with descriptions of each phase, are presented in Exhibit 4.

## COMMITTEE STAFF SUMMARY FOR JULY 20, 2023 MRC

Today, Commission and Department staff will provide an overview of the proposed process and description of changes to the third draft of public interest criteria as provided in Exhibit 2, and proposed timing/use within the lease application process, as requested by MRC. Staff will walk through the proposed aquaculture leasing process figures in Exhibit 4 and highlight areas of enhanced interagency coordination and governance, public input opportunities, and increased transparency in the overall process. The topic is scheduled for potential MRC recommendation.

### Significant Public Comments

1. An environmental NGO and four of its related chapters request that the effects of aquaculture development be carefully and thoroughly analyzed through the public interest criteria. They support the existing requirements outlined in the second draft criteria, and suggest additional criteria related to eelgrass and the forthcoming aquaculture action plan being developed by the California Ocean Protection Council (OPC) and other state agencies. They would like to see the criteria serve as a pre-screening tool that should be finalized and adopted without delay (Exhibit 4).
2. Six environmental NGO's submitted a joint letter suggesting that the criteria should serve to increase transparency throughout the leasing process and be discussed in a public forum, such as MRC and TC meetings, prior to the CEQA environmental impact analysis process. They emphasize that eelgrass is a high priority to their organizations and would like to see avoidance of eelgrass listed as a requirement, along with the requirement related to the negative impacts on native wildlife, which staff has proposed to move into considerations. In addition, they would like added to the criteria reference to the OPC aquaculture action plan, avoidance of habitat loss, and avoiding disturbance for shorebirds (Exhibit 5).
3. A member of the public warns the Commission against the potential environmental impacts of finfish aquaculture and urges the Commission to not consider finfish aquaculture in California (Exhibit 6).

### Recommendation

Provide guidance on any final changes to the proposed public interest criteria and framework in Exhibit 2 and process outlined in Exhibit 4, and advance to the Commission for consideration.

### Exhibits

1. [Staff summary from item 3, MRC meeting, March 14 & 16, 2023](#) (for background purposes only)
2. [Commission staff and Department document: Proposed Criteria and Framework for Evaluating if a New State Water Bottom Lease is in the Public Interest](#), third draft for July 20, 2023 MRC meeting (revised July 16)
3. [Commission staff document: Crosswalk of second draft criteria to third draft criteria for public interest determination](#), revised July 16, 2023
4. [Commission staff document: Figures displaying steps in the recent aquaculture leasing process versus steps in the proposed aquaculture leasing process](#), dated July 10, 2023
5. [Email from Liliana Griego, Senior Coastal Project Manager, Audubon California](#), received July 7, 2023

## COMMITTEE STAFF SUMMARY FOR JULY 20, 2023 MRC

6. [Email from Liliana Griego, Senior Coastal Project Manager, Audubon California, NGO support letter](#), received July 7, 2023
7. [Email from Julie Mascarenhas](#), received June 23, 2023

**Committee Direction/Recommendation**

The Marine Resources Committee recommends that the Commission approve the proposed public interest criteria, evaluation framework, and process outline to support Commission determination if a new application for a state water bottom lease for aquaculture purposes is in the public interest.

## COMMITTEE STAFF SUMMARY FOR JULY 20, 2023 MRC

**5. MARINE PROTECTED AREAS (MPA) DECADAL MANAGEMENT REVIEW****Today's Item**Information ☐Action ☒

Receive Department proposed prioritization of its adaptive management recommendations for the next decade of the adaptive management cycle, and develop potential committee recommendation.

**Summary of Previous/Future Actions**

- Commission adopted MPA master plan; ten-year management review cycle established Aug 2016
- Commission received decadal management review report and Department presentation Feb 8-9, 2023
- *MPA Day: Management Review Forum* hosted by Department in collaboration with the California Ocean Protection Council and Commission Mar 15, 2023
- MRC discussed management review, forum, and proposed adaptive management recommendations Mar 14 and 16, 2023; MRC
- Commission received MPA Day update, discussed management review, and adopted MRC recommendation Apr 19-20, 2023
- **Today's discussion of Department-proposed prioritization of adaptive management options; potential MRC recommendation Jul 20, 2023; MRC**

**Background**

On February 9, 2023, the Commission formally received [California's Marine Protected Area Network Decadal Management Review](#) (DMR), following its public release in January 2023. The Department's overview of this comprehensive and partnership-based ten-year review laid the foundation for future discussions about the evaluation, findings, and guidance for possible adaptive management of the state's MPA Management Program and MPA network, which began with a public management review forum and MRC discussion in March 2023.

The public *MPA Day: Management Review Forum* highlighted the collaborative work that informed both the DMR and the [28 adaptive management recommendations and associated potential management actions](#) (in Table 6.1 of the DMR) elevated by the Department for prioritization. Members and leaders of tribes, partner organizations, and stakeholders served as panelists and discussed key findings and recommendations related to the four pillars of the MPA Management Program.

At the March 2023 MRC meeting, following extensive public input on the DMR and recommendations within, MRC requested that the public provide written feedback on prioritization within Table 6.1. In addition, MRC advanced a recommendation to the Commission for next steps in prioritizing the adaptive management recommendations. See Exhibit 1 for an overview and summary of the March management review forum and MRC meeting.

## COMMITTEE STAFF SUMMARY FOR JULY 20, 2023 MRC

In April 2023, the Department provided a summary of the management review forum and the Commission discussed the next steps for considering results from the DMR and the adaptive management recommendations. Tribes, agency partners, environmental non-governmental organizations (NGOs), fishing communities, academics, collaborators, other stakeholders, and the public provided verbal and written feedback on which recommendations for adaptive management should be prioritized. The Commission approved the MRC recommendation to refer continued review and prioritization to MRC, and requested that the Department review the recommendations in Table 6.1, along with public recommendations submitted and presented, to propose near- and long-term priorities and identify associated tradeoffs for discussion and potential MRC recommendation in July 2023.

### ***Update***

Following the April direction, Commission staff worked with the Department to catalogue, summarize, and synthesize verbal and written input received from the public on prioritizing the 28 recommendations and related management actions in the DMR. The Department reviewed the 28 DMR recommendations and public input on prioritization to create a proposed list of near-, mid- and long-term priorities. The proposed priorities were based on (1) identified need, (2) expected time frame, (3) input received, and (4) level of information and resources available to advance recommendations.

In June, the Department publicly released the draft prioritized recommendations (Exhibit 2) and invited the public to provide written feedback to the Commission to inform discussion at the July MRC meeting (Exhibit 3). Today, the Department will give a presentation on the process, public input, and outcomes for prioritizing the DMR adaptive management recommendations, and explore next steps (Exhibit 4).

### **Significant Public Comments**

The Commission received 35 comment letters related to the Department's draft prioritization and proposed assignment of DMR recommendations as near-, mid- or long-term priorities; perspectives on specific adaptive management needs and priorities in response to the DMR; and specific changes to the MPA network. General themes of comments are summarized below; see Exhibit 4 for all comment letters combined.

### ***Comments about Proposed Prioritization***

1. *Support for specific priorities:* Fifteen comment letters, including thirteen from NGOs and two from individuals, support some, if not all, of the Department's proposed prioritized recommendations, and offer suggestions and comments related to specific recommendations (comment letters 5 – 19). See Exhibit 5 for a table summarizing which comments relate to specific recommendations.
2. *Suggestions to move expected time frame of priorities:* Seven comment letters, including six from NGOs and one from an individual, support most of the Department's proposed prioritized recommendations, but suggest a change in the expected time frame of one or more (comment letters 6, 10, 12, 14, 15, 21 and 22). Suggested changes include:
  - Move to a more near-term expected time frame:

## COMMITTEE STAFF SUMMARY FOR JULY 20, 2023 MRC

- Recommendations 8, 13, 17, 22, and 25 (mid- to near-term)
  - Recommendations 5, and 19 (long- to near-term)
  - Recommendation 24 (long- to mid-term)
  - Move to a more long-term expected time frame:
    - Recommendations 20 and 27 (near- to mid-term)
    - Recommendations 3, 6, 12, 15, 23 and 25 (mid- to long-term)
3. *Opposes some or all of prioritization:* Two comment letters do not support part, or all, of the proposed prioritized recommendations.
    - An individual states that the top 10 recommendations should be directly related to wildlife and biodiversity (comment letter 23).
    - An NGO representative requests that recommendations 9 and 24 be removed from the prioritized list (comment letter 6).
  4. *New recommendations:* Three comment letters from individuals suggest new recommendations should be added to the Department's list of prioritized recommendations, such as those focused on addressing pollution in MPAs (Comment letters 24 and 25) or offsetting the loss of intertidal habitat in MPAs with the looming threat of sea level rise (comment letter 26).
  5. *Uncertain how comments were incorporated into proposed prioritization:* One individual and a representative of six recreational fishing organizations wonder how their specific comments from March or April were incorporated into the Department's prioritization (comment letters 20 and 32). Three comment letters request the Commission clarify the process of public engagement regarding the DMR going forward and how the public can engage effectively and meaningfully in the process (comment letters 7, 14 and 15).
  6. A commercial fishing organization is concerned about the potential displacement of its fishing fleets as new threats emerge, and cautions against new MPA fishing restrictions; it supports the prioritization of recommendations focused on research and monitoring (comment letter 34).
  7. The MPA Collaborative Network provides a presentation highlighting MPA collaboratives' efforts to compile their adaptive management recommendations for general management and regulatory adjustments for MPAs in each region and to record specific input on all Department prioritized recommendations. The network seeks guidance on how the Commission would like to receive input from each collaborative (comment letter 4).

***General Comments and Concerns Related to the DMR recommendations, MPAs, or Management Program***

8. One individual asks a series of questions related to a framework for how and when success within a recommendation will be measured (comment letter 2).
9. One commenter requests that MPAs be strongly protected and well monitored and requests the Commission include a diversity of voices and perspectives to determine the path forward (comment letter 33).

## COMMITTEE STAFF SUMMARY FOR JULY 20, 2023 MRC

10. A commercial fishing alliance questions how the results of the DMR indicate that the MPA network is working, and wonders why adaptive management strategies did not include reducing the number of MPAs (comment letter 35).
11. A joint letter from six recreational fishing organizations raises questions related to how the Commission will engage with other agencies to ensure healthy MPAs that go beyond fishing restrictions (comment letter 20).

***Requests to Change Specific MPAs (Related to Recommendation 4)***

12. Nine commenters, including the MPA Collaborative Network, four NGOs, three individuals, and one individual transmitting five letters and group letter with 150 signatures (comment letter 1), request or address specific changes to MPAs in the network.
  - Four commenters request to change MPA boundaries or designations (comment letters 7, 27, 28 and 40).
  - Commenters included in comment letter 1 express support for the proposed MPA changes in letter 7.
  - Two commenters suggest new MPAs (comment letters 11 and 30).
  - One commenter suggests allowing the take of migratory species within certain MPAs (comment letter 29).

***Requests to Expand or Not Expand the Network of MPAs***

13. One comment letter requests that no new MPAs be implemented in southern California (comment letter 31).
14. The Commission received approximately 1,700 form letters asking the Commission to prioritize strengthening and expanding the network (see comment letter 3 for an example).

**Recommendation**

**Commission staff:** Discuss and provide feedback on the Department's recommended near-, mid- and long-term priorities and associated tradeoffs, discuss how public comments were incorporated in the prioritization, and discuss potential approaches or information needs for implementing specific near-term priorities.

**Department:** Discuss and provide MRC feedback on proposed near-term and long-term priorities, and develop an approach to implement near-term priorities.

**Exhibits**

1. [Staff summary from April 20, 2023](#) Commission meeting (for background purposes only)
2. [Department-proposed draft prioritization of recommendations](#) in Table 6.1 of the DMR
3. [Marine Region presentation](#) on its process for prioritizing the DMR recommendations, received July 7, 2023
4. [Compilation of all comment letters](#), received between June 12 and July 7, 2023

## COMMITTEE STAFF SUMMARY FOR JULY 20, 2023 MRC

5. [Summary of comments from letters](#) received for the July 20, 2023 MRC meeting that support the Department prioritization of specific recommendations from the DMR

**Committee Direction/Recommendation**

The Marine Resources Committee recommends that the Commission support the proposed near-term, mid-term, and long-term time frames for adaptive management recommendations **[as proposed by the Department / as proposed with the following changes\_\_\_\_\_]**, and request the Department to develop a plan for implementing near-term priorities.

**AND**

Request the Department to place *initial focus* on developing (1) a proposed process in collaboration with Commission staff for implementing Recommendation 4 and (2) an approach(es) for implementing recommendation(s) \_\_\_\_\_.

## COMMITTEE STAFF SUMMARY FOR JULY 20, 2023 MRC

**6. STAFF AND AGENCY UPDATES****Today's Item****Information** ☒**Action** ☐

Receive verbal and written updates from staff and other agencies, including:

- (A) California Ocean Protection Council (OPC)
- (B) Department
  - I. Law Enforcement Division (LED)
  - II. Marine Region
- (C) Commission 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. Updates related to current work plan topics are generally provided in writing. The public will have an opportunity to provide comment, although the level of in-meeting discussion will be at the discretion of the Marine Resources Committee (MRC).

**(A) OPC**

*Statewide aquaculture action plan:* OPC is actively working with our agency partners (Commission, Department, California Coastal Commission, California State Lands Commission, and California Department of Public Health) to complete an initial draft of the aquaculture action plan. The plan will align with the Commission's public interest determination efforts and be based on the jointly-developed *Guiding Principles for Sustainable Marine Aquaculture in California*.

**(B) Department****I. LED**

- a. *Marine protected areas:* Marine law enforcement staff will present related enforcement actions and statistics from 2022 (Exhibit 1).

**II. Marine Region**

- a. *Marine Fisheries Data Explorer:* Marine Region staff will provide a presentation on the Marine Fisheries Data Explorer (Exhibit 2) and has provided a copy of the [user guide](#) for this online tool (Exhibit 3).
- b. *Red abalone recovery plan:* Marine Region staff has prepared a written update on plans to develop a statewide recovery plan for red abalone; the update includes an overview of a proposed process for tribal engagement, forming technical and stakeholder teams, and a draft timeline (Exhibit 4).
- c. *Market squid fishery management and fishery management plan review:* Marine Region staff has prepared a written update on the newly-established Department Squid Fishery Advisory Committee (SFAC). Also included is a roster

## COMMITTEE STAFF SUMMARY FOR JULY 20, 2023 MRC

of the 19 SFAC members and the preliminary meeting schedule for 2023 to early 2024 (Exhibit 5).

- d. *California halibut recreational bag limit:* Marine Region staff will provide a verbal update on the Department's proposal to continue the two-fish California halibut bag limit in the northern fishery—established through emergency regulation—through a regular rulemaking this fall. In addition, staff will introduce the potential expansion of the two-fish bag and possession limit statewide.

**(C) Commission Staff**

At its June meeting, the Commission referred the proposed coastal fishing communities policy back to the Commission's Tribal Committee for additional vetting, after which the Commission will consider adoption.

*New environmental scientist:* After reviewing the many qualified candidates and conducting a highly competitive interview process, the Commission is excited to welcome Kimi Rogers as the new environmental scientist focused on marine issues on the Commission's scientific staff. Kimi received her master's degree from Scripps Institute of Oceanography and was the 2022 Sea Grant State Fellow for the Commission. Kimi's anticipated start date is August 2, 2023.

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

**Recommendation (N/A)**

**Exhibits**

1. [Department presentation on MPA enforcement actions in 2022](#)
2. [Department presentation on Marine Fisheries Data Explorer](#)
3. [Marine Fisheries Data Explorer User Guide](#)
4. [Department overview of proposed process to develop a statewide red abalone recovery plan, received July 7, 2023](#)
5. [Department update on Department Squid Fishery Advisory Committee formed to support the market squid fishery management and fishery management plan review, received July 7, 2023](#)

**Committee Direction/Recommendation (N/A)**

## COMMITTEE STAFF SUMMARY FOR JULY 20, 2023 MRC

**7. FUTURE AGENDA ITEMS**

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

- (A) Review work plan agenda topics, priorities, and timeline
- (B) Potential new agenda topics for Commission consideration

**Summary of Previous/Future Actions**

- Commission approved MRC agenda and work plan Jun 14-15, 2023
- **Today's discussion** **Jul 20, 2023; MRC**
- Next MRC meeting Nov 16, 2023; MRC

**Background**

MRC topics are referred by the Commission and scheduled as appropriate; referred topics and their schedule are shown in the MRC work plan (Exhibit 1). MRC has placed emphasis on issues of imminent regulatory or management importance; thus, scheduling current topics and considering new topics for MRC review requires planning relative to existing workload and timing considerations.

**(A) *MRC Work Plan and Timeline***

Topics anticipated to be proposed for the November 2023 MRC meeting are shown in the November column of the work plan in Exhibit 1. Note that readiness considerations may lead to changes in proposed timing and type of anticipated action for Commission consideration at its October 2023 meeting, when it is scheduled to approve the November MRC meeting agenda. Staff welcomes guidance from MRC regarding scheduling specific topics identified in the work plan.

**(B) *Discuss and Recommend New MRC Topics***

Today is an opportunity to identify any potential new agenda topics to recommend to the Commission for referral to MRC. No new topics have been identified by staff for potential referral to MRC at this time.

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

- (A) Review list of topics identified for the November 2023 MRC meeting, determine if topics should be revised, or any additional topics on the work plan be added for November.
- (B) Identify any potential new topics to recommend for referral to MRC.

**Exhibits**

1. [MRC work plan](#), updated July 5, 2023

COMMITTEE STAFF SUMMARY FOR JULY 20, 2023 MRC

**Committee Direction/Recommendation**

The Marine Resources Committee recommends that the Committee work plan be updated with

\_\_\_\_\_.

## Matthews, Kinsey-Contractor@fgc

---

**From:** Keith Rootsart <[REDACTED]>  
**Sent:** Thursday, July 6, 2023 11:48 AM  
**To:** FGC  
**Cc:** G2KR Team  
**Subject:** MRC PPT presentations 1 of 2  
**Attachments:** G2KR\_Presentation\_23.0720 Item 2.pptx

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

Dear FGC,

Please find attached power point presentations for the July 20, MRC meeting, Items #2 and Items #5. Due to their large size, they are sent separately.

They are being sent to FGC in advance of the **July 7 at 5:00 Written Comment Deadline** which is also the deadline to submit Visual Presentations/Materials. The Electronic Materials deadline used to be the Supplemental Comments Deadline, which was an unexpected change, but nonetheless we are early.

We would appreciate pre-approval of 3 minutes speaking time for each presentation.

Thank you,

Keith Rootsart  
G2KR.com  
408-206-0721



**Giant Kelp**  
Restoration Project

# Giant Giant Kelp Restoration

**Fish and Game Commission**  
**July 20, 2023**

**Agenda Item 2, General Comments Not on the Agenda**

Dear Mr. Rootsaert:

The California Fish and Game Commission (Commission) recently took action related to the petition for regulation change you submitted to the Commission (Tracking Number 2021-025) requesting to authorize the culling of red and purple sea urchins by kelp restoration specialists in Edward F. Ricketts, Pacific Grove Marine Gardens, and Carmel Bay state marine conservation areas.

At its February 16-17, 2022 meeting, the Commission denied your petition. The Commission has previously stated its intent to not authorize large-scale restoration within marine protected areas (MPAs) through recreational take regulations **until an MPA restoration policy is developed by the California Ocean Protection Council** and **the decadal management review of the MPA network is completed (in early 2023)**; the Commission reiterated their desire to consider restoration requests within that context. Staff encourages you to continue working with the California Department of Fish and Wildlife on possible future experimental approaches or designs and thanks you for all of your collaborative efforts to date at Tanker Reef.

If you have any questions about your petition, please feel free to contact Marine Advisor Susan Ashcraft at (916) 653-4899 or [fgc@fgc.ca.gov](mailto:fgc@fgc.ca.gov).

Sincerely,

Handwritten signature of Rachel Ballanti in blue ink.

# California Ocean Protection Council

**Kelp protection and restoration is our policy... The State, in writing and then in action, everything we've done over the last three years, has demonstrated that we believe in this as a policy, and it is really about figuring out the details.**



**Mike Esgro, Senior Biodiversity  
Program Manager & Tribal Liaison**

**April 24, 2023**

# Marine Resource Committee

Together with the best available science, that includes indigenous knowledge, we carry out the Commission's mission:

To hold fish and wildlife and their habitats in the public trust.

To enhance and restore California's native fish and wildlife in their natural habitats.

To secure a rich and sustainable outdoor heritage for all Californians.



Commissioner Samantha Murray, MRC Chair  
March 16, 2023

## **Best Available Science:**

**Culling urchins protects and restores kelp.**

**Without intervention kelp dies.**

**Recreational divers can do this safely with minimal by-catch and damage to the benthos and provide data to inform marine resource managers.**

**Prohibiting fishing in kelp forests has better outcomes for kelp.**



# **NOT Best Available Science:**

**Urchins will naturally die.**

**Kelp will naturally recover.**

**Unexpected consequences:  
Smashing urchins makes more urchins.**

**We could make urchins extinct.**

**Fishing in kelp forests is sustainable.**



# 2022 Scientific Collecting Permit application –

15 months process so far.

1.37% of 3 State  
Marine Conservation  
Areas



# Ocean Protection Council

**A perfect project would be:**

**“Here is some restoration work and we are going to try and learn some stuff from it. We’re going to scale up, but we are going to keep informing those knowledge gaps.”**



**Mike Esgro, Senior Biodiversity  
Program Manager & Tribal Liaison**

**April 24, 2023**



**Still Waiting**

**G2KR.com**  
**Keith@g2kr.com**

## COMMITTEE STAFF SUMMARY FOR NOVEMBER 17, 2022 MRC

*For background purposes only*

### 5. ASSESSING AND ADDRESSING BYCATCH IN CALIFORNIA FISHERIES

#### Today's Item

Information ☐

Action ☒

- (A) **Overview of process for evaluating and addressing fishery bycatch**  
Review the four-step process for limiting bycatch to acceptable types and amounts as outlined in the 2018 Marine Life Management Act (MLMA) master plan for fisheries.
- (B) **Evaluating bycatch in the California halibut fishery**  
Receive Department update on analysis of bycatch data for the California halibut fishery to support fishery management review.
- (C) **Determining acceptable bycatch types and amounts**  
Discuss potential approaches to completing inquiries for determining what bycatch is "acceptable" within a specific fishery and develop potential committee recommendation.

#### Summary of Previous/Future Actions

- |  |   |
|--|---|
| • FGC referred California halibut management review to MRC   | Aug 19-20, 2020; Webinar/Teleconference   |
| • DFW update on California halibut stock assessment and management review                              | Mar 16, 2021; MRC, Webinar/Teleconference |
| • DFW update; MRC recommendation to schedule bycatch review discussion                                 | Nov 9, 2021; MRC, Webinar/Teleconference  |
| • FGC referred bycatch review to MRC   | Dec 15-16, 2021; Webinar/Teleconference   |
| • FGC received update on bycatch evaluation for California halibut management review                   | Mar 24, 2022; MRC, Webinar/Teleconference |
| • DFW written update on bycatch evaluation for California halibut                                      | Jul 14, 2022; MRC, Santa Rosa             |
| • <b>Today's update and discussion on bycatch evaluation for halibut; potential MRC recommendation</b> | <b>Nov 17, 2022; MRC, San Diego</b>       |

#### Background

The California halibut fishery is a multi-sector commercial and recreational fishery managed under FGC authority. In 2019, as part of the fisheries prioritization process required by the Marine Life Management Act (MLMA) and outlined in *2018 Master Plan for Fisheries, A Guide for Implementation of the Marine Life Management Act*, California halibut was prioritized for management review. In Aug 2020, DFW recommended that it initiate the management review process for California halibut; FGC concurred and referred the topic to MRC.

One key driver in halibut's high priority ranking included potential risks to bycatch species (including sub-legal-sized halibut) in commercial trawl and set gillnet fisheries. Bycatch, as defined by MLMA for state-managed fisheries, means "...fish or other marine life that are taken in a fishery but are not the target of the fishery. Bycatch includes discards" (California Fish and Game Code Section 90.5). MLMA requires that DFW manage every sport and commercial

## COMMITTEE STAFF SUMMARY FOR NOVEMBER 17, 2022 MRC

*For background purposes only*

marine fishery in a way that *limits bycatch to acceptable types and amounts* (Fish and Game Code Section 7056(d)), and specifies information, analysis, and management measures required to accomplish this for each fishery (Fish and Game Code Section 7058).

The master plan established a bycatch evaluation framework in Chapter 6 (“Ecosystem-based objectives”) as guidance for achieving the requirements of Section 7058. The framework is detailed in a section titled “Limiting bycatch to acceptable types and amounts” (Exhibit 1). The section draws largely from the work of a group of diverse stakeholders, called the Bycatch Working Group, convened by FGC in 2015 to help inform review of bycatch management. The framework in the master plan is, in part, designed to help determine what constitutes “acceptable types and amounts” of bycatch for each fishery evaluated.

The California halibut fishery management review presents the first opportunity to utilize the master plan’s bycatch evaluation framework. In Dec 2021, FGC requested that MRC pursue the halibut bycatch evaluation as a separate work plan topic from the related fishery management review that the bycatch evaluation will inform, to ensure robust public engagement through this first evaluation process. In Mar 2022, DFW presented MRC with its approach to evaluating halibut fishery bycatch and, in Jul 2022, DFW provided a written update about its continued efforts and hurdles it is facing in analyzing halibut bycatch from the available data.

Today’s meeting is an opportunity to focus on the master plan guidance and discuss options for how to complete the steps in the process.

### (A) ***Overview of process for evaluating and addressing fishery bycatch***

FGC staff will recap the four-step process laid out in the master plan framework to identify bycatch and consider its impacts (Exhibit 1):

- Step 1 – Collect information on the amount and type of catch
- Step 2 – Distinguish target, incidental, and bycatch species
- Step 3 – Determine “acceptable” types and amounts of bycatch
- Step 4 – Address unacceptable bycatch

Note that today’s meeting is focused on steps 1-3.

### (B) ***Evaluating bycatch in the California halibut fishery (steps 1 and 2)***

Consistent with MRC discussion in Jul 2022, DFW has provided the recently-completed bycatch assessment report for the trawl and set gillnet California halibut fisheries that DFW developed in collaboration with an academic partner, which authored the final report (Exhibit 2). DFW believes that the report accomplishes the goals of steps 1 and 2 and is adequate to support the Step 3 analysis. DFW will present an overview of the complex assessment, methods and results—to help build a common understanding of the foundational data that can support the Step 3 evaluation of bycatch acceptability—and potential next steps for MRC consideration (Exhibit 3).

**COMMITTEE STAFF SUMMARY FOR NOVEMBER 17, 2022 MRC***For background purposes only***(C) Determining acceptable bycatch types and amounts (Step 3)**

The master plan specifies that DFW will determine if the amount and type of bycatch is unacceptable for a particular fishery using four criteria mandated in MLMA (Fish and Game Code Section 7058):

1. Legality of take of bycatch species
2. Degree of threat to the sustainability of the bycatch species
3. Impacts on fisheries that target the bycatch species
4. Ecosystem impacts

The master plan bycatch evaluation framework (Exhibit 1) lays out a detailed series of inquiries and recommended actions for each criterion under Step 3 that would be applied to each species of bycatch. The inquiries provide a structural basis for managers to consistently assess each criterion to determine what is “acceptable” bycatch in the fishery and to articulate the findings. However, given the number of bycatch species and the detailed inquiries that would need to be applied to each, it is necessary to prioritize which species to include in the Step 3 assessment. It is possible that selecting a handful of representative species for the assessment would be sufficient, as the benefit of proposed management actions will likely have benefits across multiple species.

Today’s meeting provides an opportunity to explore how DFW might accomplish the bycatch inquiries for California halibut in a manner that is transparent, inclusive and timely. This discussion will inform MRC’s direction or potential recommendation regarding an approach.

**Significant Public Comments**

A joint comment from two environmental non-governmental organizations emphasizes the importance of FGC’s commitment to minimize fishery bycatch, with an initial focus on California halibut trawl and gill net gears, consistent with DFW’s ecological risk assessment and prioritization. The organizations have conducted their own bycatch assessments of trawl and set gillnet gear in California using federal observer data and request a collaborative approach to implementing the bycatch inquiry. They also request that MRC provide direction on what additional analyses are needed and to outline the public process and timeline MRC will follow to make a recommendation to FGC (Exhibit 4).

**Recommendation**

**FGC staff:** (1) Recommend FGC support DFW moving forward with Step 3 of the bycatch evaluation to determine bycatch acceptability, using the bycatch analysis report DFW provided today (Exhibit 2) and a DFW-led workgroup of key communicators representing various interests to provide a forum for discussing responses to the Step 3 inquiries prior to bringing recommendations to MRC. (2) Recommend using MRC as a forum for broader discussion and, ultimately, MRC recommendation to FGC on DFW’s findings. (3) Provide guidance on selection of bycatch species to begin Step 3.

**COMMITTEE STAFF SUMMARY FOR NOVEMBER 17, 2022 MRC***For background purposes only*

**DFW:** Move forward with Step 3 of the framework in the master plan analysis based on the information contained in the steps 1 and 2 bycatch analysis report (Exhibit 2), and provide guidance on options for public engagement in determining bycatch acceptability.

**Exhibits**

1. Chapter 6 – “Ecosystem-based objectives: Limiting bycatch to acceptable types and amounts”, extracted from *2018 Master Plan for Fisheries, A Guide to Implementation of the Marine Life Management Act*, dated June 2018
2. Report by Christopher M. Frees, DFW contractor: *Assessment of associated landed species and bycatch discards in the California halibut gill net and trawl fisheries*, received Nov 4, 2022
3. DFW presentation
4. Letter from Geoff Shester, Oceana, and Scott Webb, Turtle Island Restoration Network, received Nov 3, 2022

**Committee Direction/Recommendation**

The Marine Resources Committee recommends that the Commission (1) support the Department moving forward with evaluation of bycatch acceptability based on the analysis report submitted by the Department at the committee’s November 2022 meeting; and (2) request that the Department pursue the following approach for completing the inquiries within the Step 3 evaluation framework and engaging stakeholders in the process: \_\_\_\_\_

# Evaluating Bycatch in the California Halibut Set Gill Net Fishery



California halibut, *Paralichthys californicus*.

(Photo Credit: Marine Applied Research Exploration, CDFW)

**California Department of Fish and Wildlife  
Marine Region**

**June 2023**



Citation: California Department of Fish and Wildlife. 2023. Evaluating Bycatch in the California Halibut Set Gill Net Fishery.

Contributors: Kirsten Ramey, Armand Barilotti, Julia Coates, Miranda Haggerty, Heather Gliniak, Kristine Lesyna, Paul Reilly, Travis Tanaka, and Chuck Valle (2023).

Evaluating Bycatch in the California Halibut Set Gill Net Fishery .....	i
LIST OF ACRONYMS.....	2
LIST OF TABLES.....	3
LIST OF FIGURES .....	4
EXECUTIVE SUMMARY .....	6
INTRODUCTION .....	7
OVERVIEW OF THE SET GILL NET FLEET.....	9
Regulatory History .....	9
Permit History .....	9
Current Set Gill Net Regulations.....	10
Annual Halibut Landings.....	11
METHODS AND RESULTS .....	12
Step 1. Collection of information on the amount and type of catch.....	12
Step 2. Distinguishing target, incidental, and bycatch species .....	13
Halibut Set gill net .....	14
Halibut Trawl Fishery.....	14
Insights from Steps 1 and 2.....	15
Step 3. Determining “acceptable” types and amounts of bycatch .....	15
Legality of Take of the Bycatch Species.....	16
Degree of threat to the sustainability of the bycatch species.....	18
Impacts on fisheries that target the bycatch species .....	19
Ecosystem impacts.....	19
Step 4. Addressing unacceptable bycatch.....	20
CONCLUSIONS.....	22
RECOMMENDATIONS.....	24
Gear Marking .....	24
Electronic Technology .....	24
Non-transferable Permits.....	25
NEXT STEPS.....	26
LITERATURE CITED.....	27
APPENDICES.....	1

## LIST OF ACRONYMS

ACL	Acceptable Catch Limits
ALDS	Automated License Data System
CCR	California Code of Regulations
CPFV	Commercial Passenger Fishing Vessel
DPS	Distinct Population Segment
ERA	Ecological Risk Assessment
ESA	Endangered Species Act
ESR	Enhanced Status Report
FGC	Fish and Game Code
FIS	Fisheries Information System Program
FMP	Fishery Management Plan
GEMM	Groundfish Expanded Mortality Multiyear
IUCN	International Union for Conservation and Nature
MLDS	Marine Landings Data System
MLMA	Marine Life Management Act
MMPA	Marine Mammal Protection Act
MRC	Marine Resources Committee
MRPZ	Marine Resources Protection Zone
MSE	Management Strategy Evaluation
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
PBR	Potential Biological Removal
PSA	Productivity Susceptibility Analysis
RLF	Resources Legacy Fund
VMS	Vessel Monitoring System
WCROP	West Coast Region Observer Program

## LIST OF TABLES

Table 1 Annual halibut landings in southern California for set gill net, 2018 – 2022. ....	11
Table 2 Legality of possession and mortality rates of top twelve species analyzed in the bycatch evaluation.....	17
Table 3 Threats to sustainability of top twelve bycatch species. ....	18
Table 4 Summary of the four bycatch criteria for the twelve species evaluated. ....	22

## LIST OF FIGURES

Figure 1 Number of general set gill net permits purchased compared to active halibut set gill net permits, from 1987-2022. ....	10
---	----

## LIST OF APPENDICES

Appendix 1a. Evaluation of Pacific angel shark based on MLMA Master Plan bycatch criteria .....	A-1
Appendix 1b. Evaluation of brown smoothhound based on MLMA Master Plan bycatch criteria .....	A-4
Appendix 1c. Evaluation of California skate based on MLMA Master Plan bycatch criteria .....	A-7
Appendix 1d. Evaluation of bat ray based on MLMA Master Plan bycatch criteria .....	A-10
Appendix 1e. Evaluation of rock crab based on MLMA Master Plan bycatch criteria .....	A-12
Appendix 1f. Evaluation of barred sand bass based on MLMA Master Plan bycatch criteria .....	A-15
Appendix 1g. Evaluation of giant sea bass based on MLMA Master Plan bycatch criteria .....	A-18
Appendix 1h. Evaluation of white shark based on MLMA Master Plan bycatch criteria .....	A-21
Appendix 1i. Evaluation of Brandt's cormorant based on MLMA Master Plan bycatch criteria .....	A-25
Appendix 1j. Evaluation of sublegal California halibut based on MLMA Master Plan bycatch criteria .....	A-29
Appendix 1k. Evaluation of California sea lion based on MLMA Master Plan bycatch criteria .....	A-35
Appendix 1l. Evaluation of humpback whale based on MLMA Master Plan bycatch criteria .....	A-39

## EXECUTIVE SUMMARY

The Marine Life Management Act (MLMA) provides for the conservation, sustainable use, and restoration of California's living marine resources. It requires an ecosystem-based approach for managing the State's fisheries, using the best available science, and involving stakeholders in a comprehensive and transparent process. The [2018 MLMA Master Plan for Fisheries](#) (Master Plan) provides guidance and a toolbox for implementing MLMA goals and objectives, and it is the Department of Fish and Wildlife's (Department) primary guidance document for managing state finfish, invertebrate, and algal commercial and recreational fisheries. The Master Plan requires the Department to prioritize its fisheries for management attention, and this was completed through a process involving the use of Productivity and Susceptibility Analyses (PSA) and Ecological Risk Assessments (ERA) (MRAG 2014 and Ramanujam et al. 2017).

The prioritization process resulted in the identification of several commercial fisheries using set gill net and trawl gear as most in need of management attention. These fisheries target California halibut (*Paralichthys californicus*, halibut), Pacific angel shark (*Squatina californica*), and white seabass (*Atractoscion nobilis*). One of the key ecosystem-based objectives in the Master Plan is to characterize bycatch of nontarget organisms in California's fisheries and develop appropriate management measures to minimize impacts to habitats and species. The Master Plan outlines a [four-step process](#) to identify bycatch and assess its potential impacts on sustainability, the ecosystem, and socioeconomics:

1. collection of information on the types and amounts of bycatch;
2. distinguishing target, incidental, and bycatch species;
3. determining "acceptable" types and amounts of bycatch; and
4. addressing unacceptable bycatch.

As part of the implementation of the Master Plan, halibut was identified as a [high priority species for management attention](#), primarily due to the potential risk to the species from fishing activities, and to other species that may be caught as bycatch in the fishery. One of the key [ecosystem-based objectives](#) in the Master Plan is to characterize bycatch of nontarget organisms in California's fisheries and develop appropriate management measures to minimize impacts to habitats and species.

In 2020, the Department began, in collaboration with partners and stakeholders, to gather information on bycatch in the trawl and set gill net state-managed fisheries. This report documents the Department's efforts to date to complete the bycatch evaluation for the halibut fishery, with a focus on the set gill net fleet, specifically.

## INTRODUCTION

The Marine Life Management Act (MLMA) [[Fish and Game Code \(FGC\) §7050 to 7090](#)], which became law on January 1, 1999, was introduced as Assembly Bill 1241 by Assemblyman Fred Keeley and serves as California's primary fisheries management law. The MLMA includes a number of innovative features:

- the MLMA applies to all marine wildlife, including fish, invertebrates, and algae taken by commercial and recreational fishermen;
- the MLMA shifts the burden of proof toward demonstrating that fisheries and other activities are sustainable, rather than assuming that exploitation should continue until damage has become clear;
- through the MLMA, the Legislature delegates greater management authority to the Fish and Game Commission (Commission) and the California Department of Fish and Wildlife (Department);
- the MLMA requires an ecosystem perspective including the whole environment, rather than focusing on single fisheries management; and
- the MLMA strongly emphasizes science-based management developed with the help of all those interested in California's marine resources (i.e., stakeholders).

The MLMA directs the Department to develop a Master Plan to guide the implementation of the act and the original 2001 Master Plan: A Guide for the Development of Fishery Management Plans (FMPs), as required by [FGC §7073](#), served as a roadmap and specified the process and resources needed to prepare, adopt and implement FMPs for sport and commercial marine fisheries managed by the state. To reflect advancements in management tools, changing ocean conditions, and stakeholder priorities, the Department undertook an effort to improve the roadmap and developed the [2018 Master Plan for Fisheries A Guide for Implementation of the Marine Life Management Act](#) (Master Plan). The 2018 Master Plan replaces the original and is intended to be both a roadmap and a toolbox for implementation of the MLMA. The Master Plan is the Department's primary guidance document for managing state finfish, invertebrate, and algal commercial and recreational fisheries. Specifically, the Master Plan includes: a prioritized list of fisheries in need of FMPs; a process for how the public may be involved in developing fishery management and research plans; a description of the essential fishery information that will be needed to effectively manage the top priority fisheries; and a process of how these various plans will be amended or revised.

The Master Plan calls for a [scaled management approach](#) to fisheries management, in which a suite of management alternatives, ranging from the completion of Enhanced Status Reports (ESRs) to rule-makings to more comprehensive FMPs, is considered.

As directed by the Master Plan, the Department began a process to prioritize our state-managed species based on their inherent productivity and their susceptibility to environmental and fishing pressures. The prioritization process is an integral part of the scaled management approach. In December, 2019, the Department presented the prioritization of 17 state-managed commercial fisheries and 14 state-managed recreational fisheries to the Commission ([Fish and Game Commission 2019](#)). This prioritization was based primarily on productivity and susceptibility analyses (PSA) and ecological risk assessments (ERA) for those species that contribute to the most valuable commercial and recreational fisheries. Several of the critical attributes in the ERA process related to the type and magnitude of bycatch in the directed fisheries, and these became the driving factors of the Department's streamlined approach to prioritization. The set gill net fisheries for California halibut (*Paralichthys californicus*, halibut), Pacific angel shark (*Squatina californica*), and white seabass (*Atractoscion nobilis*), along with the halibut trawl fishery, rose to the top as fisheries of concern. Risks to these species identified in the Department's prioritization include a changing climate and potential impacts to bycatch species from fishery gear types.

As part of the Master Plan implementation, halibut was identified as a [high priority species for management attention](#), primarily due to the potential risk to the species from fishing activities, and to other species that may be caught as bycatch in the fishery. In 2020, the Department began the initial stages of considering the best [scale of management](#) for the fishery and partnered with stakeholders to identify areas of concerns. Guided by the objectives and framework of the MLMA and Master Plan, the Department gathered information about stock depletion, bycatch, changing ocean conditions, and other issues of concern for the halibut fishery. This information gathering stage included an update to the halibut stock assessment, a preliminary Management Strategy Evaluation (MSE), the development of an ESR, exploration of habitat considerations, and an initial bycatch evaluation. Between October 2020 and September 2021, Department staff conducted a stakeholder scoping process, through [two public webinars](#), with the fishing and broader stakeholder community to assess the community's management priorities and concerns for the fishery.

Learning from the knowledge gained in the [scoping process](#) and information gathering stage, the Department engaged in an internal strategic planning process from September 2021 to February 2022 to identify management priorities for the halibut fishery. This strategic planning process confirmed six management priorities for the halibut fishery: 1) refinement of the [2020 stock assessment](#); 2) completion of the [ESR](#); 3) completion of an ecosystem evaluation; 4) conducting a [California Halibut Southern Trawl Ground assessment](#); 5) expansion of the halibut MSE; and 6) performing a bycatch evaluation. This document is focused on the Department's efforts to complete the bycatch evaluation for the halibut fishery, with a focus on the set gill net fleet.

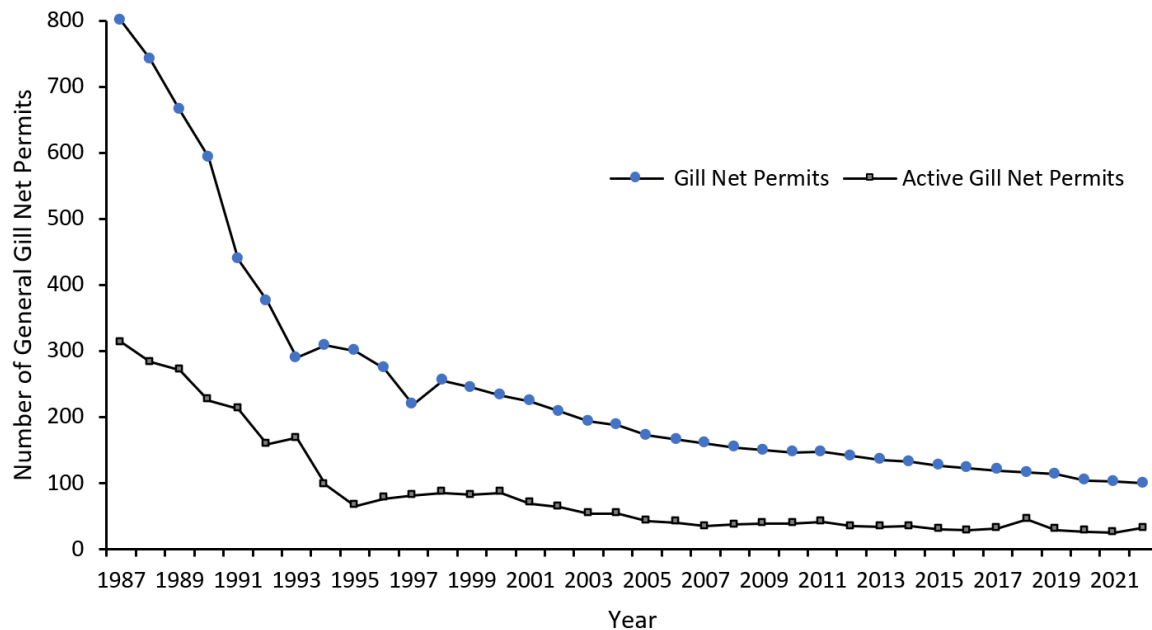
## OVERVIEW OF THE SET GILL NET FLEET

### Regulatory History

Gear restrictions on the halibut set gill net fishery date back to 1911 and extend through the early-2000s. Through the mid-1980s, several nearshore areas were closed to set gill net fishing, primarily due to concerns of seabird and marine mammal bycatch in the fishery ([FGC §8660-8670](#)). In 1989, a minimum mesh-size requirement of 8.5 inches was established for the take of halibut, statewide, in addition to the length of net allowed in certain areas ([FGC §8625](#)). In 1994, the use of set gill nets was further restricted through a California constitutional amendment which established the Marine Resources Protection Zone (MRPZ), which prevented the use of set gill nets within one nautical mile (nm), or less than 70 fathoms (420 feet) in depth, whichever is less, around the Channel Islands. Additionally, set gill nets could no longer be used within three nm of the mainland shore, south of Point Arguello, Santa Barbara County to the California/Mexico border ([FGC §8610.1-8610.16](#)). The establishment of the MRPZ was not directed at the halibut set gill net fishery, but it did impact the fleet. Most recently, in 2002, the Commission implemented a depth restriction on set gill nets in waters 360 feet (110 meters) or less between Point Reyes headlands, Marin County and Point Arguello ([14 CCR §104.1](#)). This limited the use of set gill nets for halibut to waters south of Point Arguello.

### Permit History

In 1987, during the peak of the set gill net fishery, there were more than 800 set gill net permittees, with just over 300 permittees actively landing halibut that year. The number of both general set gill nets and those who actively target halibut have steadily declined since the peak in 1987 (Figure 1). As of 2022, there are 100 set gill net permit holders, 32 of which were active, or had at least one halibut landing last year. In 2020, 26 set gill net permits were active, but only 14 made 90% of the halibut landings. In 2021 and 2022, 16 and 13 vessels contributed 90% of the catch, respectively.



**Figure 1 Number of general set gill net permits purchased compared to active halibut set gill net permits, from 1987-2022.**

### Current Set Gill Net Regulations

Current regulations for the halibut set gill net fleet include a minimum size limit for retained halibut, minimum mesh size, depth and area restrictions, and gear marking requirements. Restricted access permits have been required to use a set gill net since 1980, are issued annually, and are assigned to the fisherman, not the vessel ([FGC §8680-8682](#)). The minimum size limit for halibut is 22 inches total length (swinging or fanning the tail is permitted). The minimum mesh size to take halibut with set gill nets is 8.5 inches, with no more than 9,000 feet of net fished in combination each day. No more than 6,000 feet of net may be fished in specified areas of Santa Barbara County ([FGC §8625](#)). Set nets and set lines must be marked with buoys displaying the fisherman's identification number and each panel must be marked along the corkline, every 45 fathoms ([FGC §8601.5](#)). From December 15 to May 15, breakaway devices must be installed every 45 fathoms (270 feet) or less along the corkline and lead line and in waters shallower than 25 fathoms (150 feet), the corkline and any other line shall have a breaking strength not to exceed 2,400 pounds (lbs) ([FGC §8664.13](#)). Set gill nets are banned in waters 60 fathoms or less north of Point Arguello, as well as within nearshore waters, three nm off the mainland and one nm or less than 70 fathoms (420 feet) in depth, whichever is less, around the Channel Islands ([FGC §8610.1-8610.4](#)).

## Annual Halibut Landings

From about 1978 to 1990, set gill net landings dominated the statewide commercial catch of halibut, with those landings peaking in the 1980s. Coinciding with the nearshore area closures, set gill net landings dropped in the 1990s and the trawl gear type became more popular with halibut fishermen. However, set gill net continues to comprise the majority of the halibut landings in southern California – consisting of the Santa Barbara, Ventura, Los Angeles, and San Diego port complexes (Table 1).

**Table 1 Annual halibut landings in southern California for set gill net, 2018 – 2022.**

<b>Year</b>	<b>Set gill net halibut landings (lbs)</b>	<b>Number of set gill net permits, targeting halibut</b>	<b>Total halibut landings (lbs) for all commercial gear types combined in southern California</b>	<b>Proportion of southern California landings that are landed by set gill nets</b>
<b>2018</b>	134,788	37	221,139	61%
<b>2019</b>	178,291	30	249,061	72%
<b>2020</b>	118,186	26	203,733	58%
<b>2021</b>	167,428	24	248,916	67%
<b>2022</b>	143,878	32	224,945	64%

## METHODS AND RESULTS

One of the key [ecosystem-based objectives](#) in the Master Plan is to characterize bycatch of nontarget organisms in California's fisheries and develop appropriate management measures to minimize impacts to habitats and species. The MLMA defines bycatch as "fish or other marine life that are taken in a fishery but are not the target of the fishery. Bycatch includes discards" ([FGC §90.5](#)). The MLMA goes on to provide additional clarification on discards to include regulatory discards or discretionary discards. Discarded catch may be returned to the sea alive, dead, or dying, and it is important to assess the mortality rate to evaluate impacts. It is also important to note that while all discards are defined as bycatch under the definition, the discard of live catch may not pose a risk to a bycatch species, and discarding can be an effective management strategy to protect some individuals in which survival is expected to be high. To achieve the goal of minimizing unacceptable bycatch, the MLMA requires that the Department manage every sport and commercial marine fishery in a way that limits bycatch to acceptable types and amounts ([FGC §7056](#)). The Master Plan outlines a [four-step process](#) to identify bycatch and assess its potential impacts on sustainability, the ecosystem, and socioeconomics:

1. collection of information on the types and amounts of bycatch;
2. distinguishing target, incidental, and bycatch species;
3. determining "acceptable" types and amounts of bycatch; and
4. addressing unacceptable bycatch.

### **Step 1. Collection of information on the amount and type of catch**

The Department, in coordination with partners, undertook a two-part study to begin evaluating bycatch in California state-managed trawl and set gill net fisheries, including halibut. In 2020, with support from the Resources Legacy Fund (RLF), the Department worked with Moss Landing Marine Laboratories researchers to collect information about bycatch of marine species that are harvested with various types of trawl and set gill net gear in California state-managed fisheries. The focus of the study was on the red sea cucumber (*Apostichopus californicus*), ridgeback prawn (*Sicyonia ingentis*), and halibut trawl fisheries, and the set gill net fisheries for halibut, white seabass, barracuda (*Sphyræna argentea*), and other smaller fisheries. The objectives of the study were to: 1) compile relevant fishery catch information from Department records and [Federal Observer Program](#) data related to the amount and spatial distribution of bycatch in the focused set gill net and trawl fisheries; 2) conduct first-level analyses of those data to quantify volumes and distribution of bycatch as well as determine the areas of bycatch

that are likely to be impacting other target fisheries and/or having detrimental impacts on ecosystems, and 3) conduct a literature review of bycatch in west coast fisheries. This first phase of the bycatch evaluation compiled available fishery catch information from fishery-dependent logbook data, landing receipts, Groundfish Expanded Mortality Multiyear (GEMM) data, which is a modeled estimate of bycatch in federal commercial groundfish fisheries, and non-confidential Federal Observer Program data from the trawl and set gill net fisheries. The study separated bycatch into three components: targeted species that are discarded because the individuals are not suitable for market, untargeted species that can be sold, and untargeted species that are not retained (i.e., discarded at sea).

## **Step 2. Distinguishing target, incidental, and bycatch species**

As described in the Master Plan under Step 2, once information about the type and amount of catch is identified, it is necessary to determine which species are the target of the fishery, which are incidental catch, and which species are discarded bycatch. The relatively low selectivity of trawl and set gill net gear types means that they are used in multispecies fisheries. In such fisheries, the definition of bycatch or incidental catch may be considered fluid and dependent on seasons, markets, and fisher preferences. However, the high discard rate makes trawl and set gill net sectors vulnerable to bycatch or incidental catch of non-target species. Additionally, discard mortality may be high or unknown depending on the species caught due to the nature of these gear types which warrants investigation.

Based on the prioritization, scoping, and strategic planning processes, Department staff partnered with researchers from UC Santa Barbara, with funding support from RLF, to take a halibut-centric view of the trawl and set gill net gear types to analyze only data where halibut was targeted and caught ([Free 2022](#)). The goal of this effort was to evaluate the magnitude and composition of catch in the trawl and set gill net gear types associated with the halibut targeted fishery. This study worked to analyze three categories of catch: 1) retained, landed catch of non-halibut species; 2) discards (live/dead) of non-halibut species; and 3) discards (live/dead) of sub-legal sized halibut. The assessment calculated ratios, in terms of weight, of these categories to legal-sized halibut catch and examine patterns by gear type, location, depth, and day of year. The various datasets assembled included publicly available GEMM data, confidential Federal Observer Program data from halibut trawl and set gill net vessels, Department permit data, landing receipts, logbooks, and Department set gill net observer data. Permit, landing receipt, and logbook data from 2000-2021 were used in the assessment. Set gill net observer data from the Federal Observer Program spanned the years from 1990-2017; however, the program was active for 15 of the 27-year time frame and trawl observer data were available from 2002-2020. The assessment

presented ratios of non-halibut to halibut landings for the most frequently caught species in association with halibut ([Free 2002](#)).

### *Halibut Set gill net*

Generally, set gill net landing and logbook data were consistent regarding the species frequently caught and landed in association with halibut, and included Pacific angel shark, white seabass, leopard shark (*Triakis semifasciata*), thresher shark (*Alopias vulpinus*), soupfin shark (*Galeorhinus galeus*), and fantail sole (*Xystreurys liolepis*). However, these results differ from the top species documented in the observer data, which included Pacific angel shark, but also shovelnose guitarfish (*Rhinobatos productus*), Pacific mackerel (*Scomber japonicus*), and brown smoothhound (*Mustelus henlei*). These differences are likely due to the fact that the observer data reports catch in numbers of fish versus landing receipts and logbooks which both report catch in weight and/or numbers. The top species frequently caught and discarded either in a live or dead condition, based on observer data included rock crab (*Cancer productus*, *Metacarcinus anthonyi*, and *Romaleon antennarium*), spider crab (*Loxorhynchus grandis*), bat ray (*Myliobatis californica*), California skate (*Beringraja inornate*), halibut, Pacific mackerel, and brown smoothhound shark. Within set gill net logbook data, for sensitive species, only giant sea bass (*Stereolepis gigas*) have ever been reported as bycatch. The observer data documents the most commonly caught marine mammals are California sea lions (*Zalophus californianus*) and Pacific harbor seals (*Phoca vitulina*) ([Free 2022](#)).

### *Halibut Trawl Fishery*

The top species frequently caught and landed in association with the northern halibut trawl fishery based on both landing receipts and logbooks, included starry flounder (*Platichthys stellatus*), sand sole (*Psettichthys melanostictus*), petrale sole (*Eopsetta jordani*), white seabass, curlfin sole (*Pleuronichthys decurrens*), unspecified sole, and turbot. The most common species caught and landed in association with the southern trawl fishery based on these same data sources included unspecified trawl fish, unspecified sole, Pacific angel shark, California scorpionfish (*Scorpaena guttata*), ridgeback prawn, unspecified skate, English sole (*Parophrys vetulus*), and rock sole (*Lepidopsetta bilineata*). Based on Department onboard observations in southern California, unspecified sole are most likely fantail sole and unspecified skates are likely California skates. Additionally, the ridgeback prawn documented in the logs are likely from targeted shrimp tows. The top species frequently caught and discarded in association with northern halibut trawl fishery based on observer data, included Dungeness crab (*Metacarcinus magister*), big skate (*Beringraja binoculata*), halibut, California skate, and English sole. The most commonly discarded species for the

southern trawl fishery included halibut, California skate, hornyhead turbot (*Pleuronichthys verticalis*), longspine combfish (*Zaniolepis latipinnis*), and fantail sole. The halibut that are discarded are likely either sublegal sized fish or unmarketable due to marine mammal predation ([Free 2022](#)).

### *Insights from Steps 1 and 2*

Throughout Steps 1 and 2, the analysis to quantify bycatch amounts was affected by data limitations. Landing receipt data only describes landed catch and thus does not provide information about discards. Additionally, logbook data sometimes includes information on discards, but accuracy varies due to self-reporting and non-compliance. Federal Observer Program data, which are independently collected by field biologists, include information on spatial location, effort, and discards. However, the Federal Observer Program only documented a sub-sample of the fleet, and observation assignments were not randomly sampled across the various fishing ports or active permittees. Additionally, effort information in the observer data was combined for both the white seabass and halibut set gill net fleet, which does not allow for extrapolation for the halibut fleet, specifically (pers. comm., Charles Villafana). Landings and logbook data record species in weight compared to the observer data that captures information in total numbers. These data limitations make it difficult to estimate fleetwide bycatch amounts to more directly determine if bycatch amounts are of management concern for the halibut fishery.

### **Step 3. Determining “acceptable” types and amounts of bycatch**

The MLMA assesses the acceptability of the amount and type of bycatch using four criteria: 1) legality of the take of bycatch species; 2) degree of threat to the sustainability of the bycatch species; 3) impacts on fisheries that target the bycatch species; and 4) ecosystem impacts ([FGC §7085\(b\)](#)). The Master Plan outlines a series of inquiries for each of the four criteria to consistently assess what is “acceptable” bycatch. The responses to the questions are not proposed to be used in a formulaic or prescriptive way but are intended to provide a structured basis to consider the issue.

Results of the Department’s efforts to complete Steps 1 and 2 of the Master Plan’s four-step process were presented to the Commission’s Marine Resources Committee (MRC) in [November 2022](#). During that meeting, the MRC recommended the Department begin Step 3 of the process to determine acceptable types and amounts of bycatch with the top ten bycatch species focused on the halibut set gill net fleet. Additionally, the MRC directed the Department to reach out to the set gill net fleet to open dialogue and confer with various stakeholder groups on the outcomes.

Using several sources of information and data, Department staff weighed the following factors to identify twelve bycatch species: how frequently the species is caught in the federal observer data; documented discard mortality; if the species is actively managed or not; whether it has a formal stock assessment; the current population status, conservation status or sensitivity (i.e. marine birds and mammals); whether the bycatch species is a target of an historical or a current commercial fishery; and if the species can be representative of a guild of multiple species observed in the data. An additional consideration was to select a suite of species that would reflect the different aspects of the four criteria: potential legality issues, other fishery impacts, and sustainability and/or ecosystem concerns.

The twelve species evaluated included: Pacific angel shark, brown smoothhound, white shark (*Carcharodon carcharias*), California skate, bat ray, giant sea bass, barred sand bass (*Paralabrax nebulifer*), sublegal-sized halibut, rock crab, California sea lion, humpback whale (*Megaptera novaeangliae*), and Brandt's cormorant (*Phalacrocorax penicillatus*).

For each of the twelve species, Department staff applied the inquiries related to each of the four criteria, that are outlined in [Step 3 of the Master Plan](#), to assess the acceptability of the amounts and types of bycatch. These structured inquiries provide a practical means of conducting the analysis of impacts and a consistent approach to assessing what is “acceptable” for the halibut set gill net fishery.

Department staff consulted a variety of available sources of information and data to walk through the inquiry questions, including: FGC; California Code of Regulations (CCR) Title 14; ESRs; International Union for Conservation and Nature (IUCN) Red List of Threatened Species; Magnuson Stevens Act; Endangered Species Act; Federal Register; Federal Observer Program data; FMPs; stock assessments; scientific literature; vulnerability scores from the PSA and ERA; and results from Steps 1 and 2 of the bycatch evaluation process. Information gathered to answer the inquiry questions are presented in Appendices 1a through 1l, for each bycatch species.

#### *Legality of Take of the Bycatch Species*

Under the first criterion in [FGC §7085\(b\)\(1\)](#): Legality of the bycatch under any relevant law, the inquiry questions are intended to determine if any species are illegal to take or retain under any relevant, state, federal or international law. If legality is not assessed, the Master Plan recommends this be conducted before proceeding. If the take is determined to be illegal or if the rate of mortality exceeds legally-sanctioned injury or mortality rates, the bycatch may be considered unacceptable and Department action or consultation with responsible state or federal agencies may be necessary. If defined rates of mortality exist, the Department should evaluate if the mortality rate is being

exceeded, informing the determination of whether the mortality rate is acceptable or unacceptable for the bycatch species.

For the twelve species analyzed, rock crab, barred sand bass, Brandt's cormorant, sublegal-sized halibut, California sea lions, and humpback whales are illegal to retain with set gill nets under existing law. All other species analyzed can be legally possessed as commercial take and are currently managed with size limits, gear restrictions, possession restrictions, and/or allowed as incidental catch in the set gill net fishery. Department staff considered the documented mortality rates of all species to evaluate whether the mortality rate and catch amounts of the bycatch species exceeds any legally-sanctioned mortality thresholds. Discard mortality rates are determined from the confidential Federal Observer Program data, years 2007-2017, filtered for the halibut set gill net fishery by only selecting trips with both halibut listed as the target species and 8.5-inch mesh, and is calculated by the number of fish discarded in a dead condition over the total number of fish discarded (Table 2 and 3).

**Table 2 Legality of possession and mortality rates of top twelve species analyzed in the bycatch evaluation.**

Species	Legality of Commercial Possession	Observed Discard Mortality Rate % (discarded dead/total discard)
<b>Pacific angel shark</b>	With size and gear restrictions	12% (18/154 <sup>1</sup> )
<b>Brown smoothhound</b>	With size restriction	40% (25/62 <sup>2</sup> )
<b>California skate</b>	With possession restrictions	10% (30/298 <sup>2</sup> )
<b>Bat ray</b>	No restrictions	26% (61/238 <sup>1</sup> )
<b>Rock crab</b>	May not be retained under Federal regulations	77% (437/570 <sup>1</sup> )
<b>Barred sand bass</b>	May not be retained	39% (7/18 <sup>3</sup> )
<b>Giant sea bass</b>	Incidental catch of one per vessel	Unknown <sup>4</sup>
<b>White shark</b>	Incidental catch allowance	Unknown <sup>5</sup>
<b>Brandt's cormorant</b>	May not be retained	100% (4/4 <sup>6</sup> )
<b>Sublegal halibut</b>	May not be retained	58% (28/48 <sup>7</sup> )
<b>California sea lion</b>	May not be retained <sup>8</sup>	100% (34/34 <sup>3</sup> )
<b>Humpback whale</b>	Not legal to take <sup>9</sup>	Unknown

<sup>1</sup> Years observed: 2007, 2010, 2011, 2012, 2013, and 2017.

<sup>2</sup> Years observed: 2007, 2010, 2012, 2013, and 2017.

<sup>3</sup> Years observed: 2007, 2010, 2011, 2012, and 2017.

<sup>4</sup> From 2007-2017, there were only eight observed giant sea bass and all were kept as incidental.

<sup>5</sup> No white sharks were observed as discarded between 2007-2017. The Monterey Bay Aquarium's sampling program estimated a 49% mortality rate. Lyons et al. (2013) estimated post release survival as 92.9%.

<sup>6</sup> Years observed: 2007, 2010, 2011, and 2013.

<sup>7</sup> Observer data does not differentiate sublegal halibut. Based on industry feedback this includes halibut that were also damaged due to marine mammal predation and not in a condition to be landed for market.

<sup>8</sup> The [Marine Mammal Protection Act](#) authorizes incidental take of a marine mammal for Category I and Category II commercial fisheries, with specific reporting conditions.

<sup>9</sup> The [Endangered Species Act](#) requires that an incidental take permit and Habitat Conservation Plan be obtained for any "take" of an endangered or threatened species incidental to an otherwise lawful activity.

### *Degree of threat to the sustainability of the bycatch species*

To evaluate the threat to sustainability of the bycatch species ([FGC §7085\(b\)\(2\)](#)), the inquiry questions are intended to consider the impacts of the relative level of bycatch within the fishery on the biological health of the particular bycatch species. A level of take that compromises the sustainability of the population would be unacceptable under the standards of the MLMA. For species where there is a managed fishery, it is recommended to refer to the state or federal stock assessment or FMP to evaluate whether the level of bycatch of that species compromises the ability of the population to maintain a sustainable level. For many of the species evaluated, there is a paucity of information on the status of the stock, and the Department relied on other sources of information to gain an understanding of the degree of threat. In addition to available status estimates or MSE, vulnerability scores from the PSA and ERA conducted during the Master Plan, the [IUCN Red List of Threatened Species](#), current management measures, and estimated discard mortality rates were compiled to evaluate threats to sustainability (Table 3 and Appendices). Based on discard mortality rates, vulnerability scores, MSE, IUCN classification, and bycatch amounts: brown smoothhound, rock crab, barred sand bass, Brandt's cormorant, and sublegal halibut were considered to have a low threat to sustainability. Pacific angel sharks, California skates, bat rays, giant sea bass, white sharks, and California sea lions were considered to have a moderate threat to sustainability.

**Table 3 Threats to sustainability of top twelve bycatch species.**

<b>Species</b>	<b>Observed Discard Mortality Rate % (number discarded dead/total discard)</b>	<b>PSA Vulnerability Score</b>	<b>IUCN Classification</b>	<b>Rate of Catch in Observed Sets</b>
<b>Pacific angel shark</b>	12% (18/154)	1.80	Near threatened	30%
<b>Brown smoothhound</b>	40% (25/62)	1.77	Least concern	4%
<b>California skate</b>	10% (30/298)	2.12	Least concern	22%
<b>Bat ray</b>	26% (61/238)	Not available	Least concern	26%
<b>Rock crab</b>	77% (437/570)	0.96	Not available	38%
<b>Barred sand bass</b>	39% (7/18)	1.52	Least concern	3%
<b>Giant sea bass</b>	Unknown	Not available	Critically endangered	2%
<b>White shark</b>	Unknown	Not available	Vulnerable	Unknown
<b>Brandt's cormorant</b>	100% (4/4)	Not applicable	Not available	<1%
<b>Sublegal halibut</b>	58% (28/48)	1.50	Least concern	59%
<b>California sea lion</b>	100% (34/34)	Not applicable	Least concern	6%
<b>Humpback whale</b>	Unknown	Not applicable	Least concern	Unknown

Each year, whale interactions and entanglements have been documented along the U.S. West Coast by the National Oceanic and Atmospheric Administration (NOAA).

Between 1982 and 2017, approximately 82 reports of entanglement were attributed to unidentified set gill net gear, with most entanglements being associated with gray whales (70). NOAA reports that 71% (58) of these entanglements were reported prior to the year 2000. Changes in set gill net fishing regulations in the late 1990s have greatly resulted in a decrease in whale entanglements, particularly gray whales. The majority of set gill net entanglements are from an unknown set region ([Saez, et al. 2021](#)); since 2015 only one gray whale has been directly attributed to the California set gill net fishery (personal communication, Lauren Saez). In 2022, NOAA reported two humpback whales and one gray whale entangled in unidentified set gill nets ([NOAA Fisheries 2023](#)). NOAA's efforts conclude there is potential for whales to be entangled in set gill net gear and gear marking has been identified as an important tool to determine the origin of entangling gear. The opportunity to improve and incorporate gear marking is currently being discussed with permittees and stakeholders as an area of improvement for the halibut set gill net fishery.

#### *Impacts on fisheries that target the bycatch species*

Impacts on fisheries ([FGC §7085\(b\)\(3\)](#)) consider whether the current level of bycatch within the directed fishery negatively impact the management of the bycatch species or the industry participants. Depending on the presence and severity of impacts to the directed fishery, the bycatch may be unacceptable. It is important to evaluate whether the current level of bycatch negatively impacts the management of the bycatch species' directed fishery or the fishermen that target that fishery resource. Factors to consider include whether the bycatch species is managed under a federal rebuilding plan or if there is a management allowance for a percentage of bycatch versus a prohibition on retention.

Five of the evaluated species do not have a directed fishery; thus, the inquiry questions were not applicable to use as part of the evaluation. Based on existing management measures, low bycatch amounts, and/or low discard mortality rates: Pacific angel shark, brown smoothhound, rock crab, barred sand bass, and sublegal halibut were considered at low risk to impacts on their targeted fisheries. While California skates and bat rays do not have directed fisheries, bycatch in the halibut set gill net fishery results in discard mortality, approximately 10% and 26%, respectively, based on observer data (Table 3). For California skate, roughly 85% are discarded and roughly 74% of bat rays are discarded and based on these estimated mortality rates, these two species were considered at moderate risk to impacts.

#### *Ecosystem impacts*

The criterion focused on ecosystem impacts ([FGC §7085\(b\)\(4\)](#)) evaluates whether the level of bycatch within the fishery impedes the ability of the bycatch species to fulfill its

functional role within the ecosystem. If the ecosystem role of the bycatch species is impeded, then bycatch of that species may be unacceptable under this criterion. For most species, this is difficult to assess given the paucity of scientific evidence on whether the amount of bycatch mortality significantly increases the risk that the bycatch species will be unable to serve its ecosystem role.

Department staff compiled information from ESRs and scientific literature to gain a better understanding of each species' role in the ecosystem. As apex predators, sharks play an important role in regulating trophic interactions. Pacific angel shark prey on common reef fish, and thus probably exert some top-down regulation on the distribution and abundance of lower trophic level fishes and invertebrates in inshore food webs (Pittenger 1984). Brown smoothhound mainly feed on bottom dwelling prey and may impact lower trophic level organisms that reside in this area such as shrimp, crabs, and small fish (Talent 1982). Young of the year and juvenile white sharks are known to feed on invertebrates, small elasmobranchs (sharks and rays), and bony fishes. Adult sharks (>3 meters) expand their diets to include marine mammals, such as seals and sea lions (Dewar, et al. 2013). California sea lions, Brandt's cormorant, California skates, and bat rays are defined as mesopredators, feeding primarily on fish and invertebrates, such as crustaceans and mollusks. Giant sea bass, barred sand bass, rock crab, and halibut are generalist predators that feed on many prey types. Humpback whales feed primarily on krill and small fish.

There is a lack of scientific evidence that concludes the amount of bycatch mortality is significantly impacting the role that each bycatch species is serving in the ecosystem. For those species where little or no information was available on whether the level of bycatch is unacceptable, including brown smoothhound, giant sea bass, white sharks, Brandt's cormorant, sublegal halibut, and humpback whales, the risk is unknown and considered moderate. There is no scientific literature to suggest California sea lions are a keystone species; however, other types of pinnipeds are considered keystone species, meaning they have a large effect on the natural environment relative to their abundance. Given the possible role that California sea lions serve in the ecosystem, the potential impact on ecosystems was considered moderate. For Pacific angel shark, California skate, bay rat, rock crabs, and barred sand bass, the risk was considered low or moderate based on the generalist roles these species play in the ecosystem.

#### **Step 4. Addressing unacceptable bycatch**

Based on the four criteria above, if the current type and amount of bycatch is determined to be unacceptable, the final step in the bycatch process is to develop conservation and management measures to minimize bycatch and discard mortality. There are several main strategies, outlined in the [Master Plan Appendix M](#), that can

potentially reduce bycatch and discard mortality; however, considerations of efficacy of the mitigation, economic impacts on industry, and enforcement requirements are an important aspect of Step 4 and require input from all stakeholders and close collaboration with the fishing participants. Step 4 has not been completed, but is part of ongoing discussion at the MRC, with industry participants, and other interested stakeholders.

## CONCLUSIONS

Consistent with the MLMA mandate that California's fisheries be managed in a way that limits bycatch to acceptable types and amounts, Department staff completed Steps 1 and 2 and answered the inquiry questions in Step 3, as outlined in the Master Plan for twelve bycatch species in the halibut set gill net fishery. In March 2023, Department staff presented an update on the bycatch evaluation process for the twelve bycatch species to the MRC, including the methods and results described above.

During the MRC meeting, Department staff summarized the results of the inquiry questions for each species and provided recommendations on potential next steps (Table 4). In summary, the majority of the elasmobranchs evaluated are considered to have moderate or unknown risks of threats to sustainability, fisheries, and ecosystems. Additionally, the bycatch of marine mammals is also considered moderate or unknown. Marine birds are caught in very small numbers, four total in six observed years. However, recognizing there is a small amount of interaction and 100% mortality, it is important to track any interactions of marine birds with the fishery. For the finfish species (barred sand bass, giant sea bass, and sublegal halibut), the overall risk of threats were considered low to moderate.

**Table 4 Summary of the four bycatch criteria for the twelve species evaluated.**

<b>Species</b>	<b>Legality of Commercial Possession</b>	<b>Risk to Sustainability</b>	<b>Risk of Impacts on Fisheries</b>	<b>Risk of Impacts on Ecosystems</b>
<b>Pacific angel shark</b>	Legal with size and gear restrictions	Moderate	Low	Low
<b>Brown smoothhound</b>	Legal with size limit	Low	Low	Unknown
<b>California skate</b>	Legal	Moderate	Moderate	Low
<b>Bat ray</b>	Legal	Moderate	Moderate	Low
<b>Rock crab</b>	May not be retained under Federal Regulations	Low	Low	Low
<b>Barred sand bass</b>	May not be retained	Low	Low	Low
<b>Giant sea bass</b>	Legal as incidental	Moderate	No directed fishery	Unknown
<b>White shark</b>	Legal as incidental	Moderate	No directed fishery	Unknown
<b>Brandt's cormorant</b>	May not be retained	Low	No directed fishery	Unknown
<b>Sublegal halibut</b>	May not be retained	Low	Low	Unknown
<b>California sea lion</b>	May not be retained	Moderate	No directed fishery	Moderate
<b>Humpback whale</b>	Not legal to take	Unknown	No directed fishery	Unknown

It is important to recognize the bycatch criteria have not been defined in regulation and a uniform definition of “unacceptable” has not been identified. However, the MLMA mandates that unacceptable amounts or types of bycatch be addressed through conservation and management measures. There are significant data limitations and knowledge gaps to determine amounts and types of bycatch and potential risks to sustainability, fisheries, and ecosystems. Lack of data to understand the total amount of bycatch in an individual fishery may potentially be considered “unacceptable” under the MLMA and could lead to discussions with industry, stakeholders, and managers to address the insufficient and uncertain sources of data. Regardless of an acceptability determination, Department staff continue to move forward towards solutions and have identified potential management measures to address information gaps related to data limitations and interactions with some bycatch species in the set gill net fishery.

## RECOMMENDATIONS

Department staff have engaged key representatives in the halibut set gill net fleet and interested stakeholders throughout the bycatch evaluation process to discuss results of the analysis and potential improvements to data collection and management measures to fill information gaps and address potential bycatch concerns. Key industry members have expressed willingness to participate in discussions to brainstorm ideas on how to further reduce bycatch of species with a moderate level of sustainability risk.

Preliminary discussions and ideas have focused on pathways for improved gear marking, reducing net soak times, potential spatial and/or temporal closures to avoid sensitive species, improved data collection through electronic technology or independent observer coverage, gear loss reporting, and consideration of creating non-transferable permits. Potential improvement to gear marking, electronic technology and non-transferable permits are described in additional details below.

### **Gear Marking**

As defined in [FGC §8601.5](#), set gill nets are required to be marked at both ends with buoys displaying the fisherman's identification number, as well as along the corkline of the net, every 45 fathoms. However, there may be opportunities to improve gear marking in the California set gill net fishery to address concerns related to unidentified set gill nets in marine mammal entanglements. In discussions with industry participants, more frequent identification numbers or weaving patterns and/or colors along or into the corkline are possible ways to uniquely identify set gill nets. Additionally, set gill net webbing can be manufactured in a variety of colors, such as green, blue, clear, purple, pink, etc. A standard color across all California permittees, along with additional corkline markings could assist in identifying set gill nets involved in potential marine mammal entanglements. Staff will continue to consider gear marking changes with industry participants, gear manufactures, marine mammal managers, and other interested stakeholders.

### **Electronic Technology**

Staff are also in the process of evaluating the gill and trammel net logbook as part of an effort to improve at-sea data collection activities and are considering data needs for management and enforcement, including the potential use of electronic technology.

Electronic technology has great potential to track a vessels' geographic location (vessel tracking), catches, and discards of fish. Electronic technology is emerging as a more effective and efficient tool to meet the challenges and demands for greater monitoring, documentation of bycatch, and catch accounting. Advances in electronic technology in

fisheries offers near real-time reporting of retained and discarded catch, and includes technology such as, vessel monitoring systems (VMS), electronic logbooks (e-logs), video cameras for observer-type electronic monitoring (EM), and electronic fish tickets (e-tickets).

The [Fisheries Information System Program](#) (FIS) is a state-regional-federal partnership program, sponsored by NOAA, to fund innovative projects to improve the quality of fisheries-dependent data collection. The FIS Program offers an annual, competitive request for funding proposal process to support initiatives that improve the quality and effectiveness of collecting, reporting, and managing fisheries-dependent data. This is a collaborative program that invests in addressing data gaps and data quality; efficient technology and data integration; and coordination and communication in the design, collection, and uses of fisheries data. Additionally, the National Fish and Wildlife Foundation offers a [Fisheries Innovation Fund](#) that supports effective participation of fishermen and communities in sustainable fisheries management through a call for proposals annually, including an Electronic Monitoring and Reporting Grant Program.

A next step for the Department is to evaluate whether electronic technology is an efficient solution to address the data collection needs for managing this fishery and the costs for implementing this new technology for the set gill net fleet. Both of these funding opportunities could be considered as a financial means for participating set gill net permittees to test a pilot electronic monitoring program for the halibut gill net fleet. California state fisheries potentially offers a great opportunity to create a new integrated data monitoring program that explores different modes of data collection that meets management needs.

### **Non-transferable Permits**

Prohibiting or limiting the transfer of permits could guard against increased effort in the fishery and/or reduce effort over time. Limitations on permit transfers could be short-term (e.g., 3-5 years) with the intent to be revisited, or longer-term so that all permits would eventually sunset over time. [FGC §8681.5](#) allows for any person who has an existing, valid permit and presents evidence that he or she has landed fish for commercial purposes in at least 15 of the preceding 20 years, to transfer that permit to any person otherwise qualified under the regulations adopted pursuant to [FGC §8682](#). A few key representatives have expressed support for a potential change in permit transferability and staff will continue to discuss this with industry and other stakeholders. Ultimately, a change to the permitting structure will require amending the regulations and/or legislation that establishes the permit transfer authority.

## NEXT STEPS

The Department continues to explore opportunities to improve management of the halibut fishery, including addressing potential concerns surrounding bycatch in the set gill net fleet. This report will be provided to the MRC in July 2023 and offers additional insights to continue open discussions with fleet participants and other interested stakeholders around future management measures for the halibut fishery.

## LITERATURE CITED

- Blincow, K.M., Swalethorp, R., Ramírez-Valdez, A. and Semmens, B.X., 2022. Giant appetites: exploring the trophic ecology of California's largest kelp forest predator, the giant sea bass *Stereolepis gigas*. Marine Ecology Progress Series, 695, pp.157-171.
- Calambokidis, J. and Barlow, J. 2013. Updated abundance estimates of blue and humpback whales off the US west coast incorporating photo-identifications from 2010 and 2011. Document PSRG-2013-13 presented to the Pacific Scientific Review Group, April 2013. 7 p.
- California Department of Fish and Wildlife. 2022. California halibut, *Paralichthys californicus*, Enhanced Status Report.
- Delany, S. and Scott, D. 2006. Waterbird population estimates. Wetlands International, Wageningen, The Netherlands.
- Dewar, H., Eguchi, T., Hyde, J., Kinzey, D., Kohin, S., Moore, J., Taylor, B. and Vetter, R. 2013. Status review of the northeastern Pacific population of white sharks (*Carcharodon carcharias*) under the Endangered Species Act. <https://repository.library.noaa.gov/view/noaa/17705>
- Espinoza, M., Clarke, T.M., Villalobos-Rojas, F., and Wehrtmann, I.S. 2012. Ontogenetic dietary shifts and feeding ecology of the rasptail skate, *Raja velezi*, and the Brown Smoothhound Shark, *Mustelus henlei*, along the Pacific coast of Costa Rica, Central America. Journal of Fish Biology, 81(5), pp. 1578–1595.
- Fish and Game Commission. 2019. Agenda Item summary MLMA Prioritization <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=175397&inline>
- Fitzgerald, S.P., Wilson, J.R., and Lenihan, H.S. 2018. Detecting a need for improved management in a data-limited crab fishery. Fisheries Research 208, pp. 133-144
- Free, C.M. 2022. Assessment of associated landed species and bycatch discards in the California halibut gill net and trawl fisheries (unpublished); Presented to California Department of Fish and Wildlife
- Gray, A.E., Mulligan, T.J., and Hannah, R.W. 1997. Food habits, occurrence, and population structure of the bat ray, *Myliobatis californica*, in Humboldt Bay, California. Environmental Biology of Fishes 49.2, pp. 227-238.
- House, P.H., Clark, B.L.F., and Allen, L.G. 2016. The Return of the King of the Kelp Forest: Distribution, Abundance, and Biomass of Giant Sea Bass (*Stereolepis gigas*) off

Santa Catalina Island, California, 2014-2015. Bulletin Southern California Academy of Sciences, 115(1), pp. 1–14.

Lee, Y.-W., Gustafson, R., Jannot, J., McVeigh, J., Riley, N., Somers, K., Tuttle, V., Wang, S., and Ward, E. 2017. Observed and estimated bycatch of green sturgeon in 2002–2015 U.S. West Coast groundfish fisheries. West Coast Groundfish Observer Program, Northwest Fisheries Science Center, Seattle.

Matthews, K.E., Mohay, J.L., Todd, J.W., and Starr, R.M. 2022. Bycatch in the California halibut (*Paralichthys californicus*) Trawl Fishery. Bulletin Southern California Academy of Sciences 121(2), pp. 88-109.

MRAG Americas, Inc. 2014. Productivity and Susceptibility Analysis with Next Step Recommendations, Test Cases for Selected California Fisheries. Report to California Ocean Science Trust. <https://www.oceansciencetrust.org/wp-content/uploads/2016/11/PSA-test-on-CA-Fisheries-Report-April2014.pdf>

National Oceanic and Atmospheric Administration. U.S. Department of Commerce. 2018. California Sea Lion (*Zalophus californianus*): U.S. Stock. (Revised 3/18/2019).

NOAA Fisheries. U.S. Department of Commerce. 2023. 2022 West Coast Whale Entanglement Summary.

Pittenger G.G. 1984. Movements, distribution, feeding, and growth of the Pacific angel shark, *Squatina californica*, at Catalina Island, California. Long Beach, California. California State University. 83 p.

Ramanujam, E., Samhour, J., Bizzarro, J., and Carter, H. 2017. Ecological Risk Assessment as a Prioritization Tool to Support California Fisheries Management. Oakland, California, USA. <https://www.oceansciencetrust.org/wp-content/uploads/2017/11/Ecological-Risk-Assessment-report-OST-2017.pdf>

Ramírez-Valdez, A., Rowell, T.J., Dale, K.E., Craig, M.T., Allen, L.G., Villaseñor-Derbez, J.C., Cisneros-Montemayor, A.M., Hernández-Velasco, A., Torre, J., Hofmeister, J. and Erismann, B.E., 2021. Asymmetry across international borders: Research, fishery and management trends and economic value of the giant sea bass (*Stereolepis gigas*). Fish and Fisheries, 22(6), pp.1392-1411.

Richerson, K.E., Jannot, J.E., Lee, Y.-W., McVeigh, J.T., Somers, K.A., Tuttle, V.J., and Wang, S. 2020. Observed and estimated bycatch of green sturgeon in 2002–2017 U.S. West Coast groundfish fisheries. West Coast Groundfish Observer Program, Northwest Fisheries Science Center, Seattle. NOAA Technical Memorandum NMFS-NWFSC-158. 40 p.

Saez, L., Lawson, D. and DeAngelis M. 2021. [Large whale entanglements off the U.S. West Coast, from 1982-2017](#). National Oceanic and Atmospheric Administration. NOAA Technical Memorandum NMFS-OPR-63A.

Talent, L. 1982. Food habits of the gray smoothhound, *Mustelus californicus*, the brown smoothhound, *Mustelus henlei*, the shovelnose guitarfish, *Rhinobatos productus*, and the bat ray, *Myliobatis californica*, in Elkhorn Slough, California. California Fish and Game 68(4), pp. 224-234.

The Pacific Fishery Management Council. 2020. Status of the Pacific Coast Groundfish Fishery Stock Assessment and Fishery Evaluation September 2020, <https://www.pcouncil.org/documents/2020/09/status-of-the-pacific-coast-groundfish-fishery-stock-assessment-and-fishery-evaluation-september-2020.pdf/>

West Coast Region Observer Program. 2020. California Set Gillnet Fishery Catch Summaries: 2007, 2001-2013, 2017.

## APPENDICES

### Appendix 1a. Evaluation of Pacific angel shark based on MLMA Master Plan bycatch criteria

Category and question	Response	Comments
<b>A. Legality of take</b>		
<b>A1. Under what laws, regulations, or guidance documents is species covered?</b>	Fish and Game Code	<p>There are gear restrictions placed on the commercial California halibut set gill net fishery which lands Pacific angel shark, including minimum mesh size and total maximum net length. FGC §8625: "(a) Except as otherwise provided in this code, set gill nets and trammel nets with mesh size of not less than 8 ½ inches may be used to take California halibut. (b) Except as provided in subdivision (c), not more than 1,500 fathoms (9,000 feet) of set gill net or trammel net shall be fished in combination each day for California halibut from any vessel in ocean waters. (c) Not more than 1,000 fathoms (6,000 feet) of set gill net or trammel net shall be fished in combination each day for California halibut from any vessel in ocean waters between a line extending due west magnetic from Point Arguello in Santa Barbara County and a line extending 172° magnetic from Rincon Point in Santa Barbara County to San Pedro Point at the east end of Santa Cruz Island in Santa Barbara County, then extending southwesterly 188° magnetic from San Pedro Point on Santa Cruz Island.</p> <p>A commercial minimum size limit established in 1986 was created to ensure that sharks had a chance to reproduce at least once before being retained in the catch. FGC §8388(a) states "No female angel shark measuring less than 42 inches in total length or 15 ¼ inches in alternate length and no male angel shark measuring less than 40 inches in total length or 14 ½ inches in alternate length may be possessed, sold, or purchased, except that 10 percent of the angel sharks in any load may measure not more than ½ inch less than the minimum size specified herein."</p> <p>There is a restricted access fishery for set gill nets (FGC §8610, 8680, 8681, and 8682).</p>
	IUCN Red List of Threatened Species	The species is listed as "Near threatened" on the IUCN Red List of Threatened Species in 2014. This category is between "Least concern" and "Vulnerable". Source: <a href="https://www.iucnredlist.org/species/39328/177163701">https://www.iucnredlist.org/species/39328/177163701</a>
<b>A2. Are there prohibitions against take using specific gear type?</b>	Yes	The set gill net fishery requires the use of a minimum mesh size and a maximum net length. See above.
<b>A3. Is the species a target species that requires discard of individuals based on size limits, seasons, or gear type restrictions?</b>	Yes	There is a minimum size limit which requires discard of undersize fish. See above.
<b>A4. Is the discard mortality rate known?</b>	Yes	The discard mortality rate is 12%, based on 2007-2017 NMFS observer data in which 136 fish were discarded alive and 18 were discarded dead.
<b>A5a. Are special permits required to retain or interact with the species?</b>	No	Only a general set gill net permit is required, although these are of limited number since this is a restricted access fishery.
<b>A5b. If yes, does the fishery currently have such permits?</b>	Not applicable	
<b>A5c. If yes, do the levels of bycatch comply with them?</b>	Not applicable	
<b>A6a. Does the species have an incidental catch allowance, ACL, or other restrictions on the amount, size, or sex of catch allowed?</b>	Yes	There is a minimum legal size; see question 1 above.
<b>A6b. If yes, does the catch comply with them?</b>	Yes	Fishermen may not legally land undersize fish.

Category and question	Response	Comments
<b>B. Threats to sustainability</b>		
<b>B1. Has a peer-reviewed risk assessment of the vulnerability of the particular bycatch species to overfishing been conducted (e.g., PSA)</b>	Yes	Department PSA completed in 2019 indicated angel shark ranked first in vulnerability among 36 fish and invertebrate species analyzed.
<b>B2a. Does a population status estimate or stock assessment exist for this species?</b>	No	However, relatively few fish are taken annually in the fishery (ESR).
<b>B2b. If yes, is there confidence in the underlying data such that a reasonable determination can be made if the stock is considered healthy, overfished, or depleted?</b>	Not applicable	However, the Pacific angel shark is largely protected from fishing pressure. Therefore, it is presumed that the population remains relatively stable in California (ESR).
<b>B3a. Are there any existing state and/or federal management measures?</b>	Yes	No commercial set gill net fishing is allowed in their primary inshore sandy-bottom habitat.
<b>B3b. If yes, are they effective in ensuring sustainability?</b>	Yes	The Pacific angel shark is largely protected from fishing pressure. Therefore, it is presumed that the population remains relatively stable in California (ESR).
<b>B4. Is the bycatch the product of recreational catch-and-release practices?</b>	No	Recreational anglers do not target this species.
<b>B5. What is the estimated discard mortality rate given the characteristics of the fishery and gear type?</b>	12%	This is based on 2007-2017 NMFS observer data in which 136 fish were discarded alive and 18 were discarded dead.
<b>B6. Do any post-release studies exist to verify the estimated mortality rate?</b>	No	There have been no post-release studies for this species.
<b>B7. What is the probability of mortality exceeding levels that have been scientifically determined to be necessary for the continued viability of the species?</b>	Low	The Pacific angel shark is largely protected from fishing pressure. Therefore, it is presumed that the population remains relatively stable in California (ESR).
<b>C. Impacts on fisheries</b>		
<b>C1. Does a directed fishery exist for the bycatch species?</b>	Yes	It is taken as an incidentally caught species in the halibut set gill net fishery.
<b>C2. Has the bycatch and associated discard mortality been accounted for?</b>	Yes	2000 to 2016 observed bycatch summary from NMFS indicated 103 angel sharks kept, 136 released alive, and 18 released dead.
<b>C3. Is bycatch affecting the directed fishery management strategy (i.e., restrictions on size, sex, or season)?</b>	No	The bycatch is incidental catch since this is a desirable and marketable species.
<b>C4. Are the impacts of bycatch considered and made explicit in an ESR or FMP?</b>	Yes	This is discussed in the Pacific angel shark ESR.
<b>C5a. Is the species constrained under a federal rebuilding plan?</b>	No	This is not a federally managed species.

Category and question	Response	Comments
<b>C5b. If yes, will bycatch compete with fleets that target the species?</b>	Not applicable	
<b>C6. Is there a management allowance for percent of catch or a prohibition on retention?</b>	Yes	There is a prohibition on landing fish below the minimum legal size.
<b>C7. If there is a directed fishery for the species, have there been any of the following?</b>		
<b>C7a. Reductions in opportunities or income for participants in fisheries that target the bycatch species</b>	Yes	A ban on set gill netting in state waters and north of Point Conception, and closure of primary processing plant for angel sharks, led to a significant decline in catch and effort in the 1990s.
<b>C7b. Reductions in fishery quotas or opportunities (e.g., time and area closures) based on bycatch issues?</b>	No	There is no quota for this species.
<b>C7c. Early closures of a fishery based on higher-than-expected bycatch?</b>	No	There are no early closures based on the amount of bycatch.
<b>C7d. Changes in fishing, processing, disposal, and marketing costs due to bycatch?</b>	No	There have been no changes for which the Department is aware.
<b>C7e. Changes in the social or cultural value of fishing activities due to bycatch?</b>	No	There have been no changes for which the Department is aware.
<b>C7f. Negative socioeconomic impacts from bycatch on fisheries and/or fishing communities which target or need incidental catch of this species?</b>	Yes	A ban on set gill netting in state waters and north of Point Conception, and closure of primary processing plant for angel sharks, led to a significant decline in catch and effort in the 1990s.
<b>C7g. Negative impacts to juveniles of a species targeted by another fishery?</b>	No	A minimum size limit offers some protection to juveniles.
<b>D. Impacts on ecosystem</b>		
<b>D1. What is the ecosystem role of the bycatch species?</b>	See comments	"As apex predators, sharks play an important role in regulating trophic interactions. In California, Pacific angel shark prey on common reef fish, and thus probably exert some top-down regulation on the distribution and abundance of lower trophic level fishes and invertebrates in inshore food webs (Pittenger 1984, cited in ESR)."
<b>D2. Does scientific evidence show the amount of bycatch mortality significantly increases the risk that a bycatch species will be unable to serve its ecosystem role?</b>	No	"There are no formal overfishing threshold criteria for Pacific angel shark. However, landings are tracked in both the commercial and recreational sectors, and, given the low landings that have occurred since the ban on set gill net and trammel nets in the early 1990s, there are currently no concerns about overfishing occurring on this stock." (ESR)
<b>References</b>		Pittenger G.G. 1984. Movements, distribution, feeding, and growth of the Pacific angel shark, <i>Squatina californica</i> , at Catalina Island, California. Long Beach, California. California State University. 83 p.

## Appendix 1b. Evaluation of brown smoothhound based on MLMA Master Plan bycatch criteria

Category and question	Response	Comments
<b>A. Legality of take</b>		
<b>A1. Under what laws, regulations, or guidance documents is species covered?</b>	Fish and Game Code	§8597.b(3) brown smoothhound under 18: may be taken or possessed under marine aquaria collector permit. §8598 None less than 18" in whole condition or with head & tail removed for commercial.
	Title 14 CCR	§27.60. There is a recreational limit of 10 per day, 10 in possession
	Title 50 of the Code of Federal Regulations	No fin removal is permitted (part §600-subpart N).
<b>A2. Are there prohibitions against take using specific gear type?</b>	No	There is a commercial prohibition from take for brown smoothhound 18" or longer. §8597.b smoothhound under 18: may be taken or possessed under marine aquaria collector permit. §8598 None less than 18" in whole condition or with head & tail removed for commercial.
<b>A3. Is the species a target species that requires discard of individuals based on size limits, seasons, or gear type restrictions?</b>	No	Retention under 18" is prohibited regardless of method of take
<b>A4. Is the discard mortality rate known?</b>	Yes	The discard mortality rate is 40%, based on 2007-2017 NMFS observer data in which 37 fish were discarded alive and 25 were discarded dead
<b>A5a. Are special permits required to retain or interact with the species?</b>		A Marine Aquaria Permit is required for retention of under 18", §8597.b
<b>A5b. If yes, does the fishery currently have such permits?</b>		No such permits are required for commercial or recreational fisheries.
<b>A5c. If yes, do the levels of bycatch comply with them?</b>	Not applicable	
<b>A6a. Does the species have an incidental catch allowance, ACL, or other restrictions on the amount, size, or sex of catch allowed?</b>	Yes	There is no annual catch limit (ACL). Brown smoothhound sharks are legal to retain if 18" or longer.
<b>A6b. If yes, does the catch comply with them?</b>	Not applicable	
<b>B. Threats to sustainability</b>		
<b>B1. Has a peer-reviewed risk assessment of the vulnerability of the particular bycatch species to overfishing been conducted (e.g., PSA)</b>	No	The brown smoothhound PSA pertains to hook/line, but was 1.766
<b>B2a. Does a population status estimate or stock assessment exist for this species?</b>	No	There is no status estimate or stock assessment
<b>B2b. If yes, is there confidence in the underlying data such that a reasonable determination can be made if the stock is considered healthy, overfished, or depleted?</b>	Not applicable	With limited incidental take and no directed fishery, it is reasonable to consider this a healthy stock.
<b>B3a. Are there any existing state and/or federal management measures?</b>	Yes	A minimum length of 18" is established in FGC §8598.
<b>B3b. If yes, are they effective in ensuring sustainability?</b>	Yes	The above measure appears effective. Annual recreational and commercial take is low and consistent.

Category and question	Response	Comments
<b>B4. Is the bycatch the product of recreational catch-and-release practices?</b>	No	
<b>B5. What is the estimated discard mortality rate given the characteristics of the fishery and gear type?</b>	40%	This is based on 2007-2017 NMFS observer data in which 37 fish were discarded alive and 25 were discarded dead.
<b>B6. Do any post-release studies exist to verify the estimated mortality rate?</b>	No	
<b>B7. What is the probability of mortality exceeding levels that have been scientifically determined to be necessary for the continued viability of the species?</b>	Low	There is no directed fishery for brown smoothhound and 8.5" halibut gillnet mesh has low risk of entanglement as indicated by observer data. The species is fast growing, matures early, and has a relatively large number of pups compared to other shark species. Fishbase.org lists brown smoothhound as having a high vulnerability to fishing.
<b>C. Impacts on fisheries</b>		
<b>C1. Does a directed fishery exist for the bycatch species?</b>	No	Catch is incidental to other targets.
<b>C2. Has the bycatch and associated discard mortality been accounted for?</b>	Yes	If retained, brown smoothhound is documented on Department fish tickets. Recreational catch is documented dockside and onboard CPFVs. Based on 2007-2017 NMFS observer data, 37 fish were discarded alive and 25 were discarded dead.
<b>C3. Is bycatch affecting the directed fishery management strategy (i.e., restrictions on size, sex, or season)?</b>	No	Brown smoothhound bycatch does not affect directed halibut/ white seabass gillnet fisheries management.
<b>C4. Are the impacts of bycatch considered and made explicit in an ESR or FMP?</b>	Yes	Bycatch and fishery impacts are considered as "no concern" in the brown smoothhound ESR. There is an FMP for brown smoothhound.
<b>C5a. Is the species constrained under a federal rebuilding plan?</b>	No.	
<b>C5b. If yes, will bycatch compete with fleets that target the species?</b>	Not applicable	
<b>C6. Is there a management allowance for percent of catch or a prohibition on retention?</b>	No	Brown smoothhound less than 18" TL are prohibited from retention except under a Marine Aquaria Permit.
<b>C7. If there is a directed fishery for the species, have there been any of the following?</b>	No	There is no directed fishery for brown smoothhound. Most are commercially caught and are released.
<b>C7a. Reductions in opportunities or income for participants in fisheries that target the bycatch species</b>	Not applicable	
<b>C7b. Reductions in fishery quotas or opportunities (e.g., time and area closures) based on bycatch issues?</b>	Not applicable	
<b>C7c. Early closures of a fishery based on higher-than-expected bycatch?</b>	Not applicable	
<b>C7d. Changes in fishing, processing, disposal, and marketing costs due to bycatch?</b>	Not applicable	
<b>C7e. Changes in the social or cultural value of fishing activities due to bycatch?</b>	Not applicable	

Category and question	Response	Comments
<b>C7f. Negative socioeconomic impacts from bycatch on fisheries and/or fishing communities which target or need incidental catch of this species?</b>	Not applicable	
<b>C7g. Negative impacts to juveniles of a species targeted by another fishery?</b>	Not applicable	
<b>D. Impacts on ecosystem</b>		
<b>D1. What is the ecosystem role of the bycatch species?</b>	See comments	From the brown smoothhound ESR- "As apex predators, sharks play an important role in regulating trophic interactions by controlling the abundance of secondary carnivores. Since brown smoothhound mainly feed on bottom dwelling prey, they probably impact lower trophic level organisms that reside in this area such as shrimp, crabs and small fish." A study off Costa Rica (Espinosa et al. 2012) showed that immature smoothhound feed on benthic crustaceans and invertebrates. Mature brown smoothhound fed on small fish and crustaceans.
<b>D2. Does scientific evidence show the amount of bycatch mortality significantly increases the risk that a bycatch species will be unable to serve its ecosystem role?</b>	Unknown	
<b>References</b>		Espinoza, M., Clarke, T. M., Villalobos-Rojas, F., and Wehrtmann, I. S. (2012). Ontogenetic dietary shifts and feeding ecology of the rasptail skate, <i>Raja velezi</i> , and the Brown Smoothhound Shark, <i>Mustelus henlei</i> , along the Pacific coast of Costa Rica, Central America. <i>Journal of Fish Biology</i> , 81(5), 1578–1595.

## Appendix 1c. Evaluation of California skate based on MLMA Master Plan bycatch criteria

Category and question	Response	Comments
<b>A. Legality of take</b>		
<b>A1. Under what laws, regulations, or guidance documents is species covered?</b>	Fish and Game Code	Possession of skate wings on any boat is prohibited as there are no equivalents or conversion factors established in statute or regulation under which other than whole skates may be brought ashore (FGC §§5508, 8042). §8597.b(3) skates under 18 inches may be taken or possessed under marine aquaria collector permit. Federal groundfish seasonal closures, Title 14 CCR, §27.60 28.49(a); general bag limit of 10, §27.60
<b>A2. Are there prohibitions against take using specific gear type?</b>	No	
<b>A3. Is the species a target species that requires discard of individuals based on size limits, seasons, or gear type restrictions?</b>	No	
<b>A4. Is the discard mortality rate known?</b>	Yes	There is a 10% estimated mortality rate from NMFS set gill net observer data 2007-2017.
<b>A5a. Are special permits required to retain or interact with the species?</b>	No	
<b>A5b. If yes, does the fishery currently have such permits?</b>	Not applicable	
<b>A5c. If yes, do the levels of bycatch comply with them?</b>	Not applicable	
<b>A6a. Does the species have an incidental catch allowance, ACL, or other restrictions on the amount, size, or sex of catch allowed?</b>	No	
<b>A6b. If yes, does the catch comply with them?</b>	Not applicable	
<b>B. Threats to sustainability</b>		
<b>B1. Has a peer-reviewed risk assessment of the vulnerability of the particular bycatch species to overfishing been conducted (e.g., PSA)</b>	Yes	A vulnerability score of 2.12 indicates relatively high concern (Status of the Pacific Coast Groundfish Fishery 2020).
<b>B2a. Does a population status estimate or stock assessment exist for this species?</b>	No	
<b>B2b. If yes, is there confidence in the underlying data such that a reasonable determination can be made if the stock is considered healthy, overfished, or depleted?</b>	Not applicable	
<b>B3a. Are there any existing state and/or federal management measures?</b>	Yes	Possession of skate wings on any boat is prohibited as there are no equivalents or conversion factors established in statute or regulation under which other than whole skates may be brought ashore (FGC §§5508, 8042). §8597.b(3) skates under 18 inches may be taken or possessed under marine aquaria collector permit. Federal groundfish seasonal closures, Title 14 CCR, §27.60 28.49(a); general bag limit of 10, §27.60
<b>B3b. If yes, are they effective in ensuring sustainability?</b>	Not applicable	

Category and question	Response	Comments
<b>B4. Is the bycatch the product of recreational catch-and-release practices?</b>	No	
<b>B5. What is the estimated discard mortality rate given the characteristics of the fishery and gear type?</b>	10%	This is based on NMFS set gill net observer data 2007-2017 in which 268 California skates were discarded alive and 30 were discarded dead.
<b>B6. Do any post-release studies exist to verify the estimated mortality rate?</b>	No	
<b>B7. What is the probability of mortality exceeding levels that have been scientifically determined to be necessary for the continued viability of the species?</b>	Not applicable	
<b>C. Impacts on fisheries</b>		
<b>C1. Does a directed fishery exist for the bycatch species?</b>	No	
<b>C2. Has the bycatch and associated discard mortality been accounted for?</b>	Yes	From the NMFS set gill net observer data 2007-2017, California skates make up 4.7% of the total catch by individuals. 14.6% are kept and sold and the remaining 85.4% are discarded.
<b>C3. Is bycatch affecting the directed fishery management strategy (i.e., restrictions on size, sex, or season)?</b>	No	
<b>C4. Are the impacts of bycatch considered and made explicit in an ESR or FMP?</b>	No	
<b>C5a. Is the species constrained under a federal rebuilding plan?</b>	No	
<b>C5b. If yes, will bycatch compete with fleets that target the species?</b>	Not applicable	
<b>C6. Is there a management allowance for percent of catch or a prohibition on retention?</b>	No	
<b>C7. If there is a directed fishery for the species, have there been any of the following?</b>	Not applicable	
<b>C7a. Reductions in opportunities or income for participants in fisheries that target the bycatch species</b>	Not applicable	
<b>C7b. Reductions in fishery quotas or opportunities (e.g., time and area closures) based on bycatch issues?</b>	Not applicable	
<b>C7c. Early closures of a fishery based on higher-than-expected bycatch?</b>	Not applicable	
<b>C7d. Changes in fishing, processing, disposal, and marketing costs due to bycatch?</b>	Not applicable	

Category and question	Response	Comments
<b>C7e. Changes in the social or cultural value of fishing activities due to bycatch?</b>	Not applicable	
<b>C7f. Negative socioeconomic impacts from bycatch on fisheries and/or fishing communities which target or need incidental catch of this species?</b>	Not applicable	
<b>C7g. Negative impacts to juveniles of a species targeted by another fishery?</b>	Not applicable	
<b>D. Impacts on ecosystem</b>		
<b>D1. What is the ecosystem role of the bycatch species?</b>	See comments	Big skates are mesopredators; they eat primarily crustaceans and fishes.
<b>D2. Does scientific evidence show the amount of bycatch mortality significantly increases the risk that a bycatch species will be unable to serve its ecosystem role?</b>	No	
<b>References</b>		Status of the Pacific Coast Groundfish Fishery Stock Assessment and Fishery Evaluation September 2020, <a href="https://www.pcouncil.org/documents/2020/09/status-of-the-pacific-coast-groundfish-fishery-stock-assessment-and-fishery-evaluation-september-2020.pdf/">https://www.pcouncil.org/documents/2020/09/status-of-the-pacific-coast-groundfish-fishery-stock-assessment-and-fishery-evaluation-september-2020.pdf/</a>

## Appendix 1d. Evaluation of bat ray based on MLMA Master Plan bycatch criteria

Category and question	Response	Comments
<b>A. Legality of take</b>		
<b>A1. Under what laws, regulations, or guidance documents is species covered?</b>	Fish and Game Code	According to §8597.b(3) rays under 18 inches may be taken or possessed under a marine aquaria collector permit. According to Title 14 §27.6, the recreational bag limit is 10 per day.
<b>A2. Are there prohibitions against take using specific gear type?</b>	No	
<b>A3. Is the species a target species that requires discard of individuals based on size limits, seasons, or gear type restrictions?</b>	No	
<b>A4. Is the discard mortality rate known?</b>	Yes	There is a 26% estimated mortality rate based on NMFS set gill net observer data from 2007-2017.
<b>A5a. Are special permits required to retain or interact with the species?</b>	No	
<b>A5b. If yes, does the fishery currently have such permits?</b>	Not applicable	
<b>A5c. If yes, do the levels of bycatch comply with them?</b>	Not applicable	
<b>A6a. Does the species have an incidental catch allowance, ACL, or other restrictions on the amount, size, or sex of catch allowed?</b>	No	
<b>A6b. If yes, does the catch comply with them?</b>	Not applicable	
<b>B. Threats to sustainability</b>		
<b>B1. Has a peer-reviewed risk assessment of the vulnerability of the particular bycatch species to overfishing been conducted (e.g., PSA)</b>	No	
<b>B2a. Does a population status estimate or stock assessment exist for this species?</b>	No	
<b>B2b. If yes, is there confidence in the underlying data such that a reasonable determination can be made if the stock is considered healthy, overfished, or depleted?</b>	Not applicable	
<b>B3a. Are there any existing state and/or federal management measures?</b>	Yes	According to §8597.b(3) rays under 18 inches may be taken or possessed under marine aquaria collector permit. According to Title 14 §27.6, the recreational bag limit is 10 per day.
<b>B3b. If yes, are they effective in ensuring sustainability?</b>	Not applicable	
<b>B4. Is the bycatch the product of recreational catch-and-release practices?</b>	No	
<b>B5. What is the estimated discard mortality rate given the characteristics of the fishery and gear type?</b>	26%	This is based on NMFS set gill net observer data from 2007-2017 in which 173 bat rays were discarded alive and 61 were discarded dead.
<b>B6. Do any post-release studies exist to verify the estimated mortality rate?</b>	No	
<b>B7. What is the probability of mortality exceeding levels that have been scientifically determined to be necessary for the continued viability of the species?</b>	Not applicable	

Category and question	Response	Comments
<b>C. Impacts on fisheries</b>		
<b>C1. Does a directed fishery exist for the bycatch species?</b>	No	
<b>C2. Has the bycatch and associated discard mortality been accounted for?</b>	Yes	From the NMFS observer data, bat rays make up 4.3% of the total catch by individuals. Roughly 25% of those caught are kept and sold and the other 75% is discarded.
<b>C3. Is bycatch affecting the directed fishery management strategy (i.e., restrictions on size, sex, or season)?</b>	No	
<b>C4. Are the impacts of bycatch considered and made explicit in an ESR or FMP?</b>	No	
<b>C5a. Is the species constrained under a federal rebuilding plan?</b>	No	
<b>C5b. If yes, will bycatch compete with fleets that target the species?</b>	Not applicable	
<b>C6. Is there a management allowance for percent of catch or a prohibition on retention?</b>	No	
<b>C7. If there is a directed fishery for the species, have there been any of the following?</b>	Not applicable	
<b>C7a. Reductions in opportunities or income for participants in fisheries that target the bycatch species</b>	Not applicable	
<b>C7b. Reductions in fishery quotas or opportunities (e.g., time and area closures) based on bycatch issues?</b>	Not applicable	
<b>C7c. Early closures of a fishery based on higher-than-expected bycatch?</b>	Not applicable	
<b>C7d. Changes in fishing, processing, disposal, and marketing costs due to bycatch?</b>	Not applicable	
<b>C7e. Changes in the social or cultural value of fishing activities due to bycatch?</b>	Not applicable	
<b>C7f. Negative socioeconomic impacts from bycatch on fisheries and/or fishing communities which target or need incidental catch of this species?</b>	Not applicable	
<b>C7g. Negative impacts to juveniles of a species targeted by another fishery?</b>	Not applicable	
<b>D. Impacts on ecosystem</b>		
<b>D1. What is the ecosystem role of the bycatch species?</b>		Bat rays are mesopredators; they eat primarily crustaceans, mollusks, and echiuran worms.
<b>D2. Does scientific evidence show the amount of bycatch mortality significantly increases the risk that a bycatch species will be unable to serve its ecosystem role?</b>	No	
<b>References</b>		Gray, Ann E., Timothy J. Mulligan, and Robert W. Hannah. 1997. "Food habits, occurrence, and population structure of the bat ray, <i>Myliobatis californica</i> , in Humboldt Bay, California." <i>Environmental Biology of Fishes</i> 49.2: 227-238.

## Appendix 1e. Evaluation of rock crab based on MLMA Master Plan bycatch criteria

Category and question	Response	Comments
<b>A. Legality of take</b>		
<b>A1. Under what laws, regulations, or guidance documents is species covered?</b>	Fish and Game Code	Section 9000 describes rules associated with trap gear; specifically, §9011(b)(2) describes rock crab dimensions. §8275 defines rock crab. §8282 provides the authority to regulate. §8285 relates to domoic acid rules. §125 describes permit requirements for northern and southern regions. §125.1 describes size limit and incidental take provisions.
<b>A2. Are there prohibitions against take using specific gear type?</b>	No	
<b>A3. Is the species a target species that requires discard of individuals based on size limits, seasons, or gear type restrictions?</b>	Yes	There is a size limit but no season restriction.
<b>A4. Is the discard mortality rate known?</b>	Yes	The discard mortality rate is 77% based on NMFS set gill net observer data from 2007-2017.
<b>A5a. Are special permits required to retain or interact with the species?</b>	No	
<b>A5b. If yes, does the fishery currently have such permits?</b>	Not applicable	
<b>A5c. If yes, do the levels of bycatch comply with them?</b>	Not applicable	
<b>A6a. Does the species have an incidental catch allowance, ACL, or other restrictions on the amount, size, or sex of catch allowed?</b>	No	
<b>A6a. If yes, does the catch comply with them?</b>	Not applicable	
<b>B. Threats to sustainability</b>		
<b>B1. Has a peer-reviewed risk assessment of the vulnerability of the particular bycatch species to overfishing been conducted (e.g., PSA)</b>	Yes	See reference below: Fitzgerald. 2018. Fisheries Research. 208:133-144.
<b>B2a. Does a population status estimate or stock assessment exist for this species?</b>	No	However, data-limited assessment methods were applied by Fitzgerald (2018). A Management Strategy Evaluation also indicated that the risk of overfishing is low but vulnerable biomass has declined leading to dissatisfaction in the fishery.
<b>B2b. If yes, is there confidence in the underlying data such that a reasonable determination can be made if the stock is considered healthy, overfished, or depleted?</b>	Not applicable	
<b>B3a. Are there any existing state and/or federal management measures?</b>	Yes	There are size and permit limits.
<b>B3b. If yes, are they effective in ensuring sustainability?</b>	Yes	There does not appear to be a threat to sustainability. However, that conclusion is uncertain and there is some threat of serial depletion among the three target species.
<b>B4. Is the bycatch the product of recreational catch-and-release practices?</b>	No	
<b>B5. What is the estimated discard mortality rate given the characteristics of the fishery and gear type?</b>	77%	This is based on NMFS set gill net observer data 2007-2017, in which 133 rock crabs were discarded alive and 437 were discarded dead.

Category and question	Response	Comments
<b>B6. Do any post-release studies exist to verify the estimated mortality rate?</b>	No	Second-hand reports indicate that rock crabs do not regenerate claws the way some other stone crab species do.
<b>B7. What is the probability of mortality exceeding levels that have been scientifically determined to be necessary for the continued viability of the species?</b>	No	The probability is low, SWFSC observer data from 1994-2017 indicate the median ratio of rock crab to California halibut landings is about 1:1. Landings of California halibut by set gill net during that time were averaged approximately 250,000 lb while the rock crab fishery landings were an approximate average of 1,250,000 lb. Therefore, bycatch from the set gill net fishery could represent approximately 1/5 of fishery landings.
<b>C. Impacts on fisheries</b>		
<b>C1. Does a directed fishery exist for the bycatch species?</b>	Yes	
<b>C2. Has the bycatch and associated discard mortality been accounted for?</b>	No	
<b>C3. Is bycatch affecting the directed fishery management strategy (i.e., restrictions on size, sex, or season)?</b>	No	Rock crab landings are not restricted by season or sex. They are restricted by size and incidental landings of rock crab in other fisheries are held to the same size limit.
<b>C4. Are the impacts of bycatch considered and made explicit in an ESR or FMP?</b>	No	The ESR discusses catch of incidental species while targeting rock crab and the reduction of bycatch of undersized rock crabs due to trap configuration rules. It does not discuss bycatch of rock crab in other fisheries.
<b>C5a. Is the species constrained under a federal rebuilding plan?</b>	No	
<b>C5b. If yes, will bycatch compete with fleets that target the species?</b>	Not applicable	
<b>C6. Is there a management allowance for percent of catch or a prohibition on retention?</b>	No	State regulations do not prohibit incidental take of crab in set gill nets. Department staff believe federal rules prohibit targeting crabs with set gill net.
<b>C7. If there is a directed fishery for the species, have there been any of the following?</b>	Yes	
<b>C7a. Reductions in opportunities or income for participants in fisheries that target the bycatch species</b>	Yes	Permits were made transferrable in 2010 which led to transfer of latent capacity, crowded fishing grounds, and lower catch rates, according to participants.
<b>C7b. Reductions in fishery quotas or opportunities (e.g., time and area closures) based on bycatch issues?</b>	No	There are no quotas or seasons.
<b>C7c. Early closures of a fishery based on higher-than-expected bycatch?</b>	No	
<b>C7d. Changes in fishing, processing, disposal, and marketing costs due to bycatch?</b>	No	
<b>C7e. Changes in the social or cultural value of fishing activities due to bycatch?</b>	No	
<b>C7f. Negative socioeconomic impacts from bycatch on fisheries and/or fishing communities which target or need incidental catch of this species?</b>	No	
<b>C7g. Negative impacts to juveniles of a species targeted by another fishery?</b>	No	
<b>D. Impacts on ecosystem</b>		

Category and question	Response	Comments
D1. What is the ecosystem role of the bycatch species?	See comments	The rock crab is a benthic predator and scavenger.
D2. Does scientific evidence show the amount of bycatch mortality significantly increases the risk that a bycatch species will be unable to serve its ecosystem role?	No	No research exists on this aspect, but ecosystem impacts are considered unlikely.
References		Fitzgerald, Sean P., Jono R. Wilson, and Hunter S. Lenihan. 2018. "Detecting a need for improved management in a data-limited crab fishery." <i>Fisheries Research</i> 208: 133-144.

## Appendix 1f. Evaluation of barred sand bass based on MLMA Master Plan bycatch criteria

Category and question	Response	Comments
<b>A. Legality of take</b>		
<b>A1. Under what laws, regulations, or guidance documents is species covered?</b>	Fish and Game Code	§8372 states that barred sand bass shall not be sold or purchased or possessed in any place where fish are purchased, possessed for sale, or sold
	Title 14 CCR	§27.65 states that fillets shall be minimum of 7.5 inches. §28.30 establishes a minimum size of 14 inches or 10 inches alternate length
	Title 50 of the Code of Federal Regulations	There is a limit of 5 in any combination of kelp, barred sand, and spotted sand bass. §105 states that dead barred sand bass maybe imported into CA for sale (must have tags and proof of catch outside CA). §705 describes the price of tags.
<b>A2. Are there prohibitions against take using specific gear type?</b>	Yes	Barred sand bass are prohibited from all methods of take for commercial purposes.
<b>A3. Is the species a target species that requires discard of individuals based on size limits, seasons, or gear type restrictions?</b>	Yes	The recreational limit is 5 in any combination of kelp, barred sand, and spotted sand bass.  The minimum legal size is 14 inches
<b>A4. Is the discard mortality rate known?</b>	Yes	Relatively few are caught in set gill nets; NMFS observer set gill net data from 2007 to 2017 show discard mortality of 39% (7/18).
<b>A5a. Are special permits required to retain or interact with the species?</b>	No	
<b>A5b. If yes, does the fishery currently have such permits?</b>	Not applicable	
<b>A5c. If yes, do the levels of bycatch comply with them?</b>	Not applicable	
<b>A6a. Does the species have an incidental catch allowance, ACL, or other restrictions on the amount, size, or sex of catch allowed?</b>	No	
<b>A6b. If yes, does the catch comply with them?</b>	Not applicable	
<b>B. Threats to sustainability</b>		
<b>B1. Has a peer-reviewed risk assessment of the vulnerability of the particular bycatch species to overfishing been conducted (e.g., PSA)</b>	Yes	Department Productivity Susceptibility Analysis in 2019 indicated a high rank of vulnerability to sport fishing.
<b>B2a. Does a population status estimate or stock assessment exist for this species?</b>	No	
<b>B2b. If yes, is there confidence in the underlying data such that a reasonable determination can be made if the stock is considered healthy, overfished, or depleted?</b>	Not applicable	
<b>B3a. Are there any existing state and/or federal management measures?</b>	Yes	Commercial take is prohibited; set gill nets were moved offshore in 1994 with Proposition 132, minimizing bycatch of nearshore species such as barred sand bass; sport fishing regulations include a minimum size limit and bag limit.
<b>B3b. If yes, are they effective in ensuring sustainability?</b>	Yes	However, it is believed that additional recreational management measures are needed to protect stock once its biomass increases again.
<b>B4. Is the bycatch the product of recreational catch-and-release practices?</b>	No	

Category and question	Response	Comments
B5. What is the estimated discard mortality rate given the characteristics of the fishery and gear type?	39%	This is based on NMFS set gill net observer data from 2007-2017, in which 11 barred sand bass were discarded alive and 7 were discarded dead.
B6. Do any post-release studies exist to verify the estimated mortality rate?	No	
B7. What is the probability of mortality exceeding levels that have been scientifically determined to be necessary for the continued viability of the species?	Unknown	
C. Impacts on fisheries		
C1. Does a directed fishery exist for the bycatch species?	Yes	There is a directed sport fishery (hook and line) for barred sand bass.
C2. Has the bycatch and associated discard mortality been accounted for?	No	
C3. Is bycatch affecting the directed fishery management strategy (i.e., restrictions on size, sex, or season)?	No	
C4. Are the impacts of bycatch considered and made explicit in an ESR or FMP?	No	
C5a. Is the species constrained under a federal rebuilding plan?	No	
C5b. If yes, will bycatch compete with fleets that target the species?	Not applicable	
C6. Is there a management allowance for percent of catch or a prohibition on retention?	Yes	Barred sand bass are prohibited from commercial take.
C7. If there is a directed fishery for the species, have there been any of the following?		There is a directed sport fishery (hook and line) for barred sand bass.
C7a. Reductions in opportunities or income for participants in fisheries that target the bycatch species	No	
C7b. Reductions in fishery quotas or opportunities (e.g., time and area closures) based on bycatch issues?	No	
C7c. Early closures of a fishery based on higher-than-expected bycatch?	No	
C7d. Changes in fishing, processing, disposal, and marketing costs due to bycatch?	No	
C7e. Changes in the social or cultural value of fishing activities due to bycatch?	No	
C7f. Negative socioeconomic impacts from bycatch on fisheries and/or fishing communities which target or need incidental catch of this species?	No	
C7g. Negative impacts to juveniles of a species targeted by another fishery?	No	
D. Impacts on ecosystem		

Category and question	Response	Comments
D1. What is the ecosystem role of the bycatch species?	See comments	Barred sand bass is a generalist carnivore. The formation of large spawning aggregations can contribute substantial nutrients in the form of egg masses and nitrogen and phosphorous waste products (ESR).
D2. Does scientific evidence show the amount of bycatch mortality significantly increases the risk that a bycatch species will be unable to serve its ecosystem role?	No	

## Appendix 1g. Evaluation of giant sea bass based on MLMA Master Plan bycatch criteria

Category and question	Response	Comments
<b>A. Legality of take</b>		
<b>A1. Under what laws, regulations, or guidance documents is species covered?</b>	Fish and Game Code	§7350: giant sea bass may not be taken under a sport fishing license except by hook and line when engaged in the taking of other fish. §8380: a) giant sea bass may not be taken for any purpose, except that not more than one fish per vessel may be possessed or sold if taken incidentally in commercial fishing operations by gill or trammel net. b) above restrictions do not apply to 1000 lbs per trip taken in waters south of international boundary line. Fish taken under this provision are limited to a maximum aggregate of 3000 pounds per vessel in any calendar year.
	Title 14 CCR	§28.10: a) may not be taken off California. All fish taken incidental to other fishing activity shall be immediately returned to the water where taken. b) limit two per angler per trip when fishing south of US-Mexico border. Need valid fishing permit or license from Mexican government.
	IUCN Red List of Threatened Species	IUCN Red List of Threatened Species listed giant sea bass as critically endangered in 1996 (2004) but acknowledged a lack of information on the Mexican population. Current research indicates the population is much larger than previously thought and suggests re-evaluating designation (Ramírez-Valdez et al.).
<b>A2. Are there prohibitions against take using specific gear type?</b>	Yes	Sport take of giant sea bass is prohibited by all gear. §28.90 and §28.95 specifically list that giant sea bass cannot be taken by spear or bow and arrow, respectively.
<b>A3. Is the species a target species that requires discard of individuals based on size limits, seasons, or gear type restrictions?</b>	No	
<b>A4. Is the discard mortality rate known?</b>	No	No discards were observed as discarded in the NMFS observer data from 2007 to 2017.
<b>A5a. Are special permits required to retain or interact with the species?</b>	Yes	A general set gill net permit is required as the incidental take of one giant sea bass per vessel is only allowed by set gill net or trammel net (see FGC §8380 above).
<b>A5b. If yes, does the fishery currently have such permits?</b>	Yes	
<b>A5c. If yes, do the levels of bycatch comply with them?</b>	Yes	
<b>A6a. Does the species have an incidental catch allowance, ACL, or other restrictions on the amount, size, or sex of catch allowed?</b>	Yes	Incidental take of one giant sea bass per vessel is allowed by set gill net or trammel net.
<b>A6a. If yes, does the catch comply with them?</b>	Yes	However, landings are listed in pounds and not by numbers.
<b>B. Threats to sustainability</b>		
<b>B1. Has a peer-reviewed risk assessment of the vulnerability of the particular bycatch species to overfishing been conducted (e.g., PSA)</b>	No	
<b>B2a. Does a population status estimate or stock assessment exist for this species?</b>	No	There is no formal population status or stock assessment however Ramírez-Valdez et al. 2021 estimated population size much larger than thought. About 75% of population resides in Mexican waters. Author suggests IUCN Red List of Threatened Species re-evaluate designation of critically endangered to endangered or vulnerable.
<b>B2b. If yes, is there confidence in the underlying data such that a reasonable determination can be made if the stock is considered healthy, overfished, or depleted?</b>	No	However, it seems reasonable to conclude that giant sea bass populations are steady or increasing. More information is needed.

Category and question	Response	Comments
<b>B3a. Are there any existing state and/or federal management measures?</b>	Yes	Sport take is prohibited, except no more than two per angler per trip can be taken in Mexican waters. Commercial take is limited to incidental catch of one per vessel (see A. legality of take).
<b>B3b. If yes, are they effective in ensuring sustainability?</b>	Unknown	However, anecdotal evidence suggests the population in California has been increasing since 2004 (House et al. 2016, Ramirez-Valdez et al. 2021).
<b>B4. Is the bycatch the product of recreational catch-and-release practices?</b>	No	
<b>B5. What is the estimated discard mortality rate given the characteristics of the fishery and gear type?</b>	Unknown	No giant sea bass were observed as discarded in the 2007-2017 NMFS observer set gill net data
<b>B6. Do any post-release studies exist to verify the estimated mortality rate?</b>	No	
<b>B7. What is the probability of mortality exceeding levels that have been scientifically determined to be necessary for the continued viability of the species?</b>	Unknown	
<b>C. Impacts on fisheries</b>		
<b>C1. Does a directed fishery exist for the bycatch species?</b>	No	
<b>C2. Has the bycatch and associated discard mortality been accounted for?</b>	No	No GSB were observed as discarded in the NMFS observer data from 2007-2017.
<b>C3. Is bycatch affecting the directed fishery management strategy (i.e., restrictions on size, sex, or season)?</b>	No	
<b>C4. Are the impacts of bycatch considered and made explicit in an ESR or FMP?</b>	No	
<b>C5a. Is the species constrained under a federal rebuilding plan?</b>	No	
<b>C5b. If yes, will bycatch compete with fleets that target the species?</b>	Not applicable	There is no ESR or FMP for giant sea bass.
<b>C6. Is there a management allowance for percent of catch or a prohibition on retention?</b>	Yes	See A1 legality of take; giant sea bass is prohibited in the sport fishery and commercial take is limited to incidental catch of one per set gill net vessel
<b>C7. If there is a directed fishery for the species, have there been any of the following?</b>	No	There was once a historical directed fishery but not since 1981.
<b>C7a. Reductions in opportunities or income for participants in fisheries that target the bycatch species</b>	Not applicable	
<b>C7b. Reductions in fishery quotas or opportunities (e.g., time and area closures) based on bycatch issues?</b>	Not applicable	
<b>C7c. Early closures of a fishery based on higher-than-expected bycatch?</b>	Not applicable	
<b>C7d. Changes in fishing, processing, disposal, and marketing costs due to bycatch?</b>	Not applicable	
<b>C7e. Changes in the social or cultural value of fishing activities due to bycatch?</b>	Not applicable	

Category and question	Response	Comments
<b>C7f. Negative socioeconomic impacts from bycatch on fisheries and/or fishing communities which target or need incidental catch of this species?</b>	Not applicable	
<b>C7g. Negative impacts to juveniles of a species targeted by another fishery?</b>	Not applicable	
<b>D. Impacts on ecosystem</b>		
<b>D1. What is the ecosystem role of the bycatch species?</b>		Giant sea bass is a high trophic level predator and a generalist. Giant sea bass feed on many different prey types within kelp forests and other areas. A recent paper (Blinco et al. 2022) suggests loss of kelp forests may not have the serious impact on giant sea bass as once thought since their prey are not obligate kelp forest inhabitants and neither are giant sea bass.
<b>D2. Does scientific evidence show the amount of bycatch mortality significantly increases the risk that a bycatch species will be unable to serve its ecosystem role?</b>	Unknown	
<b>References</b>		<p>Ramírez-Valdez, A., Rowell, T.J., Dale, K.E., Craig, M.T., Allen, L.G., Villaseñor-Derbez, J.C., Cisneros-Montemayor, A.M., Hernández-Velasco, A., Torre, J., Hofmeister, J. and Erisman, B.E., 2021. Asymmetry across international borders: Research, fishery and management trends and economic value of the giant sea bass (<i>Stereolepis gigas</i>). Fish and Fisheries, 22(6), pp.1392-1411.</p> <p>Blinco, K.M., Swalethorp, R., Ramírez-Valdez, A. and Semmens, B.X., 2022. Giant appetites: exploring the trophic ecology of California's largest kelp forest predator, the giant sea bass <i>Stereolepis gigas</i>. Marine Ecology Progress Series, 695, pp.157-171.</p> <p>House, P.H., Clark, B.L. and Allen, L.G., 2016. The return of the king of the kelp forest: distribution, abundance, and biomass of giant sea bass (<i>Stereolepis gigas</i>) off Santa Catalina Island, California, 2014-2015. Bulletin, Southern California Academy of Sciences, 115(1), pp.1-14.</p>

## Appendix 1h. Evaluation of white shark based on MLMA Master Plan bycatch criteria

Category and question	Response	Comments
<b>A. Legality of take</b>		
<b>A1. Under what laws, regulations, or guidance documents is species covered?</b>	Magnuson-Stevens Fishery Conservation and Management Act (MSA)	White Shark management requirements are specified in the Highly Migratory Species Fishery Management Plan, which prohibits the commercial fishing of White Sharks. If fishermen catch a White Shark, it must be released immediately unless other provisions for their disposition are established, such as for scientific study (Pacific Fishery Management Council, 2007).
	Fish and Game Code	Section §8599: It is unlawful to take any white shark for commercial purposes, except under permits issued pursuant to §1002 for scientific or educational purposes or pursuant to subdivision (b) for scientific or live display purposes. b) Notwithstanding subdivision (a), white sharks may be taken incidentally by commercial fishing operations using set gill nets, drift gill nets, or roundhaul nets. White shark taken pursuant to this subdivision shall not have the pelvic fin severed from the carcass until after the white shark is brought ashore. White shark taken pursuant to this subdivision, if landed alive, may be sold for scientific or live display purposes. c) Any white shark killed or injured by any person in self-defense may not be landed. 5517: (a) Except as authorized by a permit issued pursuant to §1002, or as provided in subdivision (b) of §8599, it is unlawful to do any of the following: (1) Take any white shark ( <i>Carcharodon carcharias</i> ). (2) Use any shark bait, shark lure, or shark chum to attract any white shark. (3) Place any shark bait, shark lure, or shark chum into the water within one nautical mile of any shoreline, pier, or jetty when a white shark is either visible or known to be present. (4) Place any shark bait, shark lure, or shark chum into the water for the purpose of viewing any shark when a white shark is visible or known to be present. (b) For purposes of this section, "shark bait, shark lure, or shark chum" means any natural or manufactured product or device used to attract sharks by the sense of taste, smell, or sight, including, but not limited to, blood, fish, or other material upon which sharks may feed, and surface or underwater decoys. (Amended by Stats. 2022, Ch. 437, Sec. 1. (AB 2109) Effective January 1, 2023.)
	Title 14 CCR	Recreational regulations prohibit the take of white sharks: §28.06: white shark may not be taken, except under a permit issued by the Department pursuant to FGC §1002 for scientific or educational purposes
	Title 50 of the Code of Federal Regulations	660.705 (e) When fishing for HMS, a prohibited species must be returned to the sea immediately with a minimum of injury, except under the following circumstances: (3) White sharks, basking sharks, and megamouth sharks may be retained if incidentally caught and subsequently sold or donated to a recognized scientific or educational organization for research or display purposes.
	an existing FMP	No, not directly but it is mentioned in the Federal fishery management plan for U.S. West Coast Fisheries for Highly Migratory Species. This FMP prohibits retention of white shark (except for sale or donation of incidentally caught specimens to recognized scientific and educational organizations).
<b>A2. Are there prohibitions against take using specific gear type?</b>	Yes.	White sharks have been protected in California since 1994. Only incidental take is allowed in commercial fisheries using set gill nets, drift gill nets or roundhaul nets (see above). White sharks may not be recreationally taken with spear, harpoon or bow and arrow (§28.95).
<b>A3. Is the species a target species that requires discard of individuals based on size limits, seasons, or gear type restrictions?</b>	No	

Category and question	Response	Comments
<b>A4. Is the discard mortality rate known?</b>	Yes	No white sharks were observed as discarded in the 2007-2017 NMFS observer set gill net data. The Monterey Bay Aquarium's sampling program estimated a 49% mortality rate based on the number of live and dead sharks reported in the program. Research on juvenile white shark interactions with set gill net fishery estimated post release survival of sharks retrieved live in gillnets was high (92.9%) (Lyons et al. 2013).
<b>A5a. Are special permits required to retain or interact with the species?</b>	No	
<b>A5b. If yes, does the fishery currently have such permits?</b>	Yes	
<b>A5c. If yes, do the levels of bycatch comply with them?</b>	Yes	
<b>A6a. Does the species have an incidental catch allowance, ACL, or other restrictions on the amount, size, or sex of catch allowed?</b>	No	
<b>A6b. If yes, does the catch comply with them?</b>	Not applicable	
<b>B. Threats to sustainability</b>		
<b>B1. Has a peer-reviewed risk assessment of the vulnerability of the particular bycatch species to overfishing been conducted (e.g., PSA)</b>	Yes	A risk assessment was conducted in response to a petition to list the Northeastern Pacific population of white shark under the California Endangered Species Act (CESA). Based on a multitude of factors including decreased risk of set gill net interactions it was determined listing the population of white shark as threatened or endangered was not warranted. IUCN Red List of Threatened Species categorized white shark as vulnerable.
<b>B2a. Does a population status estimate or stock assessment exist for this species?</b>	Yes.	The stock status for white shark populations in U.S. waters is unknown and no stock assessments have been completed. However, according to a NOAA Fisheries status review and recent research, the northeastern Pacific white shark population appears to be increasing and is not at risk of becoming endangered in U.S. waters. There are multiple white shark population estimates with the status review estimating a total population estimate of ~3000 males and females across size classes.
<b>B2b. If yes, is there confidence in the underlying data such that a reasonable determination can be made if the stock is considered healthy, overfished, or depleted?</b>	Yes.	
<b>B3a. Are there any existing state and/or federal management measures?</b>	Yes	White sharks are federally managed under the Magnuson Stevens Act with requirements specified in the Highly Migratory Species FMP. White sharks are protected in California.
<b>B3b. If yes, are they effective in ensuring sustainability?</b>	Yes	
<b>B4. Is the bycatch the product of recreational catch-and-release practices?</b>	No	
<b>B5. What is the estimated discard mortality rate given the characteristics of the fishery and gear type?</b>		No white sharks were observed as discarded in the 2007-2017 NMFS observer set gill net data. Based on the <a href="#">Status Review of the Northeastern Pacific Population of White Sharks</a> , the expected mortality of white sharks captured in the set gill net fishery was estimated to be 49% through the Monterey Bay Aquarium's sampling program. Research on juvenile white shark interactions with set gill net fishery estimated post release survival of sharks retrieved live in gillnets was high (92.9%) (Lyons et al. 2013).

Category and question	Response	Comments
<b>B6. Do any post-release studies exist to verify the estimated mortality rate?</b>	Yes	From status review report, ~98% of sharks released survived if caught in nets with soak 24 hours or less (C. Lowe per comm.)
<b>B7. What is the probability of mortality exceeding levels that have been scientifically determined to be necessary for the continued viability of the species?</b>		There is a low to very low risk, determined during "Status Review of Northeastern Pacific Population of White Sharks under the Endangered Species Act"
<b>C. Impacts on fisheries</b>		
<b>C1. Does a directed fishery exist for the bycatch species?</b>	No	
<b>C2. Has the bycatch and associated discard mortality been accounted for?</b>	Yes, see below	
<b>C3. Is bycatch affecting the directed fishery management strategy (i.e., restrictions on size, sex, or season)?</b>	Not applicable	
<b>C4. Are the impacts of bycatch considered and made explicit in an ESR or FMP?</b>	No	However, separate federal (2013) and state (2014) reviews of white shark status, which included analyses of bycatch and other impacts, concluded they did not warrant listing under federal or California Endangered Species Acts.
<b>C5a. Is the species constrained under a federal rebuilding plan?</b>	No	
<b>C5b. If yes, will bycatch compete with fleets that target the species?</b>	Not applicable	
<b>C6. Is there a management allowance for percent of catch or a prohibition on retention?</b>	Yes	White shark may not be taken, except in specified commercial fisheries or under permit issued by the Department pursuant to FGC §1002 for scientific or educational purposes. See section A1 for more details.
<b>C7. If there is a directed fishery for the species, have there been any of the following?</b>	Not applicable	
<b>C7a. Reductions in opportunities or income for participants in fisheries that target the bycatch species</b>	Not applicable	
<b>C7b. Reductions in fishery quotas or opportunities (e.g., time and area closures) based on bycatch issues?</b>	Not applicable	
<b>C7c. Early closures of a fishery based on higher-than-expected bycatch?</b>	Not applicable	
<b>C7d. Changes in fishing, processing, disposal, and marketing costs due to bycatch?</b>	Not applicable	
<b>C7e. Changes in the social or cultural value of fishing activities due to bycatch?</b>	Not applicable	

Category and question	Response	Comments
<b>C7f. Negative socioeconomic impacts from bycatch on fisheries and/or fishing communities which target or need incidental catch of this species?</b>	Not applicable	
<b>C7g. Negative impacts to juveniles of a species targeted by another fishery?</b>	Not applicable	
D. Impacts on ecosystem		
<b>D1. What is the ecosystem role of the bycatch species?</b>	See comments	The white shark is an apex predator. Juveniles prey on larger fishes; and adults prey upon seals and sea lions
<b>D2. Does scientific evidence show the amount of bycatch mortality significantly increases the risk that a bycatch species will be unable to serve its ecosystem role?</b>	No	Recent research and status reviews show white shark populations are increasing which indicates the ecosystem role is being fulfilled.
<b>References</b>		<p>Dewar, Heidi, Tomoharu Eguchi, John Hyde, Douglas H. Kinzey, Suzanne Kohin, Jeff Moore, Barbara Louise Taylor, and Russ Vetter. "Status review of the northeastern Pacific population of white sharks (<i>Carcharodon carcharias</i>) under the Endangered Species Act." (2013).</p> <p>Lyons, K., Jarvis, E. T., Jorgensen, S. J., Weng, K., O'Sullivan, J., Winkler, C., &amp; Lowe, C. G. (2013). The degree and result of gillnet fishery interactions with juvenile white sharks in southern California assessed by fishery-independent and-dependent methods. <i>Fisheries Research</i>, 147, 370-380.</p>

## Appendix 1i. Evaluation of Brandt's cormorant based on MLMA Master Plan bycatch criteria

Category and question	Response	Comments
A. Legality of take		
<b>A1. Under what laws, regulations, or guidance documents is species covered?</b>	Migratory Bird Treaty Act	This Act prohibits the take of protected migratory birds without the prior authorization by the Department of Interior U.S. Fish and Wildlife Service.
	Title 50 of the Code of Federal Regulations	This species is included in Title 50 §10.13 List of Migratory Birds, which lists the specific species of birds that are covered under the Migratory Bird Treaty Act.
	IUCN Red List of Threatened Species	The last IUCN Red List of Threatened Species evaluation in 2018 listed this species as Least Concern.
<b>A2. Are there prohibitions against take using specific gear type?</b>	No	There is not a fishery for this species.
<b>A3. Is the species a target species that requires discard of individuals based on size limits, seasons, or gear type restrictions?</b>	Not applicable	There is not a fishery for this species.
<b>A4. Is the discard mortality rate known?</b>	Yes	A rate of 100% was estimated, but only four birds were observed returned dead from set gill nets targeting California halibut.
<b>A5a. Are special permits required to retain or interact with the species?</b>	No	
<b>A5b. If yes, does the fishery currently have such permits?</b>	Not applicable	
<b>A5c. If yes, do the levels of bycatch comply with them?</b>	Not applicable	
<b>A6a. Does the species have an incidental catch allowance, ACL, or other restrictions on the amount, size, or sex of catch allowed?</b>	Not applicable	These apply only to fishery species and there is not a fishery for Brandt's cormorant.
<b>A6b. If yes, does the catch comply with them?</b>	Not applicable	
B. Threats to sustainability		

Category and question	Response	Comments
<b>B1. Has a peer-reviewed risk assessment of the vulnerability of the particular bycatch species to overfishing been conducted (e.g., PSA)</b>	Not applicable	There is not a fishery for this species.
<b>B2a. Does a population status estimate or stock assessment exist for this species?</b>	Yes	An estimate was made of 230,000 individuals in 2006, but there are no recent estimates (Delany and Scott 2006).
<b>B2b. If yes, is there confidence in the underlying data such that a reasonable determination can be made if the stock is considered healthy, overfished, or depleted?</b>	Yes	
<b>B3a. Are there any existing state and/or federal management measures?</b>	Yes	See Legality of Take questions.
<b>B3b. If yes, are they effective in ensuring sustainability?</b>	Yes	Measures appear effective. 'Despite the fact that the population trend appears to be decreasing, the decline is not believed to be sufficiently rapid to approach the thresholds for Vulnerable under the population trend criterion (>30% decline over ten years or three generations). The population size is very large, and hence does not approach the thresholds for Vulnerable under the population size criterion (<10,000 mature individuals with a continuing decline estimated to be >10% in ten years or three generations, or with a specified population structure).' (IUCN Red List of Threatened Species)
<b>B4. Is the bycatch the product of recreational catch-and-release practices?</b>	No	
<b>B5. What is the estimated discard mortality rate given the characteristics of the fishery and gear type?</b>	100%	However, only four returned dead were recorded from set gill nets targeting California halibut, based on NMFS set gill net observer data from 2007 to 2017.
<b>B6. Do any post-release studies exist to verify the estimated mortality rate?</b>	No	
<b>B7. What is the probability of mortality exceeding levels that have been scientifically determined to be necessary for the continued viability of the species?</b>	Unknown	The population is listed as Least Concern (IUCN Red List of Threatened Species).
<b>C. Impacts on fisheries</b>		

Category and question	Response	Comments
<b>C1. Does a directed fishery exist for the bycatch species?</b>	No	There is not a fishery for this species.
<b>C2. Has the bycatch and associated discard mortality been accounted for?</b>	Yes	A total of 11 were returned dead recorded from set gill nets (four when specifically targeting California halibut) (West Coast Region Observer Program (WCROP) 2020) for the years 2007, 2010-2013, 2017 (California halibut ESR Fig 3-3).
<b>C3. Is bycatch affecting the directed fishery management strategy (i.e., restrictions on size, sex, or season)?</b>	No	
<b>C4. Are the impacts of bycatch considered and made explicit in an ESR or FMP?</b>	Yes	See the California halibut ESR.
<b>C5a. Is the species constrained under a federal rebuilding plan?</b>	No	
<b>C5b. If yes, will bycatch compete with fleets that target the species?</b>	Not applicable	
<b>C6. Is there a management allowance for percent of catch or a prohibition on retention?</b>	Yes	There is a prohibition on retention
<b>C7. If there is a directed fishery for the species, have there been any of the following?</b>	Not applicable	There is not a fishery for this species
<b>C7a. Reductions in opportunities or income for participants in fisheries that target the bycatch species</b>	Not applicable	
<b>C7b. Reductions in fishery quotas or opportunities (e.g., time and area closures) based on bycatch issues?</b>	Not applicable	
<b>C7c. Early closures of a fishery based on higher-than-expected bycatch?</b>	Not applicable	
<b>C7d. Changes in fishing, processing, disposal, and marketing costs due to bycatch?</b>	Not applicable	

Category and question	Response	Comments
<b>C7e. Changes in the social or cultural value of fishing activities due to bycatch?</b>	Not applicable	
<b>C7f. Negative socioeconomic impacts from bycatch on fisheries and/or fishing communities which target or need incidental catch of this species?</b>	Not applicable	
<b>C7g. Negative impacts to juveniles of a species targeted by another fishery?</b>	Not applicable	
<b>D. Impacts on ecosystem</b>		
<b>D1. What is the ecosystem role of the bycatch species?</b>	See comments	This species is a mesopredator that eats primarily small fishes, such as herring and rockfishes, as well as shrimp and crabs. ( <a href="https://www.nps.gov/places/000/brandts-cormorant.htm">https://www.nps.gov/places/000/brandts-cormorant.htm</a> )
<b>D2. Does scientific evidence show the amount of bycatch mortality significantly increases the risk that a bycatch species will be unable to serve its ecosystem role?</b>	No	
<b>References</b>		Delany, S. and Scott, D. 2006. Waterbird population estimates. Wetlands International, Wageningen, The Netherlands.

## Appendix 1j. Evaluation of sublegal California halibut based on MLMA Master Plan bycatch criteria

Category and question	Response	Comments
A. Legality of take		
<b>A1. Under what laws, regulations, or guidance documents is species covered?</b>	Fish and Game Code	Summary of relevant FGC sections: FGC §8392: No California halibut may be taken, possessed, or sold that measures less than 22 inches in total length. Total length means the shortest distance between the tip of the jaw or snout, whichever extends farthest while the mouth is closed, and the tip of the longest lobe of the tail, measured while the halibut is lying flat in natural repose, without resort to any force other than the swinging or fanning of the tail. From CA halibut ESR: Commercial halibut gill and trammel net gear must meet certain design requirements: A set gill net becomes a trammel net (see Figure 2-16) when a line on the net causes the webbing to hang slack (FGC §8700). Set gill and trammel nets (which are not free to drift with tide or current) may be used to target halibut in certain areas if the mesh size is at least 8.5 in (216 mm) (FGC §8625(a)). No more than 9,000 ft (2,744 m) of gill or trammel net may be fished in combination each day (FGC §8625(b)), except no more than 6,000 ft (1,829 m) may be fished in a specified area in Santa Barbara county. In waters shallower than 150 ft (45.7 m), the cork line or other line across the top of the net must have a breaking strength of no more than 2,400 lb (FGC §8664.13(a)) and breakaway devices must be installed every 270 ft (82.3 m) along the cork line and lead line (FGC §8664.13(b)). Gill and trammel nets are currently prohibited in the following state waters: in all waters from Point Reyes headlands (Marin County) to the California-Oregon Border; in 240 ft or less from Point Reyes headlands (Marin County) to Pillar Point in Half Moon Bay (San Mateo County); in 360 ft (109.8 m) or less from Pillar Point to Waddell Creek (Santa Cruz County); within 3 nm of the Farallon Islands and the Noonday Rock Buoy (San Francisco County) and; in waters less than 180 ft (54.9 m) north of Point Sal (Santa Barbara County). The set gill net depth restrictions in northern California effectively prohibit set gill nets from being a viable method of take in this region. Currently the halibut set gill net fishery operates only in southern California. In southern California, gill and trammel nets may not be used within 1 nm or 420 ft (128.0 m), whichever is less, around the Channel Islands, or within 3 nm of the mainland shore south of Point Arguello to the California/Mexico border. The commercial trawl and set gill and trammel net halibut fisheries are restricted access. Trawl (FGC §8494) and set gill net (FGC §8681.5) permits are transferable if certain conditions are met. Permits have been required since 1980 for the general gill and trammel net fishery and since 2006 for the trawl fishery. These gear types are not selective, and permits are required to limit halibut effort and catch, and to reduce bycatch.
	Title 14 CCR	California halibut is covered under title 14, however none of these regulations refer to commercial halibut set gill net fishing: see §27.65 (rec fileting of fish on vessels), §28.15 (rec bag/possession limit and minimum size limit), §124 (halibut trawl grounds and trawl gear), §124.1 (California Halibut Bottom Trawl Vessel Permits), §163.1 (halibut may not be retained in herring set gill net fishery if caught as bycatch), §176 (Trawl Fishing Activity Records)
<b>A2. Are there prohibitions against take using specific gear type?</b>	Yes	The minimum size limit for halibut is 22 in. (559 mm) total length, in all commercial and recreational fisheries, regardless of the gear type used.
<b>A3. Is the species a target species that requires discard of individuals based on size limits, seasons, or gear type restrictions?</b>	Yes	California halibut is the target species of the fishery, however all sublegal halibut must be discarded. The minimum size limit for halibut is 22 in. (559 mm) total length. This fishery may swing or fan the caudal fin to reach the minimum size.

Category and question	Response	Comments
<b>A4. Is the discard mortality rate known?</b>	Yes	See row B5.
<b>A5a. Are special permits required to retain or interact with the species?</b>	No	No special permits/incidental take permits are required. A general set gill net permit is required to target halibut using set gill nets, however sublegal halibut still may not be retained with a set gill net permit.
<b>A5b. If yes, does the fishery currently have such permits?</b>	Not applicable	
<b>A5c. If yes, do the levels of bycatch comply with them?</b>	Not applicable	
<b>A6a. Does the species have an incidental catch allowance, ACL, or other restrictions on the amount, size, or sex of catch allowed?</b>	Yes	There is a minimum legal size limit.
<b>A6b. If yes, does the catch comply with them?</b>	No	All sublegal halibut do not comply with the size allowance.
<b>B. Threats to sustainability</b>		
<b>B1. Has a peer-reviewed risk assessment of the vulnerability of the particular bycatch species to overfishing been conducted (e.g., PSA)</b>	Yes	See links to PSA and ERA for halibut:  <a href="https://www.oceansciencetrust.org/wp-content/uploads/2016/11/PSA-test-on-CA-Fisheries-Report-April2014.pdf">https://www.oceansciencetrust.org/wp-content/uploads/2016/11/PSA-test-on-CA-Fisheries-Report-April2014.pdf</a> <a href="https://www.oceansciencetrust.org/wp-content/uploads/2017/11/Ecological-Risk-Assessment-report-OST-2017.pdf">https://www.oceansciencetrust.org/wp-content/uploads/2017/11/Ecological-Risk-Assessment-report-OST-2017.pdf</a>
<b>B2a. Does a population status estimate or stock assessment exist for this species?</b>	Yes	See links to relevant documents:  2011 California Halibut Stock Assessment (The southern population is estimated to be depleted to about 14% of its unexploited spawning biomass level): <a href="https://wildlife.ca.gov/Conservation/Marine/CA-Halibut-FMP/Assessment">https://wildlife.ca.gov/Conservation/Marine/CA-Halibut-FMP/Assessment</a>  2020 California Halibut Stock Assessment, Executive Summary: <a href="https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=193616&amp;inline">https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=193616&amp;inline</a>  California Halibut 2020 Stock Assessment Review Panel Report: <a href="https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=193537&amp;inline">https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=193537&amp;inline</a>

Category and question	Response	Comments
<b>B2b. If yes, is there confidence in the underlying data such that a reasonable determination can be made if the stock is considered healthy, overfished, or depleted?</b>	No	California halibut ESR: Results of the 2020 efforts were reviewed by a panel of stock assessment experts and found not to be ready for use in management, particularly for the northern stock. The California Halibut 2020 Stock Assessment Review Panel Report outlined recommendations for additional data collection, analysis, and model improvements, including reconstructing historical halibut landings to reflect an unfished or nearly unfished condition and initial population estimates.
<b>B3a. Are there any existing state and/or federal management measures?</b>	Yes	California halibut ESR: The minimum size limit is intended to allow halibut the opportunity to reproduce at least once before they become eligible for take by the fishery. Set gill net fisheries are required to complete logbooks and under certain conditions they are subject to the requirements of the federal observer program and Vessel Monitoring Systems (VMS), which allows for monitoring of these gear types. Area closures and gear restrictions are intended to protect the halibut population, incidental co-occurring species, and habitat.
<b>B3b. If yes, are they effective in ensuring sustainability?</b>	Yes	California halibut ESR: The Department has not established formal overfishing criteria for the halibut resource. The MLMA defines overfishing as a rate or level of take that the best available scientific information, and other relevant information, indicates is not sustainable or that jeopardizes the capacity of a marine fishery to produce the maximum sustainable yield on a continuing basis. Department staff continue to monitor catch, effort, and life history trends with fishery-dependent and fishery-independent datasets on a monthly to annual basis. These data are evaluated relative to historic trends and environmental factors. If a problem is detected by the Department or reported by stakeholders, Department resources and management attention focus on the situation. The halibut fishery is currently being evaluated with a MSE using the Data Limited Methods Toolkit framework which is intended to establish formal overfishing rules. Should the MSE or the stock assessment indicate that the halibut population is overfished, a rebuilding plan will be required. There are currently no formal indications that the halibut resource is overfished, although the stock status may be different north compared to south of Point Conception.
<b>B4. Is the bycatch the product of recreational catch-and-release practices?</b>	No	
<b>B5. What is the estimated discard mortality rate given the characteristics of the fishery and gear type?</b>	58%	According to WCROP observer data filtered by halibut targeted trips, 58% of returned halibut were returned dead as observed in the California set gill net fishery. Halibut are likely discarded because they are sublegal or damaged by sea lions or other marine mammals. This mortality rate is based on a total of 48 discarded halibut.
<b>B6. Do any post-release studies exist to verify the estimated mortality rate?</b>	No	

Category and question	Response	Comments
<b>B7. What is the probability of mortality exceeding levels that have been scientifically determined to be necessary for the continued viability of the species?</b>	Low	This fishery is undergoing attrition. California halibut ESR: A restricted access permit has been required to use gill and trammel nets since 1980 (FGC §8681(a); Schultze 1990). Permits are issued annually and were established using criteria of minimum landing requirements for initial issuance. The permit is issued to the fisherman, not the vessel. Between 1919 and 1929, halibut trammel net vessels averaged 35 ft (11 m) in length with a beam of about 8 to 10 ft (2 to 3 m) and an average net tonnage of about 4 to 5 per boat (Clark 1931). In 2000, there were 231 general set gill net permittees, with 64 landing halibut at least once. Through attrition these permits have decreased in number. As of 2019, 114 general set gill net permits remain for the commercial halibut set gill and trammel net fishery (Automated License Data System (ALDS); December 2020), and according to MLDS, 29 vessels used set gill nets to land halibut in 2019. Since 2005, an average of 36 vessels per year landed halibut using set gill nets.
C. Impacts on fisheries		
<b>C1. Does a directed fishery exist for the bycatch species?</b>	Yes	Legal sized halibut are the target of this fishery and other halibut fisheries (trawl/H&L)
<b>C2. Has the bycatch and associated discard mortality been accounted for?</b>	No	Sublegal halibut are accounted for in the stock assessment. However, results were found not to be ready for use in management.
<b>C3. Is bycatch affecting the directed fishery management strategy (i.e., restrictions on size, sex, or season)?</b>	Yes	Bycatch of sublegal halibut directly affects the management strategy of this fishery. For example, gear restrictions and area restrictions are intended to minimize the take of sublegal halibut.
<b>C4. Are the impacts of bycatch considered and made explicit in an ESR or FMP?</b>	No	Bycatch impacts of sublegal halibut are not explored in detail in the ESR.
<b>C5a. Is the species constrained under a federal rebuilding plan?</b>	No	
<b>C5b. If yes, will bycatch compete with fleets that target the species?</b>	Not applicable	
<b>C6. Is there a management allowance for percent of catch or a prohibition on retention?</b>	Yes	There is a prohibition on all retention of sublegal halibut
<b>C7. If there is a directed fishery for the species, have there been any of the following?</b>		

Category and question	Response	Comments
<b>C7a. Reductions in opportunities or income for participants in fisheries that target the bycatch species</b>	Yes	Bycatch likely results in a reduction in income for this fishery and other commercial halibut fisheries (trawl/H&L) because sublegal halibut are the future of the targeted resource. For the same reason, it also likely results in reduced opportunity for recreational halibut fisheries.
<b>C7b. Reductions in fishery quotas or opportunities (e.g., time and area closures) based on bycatch issues?</b>	Yes	Minimum mesh size requirements were intended to avoid/minimize accidental capture of sublegal halibut. Nearshore area closures protect immature halibut.
<b>C7c. Early closures of a fishery based on higher-than-expected bycatch?</b>	No	
<b>C7d. Changes in fishing, processing, disposal, and marketing costs due to bycatch?</b>	No	
<b>C7e. Changes in the social or cultural value of fishing activities due to bycatch?</b>	No	
<b>C7f. Negative socioeconomic impacts from bycatch on fisheries and/or fishing communities which target or need incidental catch of this species?</b>	Yes	Impacts include reduced income for commercial halibut fishermen and reduced opportunity for recreational fishermen
<b>C7g. Negative impacts to juveniles of a species targeted by another fishery?</b>	Yes	Bycatch of sublegal halibut in the set gill net fishery impacts the halibut trawl and hook & line fisheries who also rely on these sublegal fish as the future of the targeted resource
<b>D. Impacts on ecosystem</b>		

Category and question	Response	Comments
<b>D1. What is the ecosystem role of the bycatch species?</b>	See comments	Halibut are described as a carnivorous cryptic top predator in the California halibut ESR: In the marine ecosystem, halibut occur in shallow nearshore, bay, and estuary waters, and are strongly affiliated benthically with soft bottom habitat. They are not known to play any special ecosystem roles, and they have not been documented as an important food source for other marine species, in any life stage. Large adult halibut are considered aggressive and carnivorous cryptic top predators that feed on other fishes and invertebrates. They have a long and varied list of documented prey items, however availability of forage fish (such as anchovy and squid), likely results in favorable ecosystem conditions for this species. Due to varying tolerances and life histories, associated species differ across the geographic range of halibut and are influenced by a wide variety of factors including latitude, depth, habitat, water temperature, season, and salinity. Species that are commonly associated with halibut can be categorized as fish and invertebrates with benthic soft bottom affiliation that occur in shallow nearshore, bay, and estuary waters. This includes other flatfish, some cartilaginous fishes (sharks, skates, and rays), croakers, sturgeon, some of the basses, and certain surfperch. Invertebrate species that co-occur with halibut generally include various species of crab, shrimp, prawns, sand dollars, sea cucumber, octopus, sea stars, snails, and sea pens.
<b>D2. Does scientific evidence show the amount of bycatch mortality significantly increases the risk that a bycatch species will be unable to serve its ecosystem role?</b>	No	Little evidence to draw conclusions on this exists
<b>References</b>		<p>California Department of Fish and Wildlife. 2022. California halibut, <i>Paralichthys californicus</i>, Enhanced Status Report.</p> <p>MRAG Americas, Inc. 2014. Productivity and Susceptibility Analysis with Next Step Recommendations, Test Cases for Selected California Fisheries. Report to California Ocean Science Trust.</p> <p>Ramanujam, E., Samhour, J., Bizzarro, J., and Carter, H. 2017. Ecological Risk Assessment as a Prioritization Tool to Support California Fisheries Management. Oakland, California, USA.</p> <p>West Coast Region Observer Program. 2020. California Set Gillnet Fishery Catch Summaries: 2007, 2001-2013, 2017.</p>

## Appendix 1k. Evaluation of California sea lion based on MLMA Master Plan bycatch criteria

Category and question	Response	Comments
A. Legality of take		
<b>A1. Under what laws, regulations, or guidance documents is species covered?</b>	Fish and Game Code	<p>This species is not listed, but it falls under the general term 'sea lions.' Take is described as unlawful in accordance with other existing laws. FGC § 4500: '(a) It is unlawful to take any marine mammal except in accordance with provisions of the Marine Mammal Protection Act of 1972 (Chapter 31 (commencing with §1361) of Title 16 of the United States Code) or provisions of Title 50 of the Code of Federal Regulations, or pursuant to subdivision (b) of this section.</p> <p>(b) At such time as federal laws or regulations permit the state to assume jurisdiction over marine mammals, the commission may adopt regulations governing marine mammals and the taking thereof.</p> <p>(c) For purposes of this chapter, "marine mammals" means sea otters, whales, dolphins, porpoises, seals, and sea lions'; § 10843 'Fishermen, however, may not take any seal or sea lion while in this refuge, notwithstanding the provisions of §4500 or 4500.5.'</p>
	Marine Mammal Protection Act	This Act, established in 1972, protects all marine mammals.
	IUCN Red List of Threatened Species	The last IUCN Red List of Threatened Species evaluation in 2014 listed this species as Least Concern.
<b>A2. Are there prohibitions against take using specific gear type?</b>	No	There is not a fishery for this species.
<b>A3. Is the species a target species that requires discard of individuals based on size limits, seasons, or gear type restrictions?</b>	Not applicable	There is not a fishery for this species.
<b>A4. Is the discard mortality rate known?</b>	Yes	See question B5.
<b>A5a. Are special permits required to retain or interact with the species?</b>	No	These permits are only issued when sea lions are threatening protected salmon, which would not occur in the California halibut set gillnet fishery.
<b>A5b. If yes, does the fishery currently have such permits?</b>	Not applicable	
<b>A5c. If yes, do the levels of bycatch comply with them?</b>	Not applicable	

Category and question	Response	Comments
<b>A6a. Does the species have an incidental catch allowance, ACL, or other restrictions on the amount, size, or sex of catch allowed?</b>	Not applicable	These are only for fishery species and there is not a fishery for California sea lion.
<b>A6b. If yes, does the catch comply with them?</b>	Not applicable	
<b>B. Threats to sustainability</b>		
<b>B1. Has a peer-reviewed risk assessment of the vulnerability of the particular bycatch species to overfishing been conducted (e.g., PSA)</b>	Not applicable	There is not a fishery for this species.
<b>B2a. Does a population status estimate or stock assessment exist for this species?</b>	Yes	Population size in 2014 was estimated at 257,606 animals, which corresponded with a pup count of 47,691 animals along the U.S. west coast (NOAA 2018).
<b>B2b. If yes, is there confidence in the underlying data such that a reasonable determination can be made if the stock is considered healthy, overfished, or depleted?</b>	Yes	The population is considered to be at or above carrying capacity.
<b>B3a. Are there any existing state and/or federal management measures?</b>	Yes	See Legality of Take questions.
<b>B3b. If yes, are they effective in ensuring sustainability?</b>	Yes	California Sea Lions have recovered from historical exploitation and their population is now large and still expanding slowly. Beyond the temporal effects of El Niño events, no other major threats are apparent. They should be listed by IUCN Red List of Threatened Species as of Least Concern (IUCN Red List of Threatened Species).
<b>B4. Is the bycatch the product of recreational catch-and-release practices?</b>	No	
<b>B5. What is the estimated discard mortality rate given the characteristics of the fishery and gear type?</b>	100%	A total of 34 were returned dead recorded from set gill nets targeting CA halibut for years 2007, 2010-2013, 2017. (NMFS observer data)
<b>B6. Do any post-release studies exist to verify the estimated mortality rate?</b>	No	

Category and question	Response	Comments
<b>B7. What is the probability of mortality exceeding levels that have been scientifically determined to be necessary for the continued viability of the species?</b>	Very low	'The fishery mortality and serious injury rate (197 animals/year) for this stock is less than 10% of the calculated Potential Biological Removal (PBR) and, therefore, is considered to be insignificant and approaching a zero mortality and serious injury rate.'(NOAA 2018)
C. Impacts on fisheries		
<b>C1. Does a directed fishery exist for the bycatch species?</b>	No	There is not a fishery for this species.
<b>C2. Has the bycatch and associated discard mortality been accounted for?</b>	Yes	A total of 34 California sea lions were document as discarded dead in the Federal Observer Program data for the targeted California halibut set gill net fishery for years 2007, 2010-2013, 2017 (WCROP 2020).
<b>C3. Is bycatch affecting the directed fishery management strategy (i.e., restrictions on size, sex, or season)?</b>	No	
<b>C4. Are the impacts of bycatch considered and made explicit in an ESR or FMP?</b>	Yes	See the California halibut ESR.
<b>C5a. Is the species constrained under a federal rebuilding plan?</b>	No	
<b>C5b. If yes, will bycatch compete with fleets that target the species?</b>	Not applicable	
<b>C6. Is there a management allowance for percent of catch or a prohibition on retention?</b>	Yes	There is a prohibition on retention.
<b>C7. If there is a directed fishery for the species, have there been any of the following?</b>	Not applicable	There is not a fishery for this species.
<b>C7a. Reductions in opportunities or income for participants in fisheries that target the bycatch species</b>	Not applicable	
<b>C7b. Reductions in fishery quotas or opportunities (e.g., time and area closures) based on bycatch issues?</b>	Not applicable	
<b>C7c. Early closures of a fishery based on higher-than-expected bycatch?</b>	Not applicable	

Category and question	Response	Comments
<b>C7d. Changes in fishing, processing, disposal, and marketing costs due to bycatch?</b>	Not applicable	
<b>C7e. Changes in the social or cultural value of fishing activities due to bycatch?</b>	Not applicable	
<b>C7f. Negative socioeconomic impacts from bycatch on fisheries and/or fishing communities which target or need incidental catch of this species?</b>	Not applicable	
<b>C7g. Negative impacts to juveniles of a species targeted by another fishery?</b>	Not applicable	
<b>D. Impacts on ecosystem</b>		
<b>D1. What is the ecosystem role of the bycatch species?</b>	See Comments	This species is a mesopredator and feeds on a variety of prey, including squid, anchovies, mackerel, rockfishes, and sardines. ( <a href="https://www.fisheries.noaa.gov/species/california-sea-lion">https://www.fisheries.noaa.gov/species/california-sea-lion</a> )
<b>D2. Does scientific evidence show the amount of bycatch mortality significantly increases the risk that a bycatch species will be unable to serve its ecosystem role?</b>	No	
<b>References</b>		California Department of Fish and Wildlife. 2022. California halibut, <i>Paralichthys californicus</i> , Enhanced Status Report.  National Oceanic and Atmospheric Administration. U.S. Department of Commerce. 2018. CALIFORNIA SEA LION ( <i>Zalophus californianus</i> ): U.S. Stock. (Revised 3/18/2019).

## Appendix 1I. Evaluation of humpback whale based on MLMA Master Plan bycatch criteria

Category and question	Response	Comments
<b>A. Legality of take</b>		
<b>A1. Under what laws, regulations, or guidance documents is species covered?</b>	Endangered Species Act (ESA)	The species was initially listed in Federal Register 35 18319 in 1970, revised in Federal Register 80 FR 22304 in 2015.
	Marine Mammal Protection Act (MMPA)	This Act, established in 1972, protects all marine mammals.
	Magnuson-Stevens Fishery Conservation and Management Act (MSA)	Indirectly- §403 of the Act establishes guidelines for federal observers on fishing vessels
	Fish and Game Code	<p>Take is described as unlawful in accordance with other existing laws. FGC § 4500: '(a) It is unlawful to take any marine mammal except in accordance with provisions of the Marine Mammal Protection Act of 1972 (Chapter 31 (commencing with §1361) of Title 16 of the United States Code) or provisions of Title 50 of the Code of Federal Regulations, or pursuant to subdivision (b) of this section.</p> <p>(b) At such time as federal laws or regulations permit the state to assume jurisdiction over marine mammals, the commission may adopt regulations governing marine mammals and the taking thereof.</p> <p>(c) For purposes of this chapter, "marine mammals" means sea otters, whales, dolphins, porpoises, seals, and sea lions'; §10843 'Fishermen, however, may not take any seal or sea lion while in this refuge, notwithstanding the provisions of §4500 or 4500.5.'</p> <p>Indirectly-§8276.1 provides for delay of Dungeness crab trap fishery opener due to risk of marine life entanglement.</p> <p>Indirectly- §8664.5 established the set gill net closure in waters north of Point Sal, which reduced risk of entanglement.</p> <p>§8664.5(d) allows the Director to restrict the use, method of use, size, or materials used in construction of any net used in the set gill net fishery if it is determined that it is having an adverse impact on any marine mammal species.</p>

Category and question	Response	Comments
	Title 14 CCR	Indirectly- §104.1 established the set gill net closure in waters north of Point Arguello, which reduced risk of entanglement.
	IUCN Red List of Threatened Species	The humpback whale is considered to be a species of Least Concern by IUCN Red List of Threatened Species. The Mexico population, which feeds off California, the Pacific Northwest, and Alaska, has been downlisted to threatened.
<b>A2. Are there prohibitions against take using specific gear type?</b>	Yes	The set gill net fishery requires the use of a minimum mesh size and a maximum net length. See above.
<b>A3. Is the species a target species that requires discard of individuals based on size limits, seasons, or gear type restrictions?</b>	No	
<b>A4. Is the discard mortality rate known?</b>	Not applicable	
<b>A5a. Are special permits required to retain or interact with the species?</b>	No	However, the Department believes technically that a 1013e ESA Permit (negligible impact determination) is required. The NMFS believes that the set gill net permittees do not possess these.
<b>A5b. If yes, does the fishery currently have such permits?</b>	Not applicable	
<b>A5c. If yes, do the levels of bycatch comply with them?</b>	Not applicable	
<b>A6a. Does the species have an incidental catch allowance, ACL, or other restrictions on the amount, size, or sex of catch allowed?</b>	No	
<b>A6b. If yes, does the catch comply with them?</b>	Not applicable	
<b>B. Threats to sustainability</b>		
<b>B1. Has a peer-reviewed risk assessment of the vulnerability of the particular bycatch species to overfishing been conducted (e.g., PSA)</b>	Yes	In 2016 NOAA listed the Mexico Distinct Population Segment (DPS) as threatened. All threats are considered likely to have no or minor impact on population size and/or the growth rate of this DPS or are unknown, with the following exception: Fishing gear entanglements are still considered likely to moderately reduce the population size or the growth rate of the Mexico DPS. (Federal Register).

Category and question	Response	Comments
<b>B2a. Does a population status estimate or stock assessment exist for this species?</b>	Yes	Humpback whales found in California waters are considered part of the Mexico DPS. A federal stock assessment concluded that the species is depleted. The minimum population estimate for humpback whales in the California/Oregon/Washington stock is taken as the lower 20th percentile of the mark-recapture estimate, or 4,776 whales (Federal Register, Calambokidis, J. and J. Barlow. 2013)
<b>B2b. If yes, is there confidence in the underlying data such that a reasonable determination can be made if the stock is considered healthy, overfished, or depleted?</b>	Yes	See above- stock is considered depleted. NOAA concluded that the Mexico DPS is likely to become endangered throughout its range within the foreseeable future, i.e., that it is a threatened species. (source <a href="https://www.fisheries.noaa.gov/topic/laws-policies/marine-mammal-protection-act">https://www.fisheries.noaa.gov/topic/laws-policies/marine-mammal-protection-act</a> Federal Register)
<b>B3a. Are there any existing state and/or federal management measures?</b>	Yes	Humpback whales are fully protected under the ESA and MMPA. Set gill nets have been restricted within California to a small portion of federal waters in the southern part of the state (Title 14, §104), and the fishery is restricted access. In addition, the Dungeness crab trap fisheries have built-in conservation measures to reduce the probability of whales encountering trap gear, including the ability of the Department Director to close the recreational and/or commercial fishery early if there is a significant presence of whales in the area. Sanctuaries have established voluntary speed reduction measures for large vessels in their waters to reduce the likelihood of ship strikes on whales.
<b>B3b. If yes, are they effective in ensuring sustainability?</b>	Uncertain	NOAA concluded that the Mexico DPS is likely to become endangered throughout its range within the foreseeable future, i.e., that it is a threatened species. (Federal Register).
<b>B4. Is the bycatch the product of recreational catch-and-release practices?</b>	No	
<b>B5. What is the estimated discard mortality rate given the characteristics of the fishery and gear type?</b>	Not applicable	No humpback whale has been documented as bycatch in the halibut set gill net fishery in California by federal observers; thus, no estimated of discard mortality is possible.
<b>B6. Do any post-release studies exist to verify the estimated mortality rate?</b>	Not applicable	No humpback whale has been documented as bycatch in the halibut set gill net fishery in California.
<b>B7. What is the probability of mortality exceeding levels that have been scientifically determined to be necessary for the continued viability of the species?</b>	Low	No humpback whale has been documented as bycatch in the halibut set gill net fishery in California.
<b>C. Impacts on fisheries</b>		
<b>C1. Does a directed fishery exist for the bycatch species?</b>	No	

Category and question	Response	Comments
<b>C2. Has the bycatch and associated discard mortality been accounted for?</b>	Not applicable	
<b>C3. Is bycatch affecting the directed fishery management strategy (i.e., restrictions on size, sex, or season)?</b>	No	No humpback whale has been documented as bycatch in the halibut set gill net fishery in California.
<b>C4. Are the impacts of bycatch considered and made explicit in an ESR or FMP?</b>	Not applicable	
<b>C5a. Is the species constrained under a federal rebuilding plan?</b>	Not applicable	
<b>C5b. If yes, will bycatch compete with fleets that target the species?</b>	Not applicable	
<b>C6. Is there a management allowance for percent of catch or a prohibition on retention?</b>	Not applicable	
<b>C7. If there is a directed fishery for the species, have there been any of the following?</b>		
<b>C7a. Reductions in opportunities or income for participants in fisheries that target the bycatch species</b>	Not applicable	
<b>C7b. Reductions in fishery quotas or opportunities (e.g., time and area closures) based on bycatch issues?</b>	Not applicable	
<b>C7c. Early closures of a fishery based on higher-than-expected bycatch?</b>	Not applicable	
<b>C7d. Changes in fishing, processing, disposal, and marketing costs due to bycatch?</b>	Not applicable	
<b>C7e. Changes in the social or cultural value of fishing activities due to bycatch?</b>	Not applicable	

Category and question	Response	Comments
<b>C7f. Negative socioeconomic impacts from bycatch on fisheries and/or fishing communities which target or need incidental catch of this species?</b>	Not applicable	
<b>C7g. Negative impacts to juveniles of a species targeted by another fishery?</b>	Not applicable	
<b>D. Impacts on ecosystem</b>		
<b>D1. What is the ecosystem role of the bycatch species?</b>	See Comments	Humpback whales are both predators and prey, feeding on krill and small fish, and being preyed upon by killer whales and sharks. When they die, their carcasses sink and provide food to many scavenger species which decompose them into nutrients available for other organisms. Through defecation, they recirculate nitrogen-enriched nutrients into the water column, which are then used in primary production. As the base of the marine food web, phytoplankton takes in carbon dioxide, phytoplankton sequester hundreds of thousands of tons of carbon each year in the world's oceans, helping to reduce impacts of climate change.
<b>D2. Does scientific evidence show the amount of bycatch mortality significantly increases the risk that a bycatch species will be unable to serve its ecosystem role?</b>	No	No humpback whale has been documented as bycatch in the halibut set gill net fishery in California.
<b>References</b>		Calambokidis, J. and J. Barlow. 2013. Updated abundance estimates of blue and humpback whales off the US west coast incorporating photo-identifications from 2010 and 2011. Document PSRG-2013-13 presented to the Pacific Scientific Review Group, April 2013. 7 p.)

**NMFS California Set Gill Net Observer Program Observed Catch, filtered for California halibut 8.5-inch mesh**  
**(447 sets in 2007, 2010, 2011, 2012, 2013, and 2017)**

<b>Species</b>	<b>Total Caught*</b>	<b>Number Kept*</b>	<b>Number Discarded*</b>	<b>Number Returned Dead*</b>	<b>Number Returned Alive*</b>	<b>Number Returned Unknown*</b>	<b>Observed Discard Mortality Rate</b>	<b>Rate of Catch in Observed Sets</b>
Mackerel, Pacific	1863	206	1657	1654	3	0	99.8%	21.9%
Halibut, California	775	727	48	28	20	0	58.3%	59.1%
Crab, Rock	749	179	570	437	131	2	76.7%	37.6%
Crab, Spider	558	151	407	250	147	10	61.4%	37.8%
Crab, Pointer	397	16	381	321	60	0	84.3%	18.1%
Skate, California	349	51	298	30	268	0	10.1%	21.7%
Ray, Bat	321	83	238	61	173	4	25.6%	26.0%
Shark, Pacific Angel	257	103	154	18	136	0	11.7%	30.0%
Skate, Longnose	218	65	153	22	126	5	14.4%	16.6%
Whelk	182	72	110	0	110	0	0.0%	5.4%
Crab, Red Rock	160	1	159	148	8	3	93.1%	8.5%
Sea Star	142	0	142	0	141	1	0.0%	10.1%
Ratfish, Spotted	118	0	118	103	15	0	87.3%	7.6%
Shark, Swell	112	9	103	4	98	1	3.9%	9.8%
Guitarfish, Shovelnose	65	49	16	0	16	0	0.0%	7.6%
Skate, Big	63	3	60	0	60	0	0.0%	4.3%
Shark, Brown Smoothhound	62	0	62	25	37	0	40.3%	4.5%
Shark, Leopard	61	27	34	13	20	1	38.2%	10.1%
Crab, Yellow Rock	60	2	58	31	25	2	53.4%	5.4%
Crab, Unidentified	59	0	59	56	3	0	94.9%	2.2%
Shark, Soupfin	52	19	33	20	13	0	60.6%	7.4%
Shark, Spiny Dogfish	47	2	45	10	35	0	22.2%	7.4%
Tunicates, Pelagic	45	0	45	20	0	25	44.4%	1.6%
Scorpionfish, California	41	11	30	2	28	0	6.7%	3.8%
Thornback	41	1	40	3	37	0	7.5%	2.0%
Seabass, White	39	22	17	17	0	0	100.0%	7.2%
Barracuda, California	37	25	12	11	1	0	91.7%	4.7%
Sea Cucumber	36	0	36	5	24	7	13.9%	4.0%
Sea Lion, California	34	0	34	34	0	0	100.0%	5.6%

Species	Total Caught*	Number Kept*	Number Discarded*	Number Returned Dead*	Number Returned Alive*	Number Returned Unknown*	Observed Discard Mortality Rate	Rate of Catch in Observed Sets
Crustacean, Unidentified	34	6	28	20	8	0	71.4%	0.9%
Shark, Common Thresher	22	19	3	0	3	0	0.0%	3.4%
Butterfish, Pacific	22	12	10	7	3	0	70.0%	2.5%
Sardine, Pacific	20	0	20	20	0	0	100.0%	2.2%
Lobster, California Spiny	19	0	19	0	19	0	0.0%	2.9%
Bass, Barred Sand	18	0	18	7	11	0	38.9%	3.4%
Hake, Pacific	18	0	18	18	0	0	100.0%	1.8%
Invertebrate, Unidentified	18	9	9	8	1	0	88.9%	1.1%
Sculpin, Cabezon	17	0	17	2	15	0	11.8%	2.7%
Lingcod	17	0	17	11	6	0	64.7%	2.0%
Squid, Jumbo	17	0	17	13	0	4	76.5%	0.7%
Shark, Horn	14	3	11	1	10	0	9.1%	2.7%
Crab, California King	13	10	3	0	3	0	0.0%	1.6%
Rockfish, Bocaccio	12	0	12	5	7	0	41.7%	0.9%
Whitefish, Ocean	12	0	12	2	10	0	16.7%	0.2%
Octopus, Unidentified	11	1	10	0	10	0	0.0%	1.6%
Sole, Fantail	9	1	8	3	5	0	37.5%	1.8%
Rockfish, Vermillion	9	0	9	7	2	0	77.8%	0.9%
Stingray, Round	9	0	9	1	8	0	11.1%	0.5%
Bass, Giant Sea	8	8	0	0	0	0	0.0%	1.8%
Shark, Gray Smoothhound	8	5	3	2	1	0	66.7%	1.3%
Sheephead, California	7	2	5	2	3	0	40.0%	0.9%
Crab, Dungeness	6	0	6	5	1	0	83.3%	1.1%
Ray, California Butterfly	6	0	6	1	5	0	16.7%	0.9%
Shad, American	6	4	2	2	0	0	100.0%	0.9%
Sanddab, Longfin	6	0	6	6	0	0	100.0%	0.5%
Flatfish, Unidentified	5	2	3	0	3	0	0.0%	1.1%
Rockfish, Copper	5	0	5	2	2	1	40.0%	1.1%
Sole, English	5	0	5	1	4	0	20.0%	0.9%
Flounder, Starry	5	5	0	0	0	0	0.0%	0.7%
Sanddab, Pacific	5	0	5	2	3	0	40.0%	0.7%
Bonito, Pacific	5	5	0	0	0	0	0.0%	0.5%

Species	Total Caught*	Number Kept*	Number Discarded*	Number Returned Dead*	Number Returned Alive*	Number Returned Unknown*	Observed Discard Mortality Rate	Rate of Catch in Observed Sets
Skate, Starry	5	0	5	1	3	1	20.0%	0.5%
Cormorant, Brandt's	4	0	4	4	0	0	100.0%	0.9%
Ray, Pacific Electric	4	0	4	1	3	0	25.0%	0.9%
Seal, Harbor	4	0	4	4	0	0	100.0%	0.9%
Fish, Unidentified	4	0	4	4	0	0	100.0%	0.7%
Lizardfish, California	4	2	2	2	0	0	100.0%	0.7%
Sea Urchin	4	2	2	1	1	0	50.0%	0.7%
Snail, Unidentified	4	0	4	0	4	0	0.0%	0.7%
Yellowtail	4	2	2	2	0	0	100.0%	0.7%
Croaker, White	4	0	4	3	1	0	75.0%	0.5%
Skate, Unidentified	4	0	4	1	2	1	25.0%	0.5%
Turbot, Curlfin	4	0	4	3	1	0	75.0%	0.5%
Shark, Sevengill	3	0	3	3	0	0	100.0%	0.7%
Sole, Sand	3	1	2	1	1	0	50.0%	0.7%
Anchovy, Northern	3	0	3	3	0	0	100.0%	0.5%
Turbot, Diamond	3	0	3	0	3	0	0.0%	0.2%
Gull, Unidentified	2	0	2	2	0	0	100.0%	0.5%
Mackerel, Jack	2	0	2	1	0	1	50.0%	0.5%
Rockfish, Canary	2	0	2	1	0	1	50.0%	0.5%
Crab, Opossum	2	0	2	2	0	0	100.0%	0.2%
Shark, Unidentified	2	0	2	0	2	0	0.0%	0.2%
Surfperch, Pink	2	0	2	2	0	0	100.0%	0.2%
Bass, Kelp	1	0	1	0	1	0	0.0%	0.2%
Cormorant, Double-crested	1	0	1	1	0	0	100.0%	0.2%
Crab, Marble	1	0	1	0	1	0	0.0%	0.2%
Crab, Northern Kelp	1	0	1	1	0	0	100.0%	0.2%
Croaker, Spotfin	1	0	1	1	0	0	100.0%	0.2%
Dolphin, Short-Beaked Common	1	0	1	1	0	0	100.0%	0.2%
Midshipman, Specklefin	1	0	1	0	1	0	0.0%	0.2%
Octopus, Tuberculate Pelagic	1	0	1	0	1	0	0.0%	0.2%
Pinniped, Unidentified	1	0	1	1	0	0	100.0%	0.2%
Rockfish, Brown	1	0	1	0	1	0	0.0%	0.2%

Species	Total Caught*	Number Kept*	Number Discarded*	Number Returned Dead*	Number Returned Alive*	Number Returned Unknown*	Observed Discard Mortality Rate	Rate of Catch in Observed Sets
Rockfish, Rosy	1	0	1	0	0	1	0.0%	0.2%
Rockfish, Unidentified	1	0	1	0	1	0	0.0%	0.2%
Salmon, Other Identified	1	0	1	1	0	0	100.0%	0.2%
Sandab, Unidentified	1	0	1	0	1	0	0.0%	0.2%
Sculpin, Unidentified	1	0	1	0	1	0	0.0%	0.2%
Searobin, Lumptail	1	0	1	0	1	0	0.0%	0.2%
Shark, Sixgill	1	0	1	0	1	0	0.0%	0.2%
Sole, Bigmouth	1	0	1	0	1	0	0.0%	0.2%
Sole, Rex	1	0	1	1	0	0	100.0%	0.2%
Sole, Rock	1	1	0	0	0	0	0.0%	0.2%
Sole, Slender	1	0	1	0	1	0	0.0%	0.2%
Turbot Hornyhead	1	0	1	0	1	0	0.0%	0.2%
Turbot, C-O	1	0	1	1	0	0	100.0%	0.2%

\* NMFS Observer Program captures information in total numbers (counts).



# Evaluation of Bycatch in the California Halibut Gill Net Fishery

20 July 2023

*Presented to:*

**Marine Resources Committee**

*Presented by:*

**Kirsten Ramey**

**Environmental Program Manager**

**Marine Region**



# Outline

- Bycatch Evaluation Report
- Understanding bycatch
  - Caught and landed
  - Caught and discarded
- Stakeholder discussions
- Recommendations
- Next Steps



Photo Credit: CDFW



# Bycatch Evaluation Report

- Four-step process:
  1. Collection of information on types and amounts of bycatch
  2. Distinguishing target, incidental, and bycatch species
  3. Determining “acceptable” types and amounts of bycatch
  4. Addressing unacceptable bycatch



# Understanding Bycatch in the Gill Net Fishery

- Caught and landed
  - Landing receipts (pounds)
  - Gill net logbooks (pounds or counts)
- Caught and landed or discarded
  - Federal Observer data (counts)



Photo Credit: CDFW



# Species Caught and Landed – Landing Receipts

Species	Total Pounds	Proportion of landings		Species	Total Pounds	Proportion of landings
California halibut	655,866	47.88		Unspecified rock crab	769	0.06
White seabass	184,387	13.46		Sevengill shark	736	0.05
Pacific angel shark	127,413	9.30		Lingcod	586	0.04
Thresher shark	88,836	6.49		Swell shark	574	0.04
Bat ray	75,968	5.55		Stingray	539	0.04
Soupfin shark	58,886	4.30		Crab claws	528	0.04
California barracuda	24,876	1.82		California sheephead	511	0.04
Leopard shark	22,259	1.63		Unspecified sole	489	0.04
Giant sea bass	19,941	1.46		Ocean whitefish	482	0.04
Yellowtail	16,358	1.19		Pacific sanddab	449	0.03
Spider crab	15,813	1.15		Brown smoothhound shark	424	0.03
California skate	12,716	0.93		Vermilion rockfish	280	0.02
Yellow rock crab	11,613	0.85		Sanddab	226	0.02
Shortfin mako shark	11,200	0.82		Bigeye thresher shark	225	0.02
Fantail sole	7,662	0.56		Sixgill shark	204	0.01
Pacific bonito	6,466	0.47		Red rock crab	203	0.01
Spiny dogfish shark	4,736	0.35		Petrale sole	198	0.01
Pacific mackerel	3,272	0.24		Rock sole	141	0.01
Dover sole	2,369	0.17		Cabazon	128	0.01
Unspecified skate	2,248	0.16		Pelagic thresher shark	76	0.01
Spider/sheep crab claws	2,240	0.16		California lizardfish	63	0.00
Great white shark	1,644	0.12		Brown rock crab	48	0.00
Unspecified mackerel	1,381	0.10		California scorpionfish	46	0.00
Swordfish	1,286	0.09		Staghorn sculpin	23	0.00
Shovelnose guitarfish	1,252	0.09		Pacific sardine	20	0.00
Longnose skate	1,064	0.08				



# Species Caught and Landed or Discarded – Observer Data

Species	Total Caught	Number Kept	Number Discarded	Number Returned Dead	Number Returned Alive	Number Returned Unknown	Observed Discard Mortality Rate	Rate of Catch in Observed Sets
Mackerel, Pacific	1863	206	1657	1654	3	0	99.8%	21.9%
Halibut, California	775	727	48	28	20	0	58.3%	59.1%
Crab, Rock	749	179	570	437	131	2	76.7%	37.6%
Crab, Spider	558	151	407	250	147	10	61.4%	37.8%
Crab, Pointer	397	16	381	321	60	0	84.3%	18.1%
Skate, California	349	51	298	30	268	0	10.1%	21.7%
Ray, Bat	321	83	238	61	173	4	25.6%	26.0%
Shark, Pacific Angel	257	103	154	18	136	0	11.7%	30.0%
Skate, Longnose	218	65	153	22	126	5	14.4%	16.6%
Whelk	182	72	110	0	110	0	0.0%	5.4%
Crab, Red Rock	160	1	159	148	8	3	93.1%	8.5%
Sea Star	142	0	142	0	141	1	0.0%	10.1%
Ratfish, Spotted	118	0	118	103	15	0	87.3%	7.6%
Shark, Swell	112	9	103	4	98	1	3.9%	9.8%
Guitarfish, Shovelnose	65	49	16	0	16	0	0.0%	7.6%
Skate, Big	63	3	60	0	60	0	0.0%	4.3%
Shark, Brown Smoothhound	62	0	62	25	37	0	40.3%	4.5%
Shark, Leopard	61	27	34	13	20	1	38.2%	10.1%
Crab, Yellow Rock	60	2	58	31	25	2	53.4%	5.4%
Crab, Unidentified	59	0	59	56	3	0	94.9%	2.2%
Shark, Soupfin	52	19	33	20	13	0	60.6%	7.4%
Shark, Spiny Dogfish	47	2	45	10	35	0	22.2%	7.4%
Tunicates, Pelagic	45	0	45	20	0	25	44.4%	1.6%
Scorpionfish, California	41	11	30	2	28	0	6.7%	3.8%
Thornback	41	1	40	3	37	0	7.5%	2.0%
Seabass, White	39	22	17	17	0	0	100.0%	7.2%
Barracuda, California	37	25	12	11	1	0	91.7%	4.7%



# Species Caught and Landed or Discarded – Observer Data (cont'd 1)

Species	Total Caught	Number Kept	Number Discarded	Number Returned Dead	Number Returned Alive	Number Returned Unknown	Observed Discard Mortality Rate	Rate of Catch in Observed Sets
Sea Cucumber	36	0	36	5	24	7	13.9%	4.0%
Sea Lion, California	34	0	34	34	0	0	100.0%	5.6%
Crustacean, Unidentified	34	6	28	20	8	0	71.4%	0.9%
Shark, Common Thresher	22	19	3	0	3	0	0.0%	3.4%
Butterfish, Pacific	22	12	10	7	3	0	70.0%	2.5%
Sardine, Pacific	20	0	20	20	0	0	100.0%	2.2%
Lobster, California Spiny	19	0	19	0	19	0	0.0%	2.9%
Bass, Barred Sand	18	0	18	7	11	0	38.9%	3.4%
Hake, Pacific	18	0	18	18	0	0	100.0%	1.8%
Invertebrate, Unidentified	18	9	9	8	1	0	88.9%	1.1%
Sculpin, Cabezon	17	0	17	2	15	0	11.8%	2.7%
Lingcod	17	0	17	11	6	0	64.7%	2.0%
Squid, Jumbo	17	0	17	13	0	4	76.5%	0.7%
Shark, Horn	14	3	11	1	10	0	9.1%	2.7%
Crab, California King	13	10	3	0	3	0	0.0%	1.6%
Rockfish, Bocaccio	12	0	12	5	7	0	41.7%	0.9%
Whitefish, Ocean	12	0	12	2	10	0	16.7%	0.2%
Octopus, Unidentified	11	1	10	0	10	0	0.0%	1.6%
Sole, Fantail	9	1	8	3	5	0	37.5%	1.8%
Rockfish, Vermillion	9	0	9	7	2	0	77.8%	0.9%
Stingray, Round	9	0	9	1	8	0	11.1%	0.5%
Bass, Giant Sea	8	8	0	0	0	0	0.0%	1.8%
Shark, Gray Smoothhound	8	5	3	2	1	0	66.7%	1.3%
Sheephead, California	7	2	5	2	3	0	40.0%	0.9%
Crab, Dungeness	6	0	6	5	1	0	83.3%	1.1%
Ray, California Butterfly	6	0	6	1	5	0	16.7%	0.9%
Shad, American	6	4	2	2	0	0	100.0%	0.9%



# Species Caught and Landed or Discarded – Observer Data (cont'd 2)

Species	Total Caught	Number Kept	Number Discarded	Number Returned Dead	Number Returned Alive	Number Returned Unknown	Observed Discard Mortality Rate	Rate of Catch in Observed Sets
Sanddab, Longfin	6	0	6	6	0	0	100.0%	0.5%
Flatfish, Unidentified	5	2	3	0	3	0	0.0%	1.1%
Rockfish, Copper	5	0	5	2	2	1	40.0%	1.1%
Sole, English	5	0	5	1	4	0	20.0%	0.9%
Flounder, Starry	5	5	0	0	0	0	0.0%	0.7%
Sanddab, Pacific	5	0	5	2	3	0	40.0%	0.7%
Bonito, Pacific	5	5	0	0	0	0	0.0%	0.5%
Skate, Starry	5	0	5	1	3	1	20.0%	0.5%
Cormorant, Brandt's	4	0	4	4	0	0	100.0%	0.9%
Ray, Pacific Electric	4	0	4	1	3	0	25.0%	0.9%
Seal, Harbor	4	0	4	4	0	0	100.0%	0.9%
Fish, Unidentified	4	0	4	4	0	0	100.0%	0.7%
Lizardfish, California	4	2	2	2	0	0	100.0%	0.7%
Sea Urchin	4	2	2	1	1	0	50.0%	0.7%
Snail, Unidentified	4	0	4	0	4	0	0.0%	0.7%
Yellowtail	4	2	2	2	0	0	100.0%	0.7%
Croaker, White	4	0	4	3	1	0	75.0%	0.5%
Skate, Unidentified	4	0	4	1	2	1	25.0%	0.5%
Turbot, Curlfin	4	0	4	3	1	0	75.0%	0.5%
Shark, Sevengill	3	0	3	3	0	0	100.0%	0.7%
Sole, Sand	3	1	2	1	1	0	50.0%	0.7%
Anchovy, Northern	3	0	3	3	0	0	100.0%	0.5%
Turbot, Diamond	3	0	3	0	3	0	0.0%	0.2%
Gull, Unidentified	2	0	2	2	0	0	100.0%	0.5%
Mackerel, Jack	2	0	2	1	0	1	50.0%	0.5%
Rockfish, Canary	2	0	2	1	0	1	50.0%	0.5%
Crab, Opossum	2	0	2	2	0	0	100.0%	0.2%



# Species Caught and Landed or Discarded – Observer Data (cont'd 3)

Species	Total Caught	Number Kept	Number Discarded	Number Returned Dead	Number Returned Alive	Number Returned Unknown	Observed Discard Mortality Rate	Rate of Catch in Observed Sets
Shark, Unidentified	2	0	2	0	2	0	0.0%	0.2%
Surfperch, Pink	2	0	2	2	0	0	100.0%	0.2%
Bass, Kelp	1	0	1	0	1	0	0.0%	0.2%
Cormorant, Double-crested	1	0	1	1	0	0	100.0%	0.2%
Crab, Marble	1	0	1	0	1	0	0.0%	0.2%
Crab, Northern Kelp	1	0	1	1	0	0	100.0%	0.2%
Croaker, Spotfin	1	0	1	1	0	0	100.0%	0.2%
Dolphin, Short-Beaked Common	1	0	1	1	0	0	100.0%	0.2%
Midshipman, Specklefin	1	0	1	0	1	0	0.0%	0.2%
Octopus, Tuberculate Pelagic	1	0	1	0	1	0	0.0%	0.2%
Pinniped, Unidentified	1	0	1	1	0	0	100.0%	0.2%
Rockfish, Brown	1	0	1	0	1	0	0.0%	0.2%
Rockfish, Rosy	1	0	1	0	0	1	0.0%	0.2%
Rockfish, Unidentified	1	0	1	0	1	0	0.0%	0.2%
Salmon, Other Identified	1	0	1	1	0	0	100.0%	0.2%
Sandab, Unidentified	1	0	1	0	1	0	0.0%	0.2%
Sculpin, Unidentified	1	0	1	0	1	0	0.0%	0.2%
Searobin, Lumptail	1	0	1	0	1	0	0.0%	0.2%
Shark, Sixgill	1	0	1	0	1	0	0.0%	0.2%
Sole, Bigmouth	1	0	1	0	1	0	0.0%	0.2%
Sole, Rex	1	0	1	1	0	0	100.0%	0.2%
Sole, Rock	1	1	0	0	0	0	0.0%	0.2%
Sole, Slender	1	0	1	0	1	0	0.0%	0.2%
Turbot Hornyhead	1	0	1	0	1	0	0.0%	0.2%
Turbot, C-O	1	0	1	1	0	0	100.0%	0.2%



# Stakeholder Discussions

- Key industry representatives
- NOAA Fisheries and USFWS staff
- Gear manufacturers
- Oceana and Turtle Island Network



Photo Credit: CDFW



# Recommendations

- Potential improvements to data collection and fill information gaps
  - Gear marking
  - Observer coverage
  - Non-transferable permits
  - Electronic technology
  - Soak times
  - Spatial/temporal closures
  - Gear loss reporting





# Next Steps

- Open discussion today
- Prioritize potential recommendations
- Continue stakeholder discussions

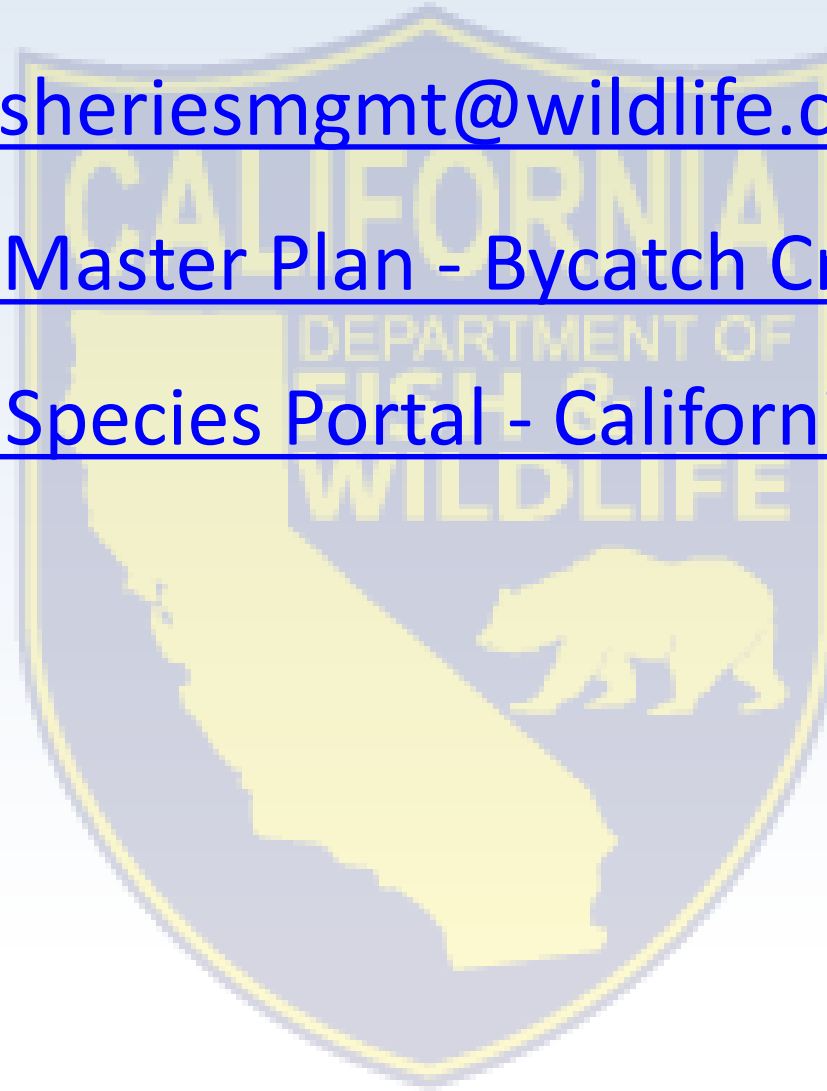


# Thank You

[mlmafisheriesmgmt@wildlife.ca.gov](mailto:mlmafisheriesmgmt@wildlife.ca.gov)

[MLMA Master Plan - Bycatch Criteria](#)

[CA Marine Species Portal - California Halibut](#)



**California Fish and Game Commission  
Marine Resources Committee**

**Comment Letters Received for the July 20, 2023 Meeting Related to Agenda  
Item 3, Evaluation of Bycatch in the California Halibut Set Gillnet Fishery  
in Support of the Fishery Management Review**

*July 18, 2023*

<b>Comment #</b>	<b>Commenter Name, Title and Affiliation (if any), Date Received</b>
1.	<a href="#">Email from Dr. Douglas McCauley, Professor, Department of Ecology, Evolution, and Marine Biology, UC Santa Barbara, with letter and associated publication on economic value of giant sea bass</a> , received June 20, 2023
2.	<a href="#">Email from Ciara Ristig</a> , received June 24, 2023
3.	<a href="#">Emailed letter from Dr. Geoff Shester, California Campaign Director and Senior Scientist, and Caitlynn Birch, Pacific Marine Scientist, Oceana, with attached report</a> , received July 7, 2023
4.	<a href="#">Email from Caitlynn Birch, Pacific Marine Scientist, Oceana, transmitting joint letter from 19 scientists, including 12 academic scientists, 1 educator, 3 Ph.D. candidates, and 3 environmental NGO scientists</a> , received July 7, 2023
5.	<a href="#">Email from Ashley Blacow Draeger, Pacific Policy and Communications Manager, Oceana, transmitting a letter signed by 1,427 California residents</a> , received July 7, 2023
6.	<a href="#">Email from Travis York, Executive Assistant, Office of Senator Ben Allen, transmitting joint legislative letter signed by 5 senators and 14 assembly members</a> , received July 7, 2023
7.	<a href="#">Email from Jack Lighton, Chief Executive Officer, SeaLegacy, transmitting letter from Cristina Mittermeier, Co-Founder, SeaLegacy</a> , received July 7, 2023
8.	<a href="#">Letter from Scott Webb, Advocacy &amp; Policy Director, Turtle Island Restoration Network and Chance Cutrano, Director of Programs, Resource Renewal Institute</a> , received July 7, 2023
9.	<a href="#">Letter from 17 non-governmental organizations and school environmental clubs</a> , received July 7, 2023

**From:** Douglas McCauley <[REDACTED]>  
**Sent:** Monday, June 26, 2023 4:31 PM  
**To:** FGC <FGC@fgc.ca.gov>  
**Cc:** Ashcraft, Susan@FGC <[REDACTED]>  
**Subject:** Comment letter on bycatch in CA set gillnet fishery

To whom it may concern,

May I please respectfully request that the attached letter and associated publication on the economic value of giant sea bass be included in the briefing materials for the July MRC meeting under agenda item 3: Evaluation of bycatch in the California halibut set gillnet fishery in support of the fishery management review.

Thank you,

Dr. Douglas McCauley

Mr. Eric Sklar, President  
California Fish and Game Commission  
P.O. Box 944209  
Sacramento, CA 94244-2090

20 June 2023

RE: Bycatch in California set gillnet fishery

Dear President Sklar and Members of the Commission,

I am Professor of Marine Biology at UC Santa Barbara and have studied coastal ecology in California and other Pacific ecosystems for several decades. I wish to share some thoughts in my personal capacity regarding our state's set gillnet fishery.

Effectively assessing and minimizing bycatch is a fundamental cornerstone of all sustainable fishery management and I am grateful to CDFW for their efforts to manage such impacts in many of our state's fisheries. The unintended catch and discarding of marine life is something that I and many colleagues in the research community consider a top negative impact of fisheries, and can also have major economic ramifications on California's coastal communities.

*I wanted to take this opportunity to specifically underscore the importance for CDFW of identifying the management needs and minimizing bycatch in the California set gillnet fishery.* Non-selective gear types such as set gillnets that are fished in diverse ecosystems, such as the Southern California Bight, have the potential to significantly impact the diversity, function, and resilience of the ecosystem if not properly and thoroughly managed.

While many marine species are affected as bycatch in this gill net fishery, I wanted to call attention to two affected species which have been the subject of study in my lab: the IUCN listed critically endangered giant seabass and the vulnerable white shark. Our group has studied the population dynamics, behavior, and movement of these two species.

Giant seabass, a species that has been prohibited for commercial and recreational take for decades due to severe population decline driven by overfishing, is both discarded and legally landed in this fishery. The average weight landed of giant seabass each year is over 5,500 pounds. Our team has estimated that value of giant seabass alive to the California dive ecotourism industry is more than \$2M annually (publication attached) – a value that is diminished significant by this bycatch. It remains that bycatch in the set gill net fishery is the single largest threat to giant seabass populations and has been preventing them from recovering from historic overfishing at a natural and healthy pace.

Over 20 different shark, skate and ray species are both frequently landed and discarded in this fishery, many with no known population assessment or management plan. Globally, approximately a third of such species are now considered headed towards extinction. White

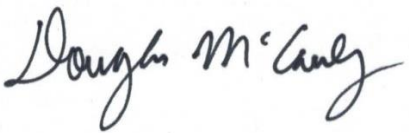
sharks, in particular, have been negatively impacted. Many of the regions in Southern California where the set gill net fishery operates are vital nursery habitat for juvenile white sharks and set gill nets are a top source of mortality for these age classes. And as is the case with giant seabass, white sharks are consequently on a much slower pathway to recovery as a result of this bycatch. This impeded recovery is ecologically consequential as both giant seabass and white sharks are understudied species that by all indications play important roles in California's marine ecosystems.

It is important that the species landed in the set gillnet fishery, including target and incidentally caught species, have management plans and stock assessments that inform catch limits and sustainable harvest. Species with existing federal or state management plans should have the catch associated with this fishery accounted for in the total allowable take, which is not currently occurring for the small number of species managed under fisher management plans.

Ecosystem-based management requires a holistic approach for managing fisheries and marine resources by taking into account the entire ecosystem of the species being managed. The goal of ecosystem-based management is to maintain ecosystems in a healthy, productive, and resilient condition so they can provide the services humans want and need. The Commission should consider this first fishery to be addressed through the scaled management process of the Marine Life Management Act as an opportunity to drive the state towards sustainable, ecosystem based management that both prioritize long-term resilience of fish stocks and healthy marine ecosystems.

Thank you and your colleagues for your past attention issues and leadership when it comes to considering the long-term vibrancy and sustainability of California's fisheries and biodiversity resources and thank you for your attention to this important matter.

Sincerely,

A handwritten signature in black ink that reads "Douglas McCauley". The signature is written in a cursive, flowing style.

Dr. Douglas McCauley

Department of Ecology, Evolution, Marine Biology

UC Santa Barbara

## RESEARCH ARTICLE

# The worth of giants: The consumptive and non-consumptive use value of the giant sea bass (*Stereolepis gigas*)

Ana Sofía Guerra<sup>1</sup>  | Daniel J. Madigan<sup>2</sup>  | Milton S. Love<sup>3</sup> | Douglas J. McCauley<sup>1,3</sup> 

<sup>1</sup>Department of Ecology, Evolution and Marine Biology, University of California Santa Barbara, Santa Barbara, California, USA

<sup>2</sup>Harvard University Center for the Environment, Harvard University, Cambridge, Massachusetts, USA

<sup>3</sup>Marine Science Institute, University of California Santa Barbara, Santa Barbara, California, USA

## Correspondence

Ana Sofía Guerra, Ecology, Evolution and Marine Biology, University of California, Santa Barbara, California 93106-9620, USA.  
Email: ana.sofia.guerra@lifesci.ucsb.edu

## Funding information

UCSB Coastal Fund; Our World-Underwater Scholarship Society; Benioff Ocean Initiative; Alfred P. Sloan Foundation

## Abstract

1. Although the economic value of wildlife historically has been attributed to its consumptive use, the global growth of ecotourism has expanded wildlife valuation to include non-consumptive uses. In California, the critically endangered giant sea bass (*Stereolepis gigas*) is paradoxically both a flagship species in the recreational dive industry and regularly sold in California's commercial fisheries when incidentally caught. The differences in the economic value of *S. gigas* to these two key stakeholders – commercial fishers and recreational scuba divers – were explored.
2. The average annual landing value of *S. gigas* was US\$12 600, this value was determined using California commercial fishery landing receipt data. In contrast the estimated average value of *S. gigas* to recreational divers was US\$2.3 million per year. The non-consumptive use value was calculated by approximating the annual number of recreational charter boat divers and determining divers' willingness-to-pay for a *S. gigas* sighting.
3. Stated landings volumes of *S. gigas* appear to represent a minimum annual extraction of 2% to 19% of the *S. gigas* population. Using self-reported fishery catch location data, *S. gigas* bycatch hotspots were identified and used to inform suggestions for strategic spatial and temporal closures.
4. Overall, these results highlight the value of giant sea bass beyond fisheries and underscore the importance of incorporating non-consumptive values when developing harvest policies and marine management plans.

## KEYWORDS

contingent valuation, species management, wildlife economic value, wildlife-viewing

## 1 | INTRODUCTION

Historically, the primary recognized value of wildlife, from elephants to seahorses, has been the value that can be obtained through their harvest and direct use. Economic forces, such as overexploitation and coastal and land development, are the primary drivers of declining wildlife populations and species extinctions (Barnosky et al., 2011; Jackson et al., 2001; Rosser & Mainka, 2002). However, some species may have substantial economic value that extends beyond traditional use for consumption. Explicitly accounting for these alternative values can, in certain cases, provide a more complete view of a species' worth and lead to more informed species management.

The economic value of an ecosystem or a species can be categorized as either use or non-use values. Non-use value is the intrinsic value of a species' or ecosystem's existence regardless of our

interaction with it (Pascual et al., 2010). Use values can be split into at least two categories: consumptive use values, where the goods produced by an ecosystem, or the extraction of a species, can be consumed (e.g. fisheries) and non-consumptive use values, where the species or ecosystem is valued for our desire to interact with it (e.g. whale watching) (Pascual et al., 2010). The consumptive use value of wildlife, particularly marine species, is readily apparent. Globally, wild fish capture in 2014 was 93.40 million tonnes (FAO, 2016) and in the United States alone, the value of the 4.30 million tonnes of wild fish landed that year amounted to US\$5.45 billion (National Marine Fisheries Service, 2015). Thus, interest in preserving this valuable resource exerts considerable influence on national and international policy. However, there is increasing awareness of the non-consumptive use values of wildlife to the public and the importance of using these values to better inform management of certain species (Lew, 2015).

Along the coast of California and Baja California, giant sea bass (*Stereolepis gigas*) hold a unique ecological position in the local kelp forest system as the largest teleost carnivore, weighing up to 253 kg (Eschmeyer & Herald, 1983). This slow-growing fish was once a valuable species in California markets. Its commercial fishery began in the late 1800s and peaked in 1932 at over 100 tonnes (Domeier, 2001). Increases in fishing pressure led to depletion in *S. gigas* numbers and the crash of the fishery in the 1970s (Domeier, 2001). The fishery collapse led to a suspension of the *S. gigas* fishery in 1981. However, regulations still allowed the take of two incidentally caught fish per trip in the commercial set gillnet and trammel net fisheries, which principally target white sea bass (*Atractoscion nobilis*) and California halibut (*Paralichthys californicus*) (Domeier, 2001; National Marine Fisheries Service, 2013). In 1988, given the continuing population decline of *S. gigas*, this regulation was amended to allow the take of only one incidentally caught fish per trip (California Fish and Game Code Section 8380, 2016).

Evaluations of the population status of *S. gigas* in 1996 led to it being classified as critically endangered by the IUCN Red List (Cornish, 2004). *Stereolepis gigas* has never, however, been listed as a threatened or endangered species by the State of California (CADFW, 2017). Recent work suggests that southern California *S. gigas* populations may be recovering, likely due to the banning of inshore gillnets in 1994; however, their numbers remain far below pre-exploitation levels (House, Clark, & Allen, 2016; Pondella & Allen, 2008).

Charismatic fauna are incidentally caught in many fisheries, and are either retained owing to some commercial value (e.g. elasmobranchs) or discarded (e.g. seabirds, dolphins) (Croll et al., 2016; Lewison et al., 2014; Lewison, Crowder, Read, & Freeman, 2004). In California, incidentally caught *S. gigas* are legally sold at the landing port and are regularly found in local fish markets, giving this source of bycatch monetary value to fishers. In addition to their value in fisheries, *S. gigas* are also a highly regarded underwater attraction to California's sizeable recreational scuba diving industry (Diving Equipment and Marketing Association (DEMA), 2014). Their bold and curious nature often results in close encounters with divers. These encounters, in conjunction with their large size, makes them a charismatic and desirable underwater sighting (Figure 1).



**FIGURE 1** Giant sea bass (*Stereolepis gigas*) and scuba diver in southern California kelp forest. Photo: J. McClain

Comparisons of the consumptive and non-consumptive values of a subset of other marine megafauna (e.g. reef sharks and manta rays) have provided useful information to species management approaches that maximize value to local communities and stakeholders (Anderson, Adam, Kitchen-Wheeler, & Stevens, 2011; Clua, Buray, Legendre, Mourier, & Planes, 2011; Vianna, Meekan, Pannell, Marsh, & Meeuwig, 2010). Such values have not yet been estimated or compared for *S. gigas*.

Contingent valuation methods provide one mechanism for assigning dollar values to values that do not typically involve market purchases or cash flow by asking respondents for a willingness-to-pay for a specific good (Mitchell & Carson, 1989). Values derived from contingent valuations provide a hypothetical dollar value for a good, not a present or future profit. However, these valuations can provide important information regarding stakeholder preference for the conservation or maintenance of a good or resource (Sanchirico, Lew, Haynie, Kling, & Layton, 2013).

Reducing incidental catch of charismatic species, many of which are valued for recreational viewing (e.g. sharks and cetaceans), is a pressing issue in conservation and fisheries management (Lewison et al., 2004, 2014). Identifying incidental catch hotspots using catch data can inform management strategies for reducing non-target species mortality and preserving recreationally valued species (Cambiè, Sánchez-Carnero, Mingozi, Muiño, & Freire, 2013; Grantham, Petersen, & Possingham, 2008; Lewison, Soykan, & Franklin, 2009).

Using landing receipt data and contingent valuation surveys, this study provides the first comparison of the consumptive value and estimated non-consumptive use value of the critically endangered *S. gigas* to two important stakeholders, commercial fishers and recreational scuba divers. The results indicate that *S. gigas* are highly valued as a non-consumptive resource, demonstrate the importance of incorporating multiple values when evaluating outcomes of marine management strategies and policy, and provide suggestions for potential management of this important species by using catch location data derived from the landing receipts.

## 2 | METHODS

### 2.1 | Value to fishers

California Department of Fish and Wildlife (CADFW) landing receipt data from all commercial fishing trips between 2006 and 2015 were used to determine contemporary average price per whole fish, average size (kg) of fish caught, annual gross value of *S. gigas* to the entire California commercial fleet, and the number of *S. gigas* landed per year. Given that the CADFW regulation during this period only permits fishers to land one incidentally caught *S. gigas* per fishing trip, each landing receipt in the data was assumed to refer to a single landed fish. CADFW landing receipts were also used to determine the average annual value of the target fishery (*A. nobilis* and *P. californicus*) between 2006 and 2015.

Although *S. gigas* are occasionally hooked by recreational fishers, in California recreational take of this species is prohibited. For this reason, an estimate of the consumptive value of *S. gigas* to recreational fishers was not included in the study.

## 2.2 | Value to divers

### 2.2.1 | California divers

An estimate of the annual number of charter boat diver days (divers diving from charter dive boats, as opposed to shore diving) who dive south of Point Conception, a core area within the geographic range of *S. gigas* (Domeier, 2001), was generated to calculate the annual non-consumptive value of *S. gigas* to the California scuba diving community. Although California also has a significant private vessel and shore-diving scuba diver demographic, only the value to charter boat divers was considered as this can be most meaningfully and accurately assayed.

A list of all known California dive vessel operators who operate south of Point Conception was compiled using vessel registry lists and key local informant surveys ( $n = 40$ ) and each boat's maximum stated dive passenger capacity was noted using publicly available vessel listings. All 40 dive vessel operators were contacted, but only a subset ( $n = 17$ ) were responsive to a survey aimed at obtaining information on their average number of trips per year ( $t$ ) and average passenger capacity ( $c$ ) on said trips. Total number of diver days ( $d$ ) per year for each vessel was calculated as

$$d = t (c \times s) \quad (1)$$

where  $s$  refers to maximum stated dive passenger capacity for each vessel, and summed these values to provide total number of diver days per year for all surveyed vessels ( $D_s$ ) (see Table 1 for summary of variables).

Estimates of number of diver days per year for all vessel operators that were not surveyed ('non-surveyed vessels') were generated using values acquired from surveyed vessels. Because the subset of the surveyed vessels was not randomly selected, but rather a result of vessel operator responsiveness, post-stratification sample weighting was used to adjust for missing data from non-surveyed vessels. Post-stratification sample weighting is commonly used to account for non-responses and missing data and reduces potential bias by incomplete representative sampling of a population (Brick & Kalton, 1996; Little & Rubin, 1989) and has previously been used in data regarding surveyed vessels (Lew, Himes-Cornell, & Lee, 2015). Two weighting factors were used in the weighting adjustment: home port location and vessel passenger capacity (see Supplementary material, Appendix A, Table A.1 for details). Once weighted, surveyed vessels were then

binned into three groups based on their stated maximum passenger capacities ( $\leq 6$  divers, 7–29 divers, 30–40 divers). Basic economies of scale dictate that per-passenger operational cost should decrease as passenger capacity increases, thus average operating capacity likely differs between groups. Weighted average number of trips per year and average capacity per trip were then averaged across vessels for each of the vessel groups to obtain  $t_a$  (weighted average number of trips per year) and  $c_a$  (weighted average capacity per trip) for each of the three vessel groups (Table A.2). Using the following formulae:

$$d_a = t_a (c_a \times s) \quad (2)$$

$$D_e = d_a \times n \quad (3)$$

where  $s$  is maximum stated capacity for each vessel and  $n$  is the number of vessels in each vessel group,  $d_a$  (average number of diver days per vessel per year) and  $D_e$  (estimated number of diver days in a year) were calculated for each vessel group. The sum of the  $D_s$  and the  $D_e$  values for the three vessel groups provides  $D_t$ , the total estimated number of charter boat diver days in southern California per year (Table 1). A supplementary conservative estimate of total diver days per year,  $D_c$ , was also generated using the lowest responses for average capacity and average trips per year (Table A.3). A non-weighted estimate was also generated for comparison (Table A.3).

### 2.2.2 | Non-consumptive use value survey

The target demographic for the non-consumptive value survey was scuba divers who dive off the California coast. After conducting a preliminary survey of 28 scuba divers during observational ride-alongs on dive trips and southern California regional scuba club meetings in 2014, divers were surveyed from August to December 2015. Mailed surveys and face-to-face interviews are the more commonly used surveying techniques; however, recent studies have not found a significant difference in data quality and estimates from contingent valuation surveys between these and on-line surveys (Fleming & Bowden, 2009; Lindhjem & Navrud, 2011; Marta-Pedroso, Freitas, & Domingos, 2007). Thus, an on-line valuation survey was designed in order to maximize reach to scuba divers. The on-line survey was distributed to southern California scuba diving club e-mail lists and posted on regional scuba diving on-line magazine websites.

Respondents were asked to provide general information regarding their scuba diving habits and experience in and outside of California, as

**TABLE 1** Variables and definitions for diver day calculations

Variable	Definition
$c$	Average capacity per trip for each surveyed vessel. Value is expressed as a percentage of maximum stated capacity.
$c_a$	Average capacity per trip averaged across all vessels for each vessel group. Value is expressed as a percentage of maximum stated capacity.
$d$	Dive days per year for each surveyed vessel.
$d_a$	Average diver days per year averaged across all vessels for each vessel group.
$n$	Number of vessels in each vessel group.
$t$	Average number of trips per year for each surveyed vessel.
$t_a$	Average number of trips per year averaged across all vessels for each vessel group.
$s$	Maximum stated passenger capacity. Value is expressed as a whole number.
$D_s$	Estimated total number of diver days per year for all surveyed vessels.
$D_e$	Conservative estimate of total number of diver days per year for all surveyed vessels.

well as their typical diving-related expenses including gear rental, travel distance, and dive boat pricing. In addition, respondents were asked to answer questions pertaining specifically to *S. gigas* including their knowledge of the fish, how they rank the importance of seeing *S. gigas* on a dive (scale of 1 to 5) (see Appendix C, Supplementary material for explanation of rating scale), and past experiences with *S. gigas* on dives. Finally, respondents were asked a series of valuation questions regarding *S. gigas* (see Appendix C for full survey).

The contingent valuation method (CVM), a commonly used method developed for determining the public's stated willingness to pay for non-consumptive public goods (Mitchell & Carson, 1989) and a reliable method for estimating the value of a non-consumptive resource (Carson, Flores, & Meade, 2001), was used to estimate the economic value of *S. gigas* to recreational divers. The payment card (PC) approach to elicit willingness-to-pay (WTP) from respondents (Mitchell & Carson, 1981) was adopted in this study's survey design. With this method, the question is presented in multiple-choice format and respondents are asked to select a WTP value from a set of available predetermined value options. Various valuation methodologies are available for estimating WTP (Mitchell & Carson, 1981), though the effect of questionnaire format may be insignificant when valuing endangered species (Loomis & White, 1996; Richardson & Loomis, 2009). However, the PC elicitation method has been widely used to elicit WTP with regard to wildlife conservation and preservation of natural attractions (Farr, Stoeckl, & Alam Beg, 2014; Jakobsson & Dragun, 2001; Ressurreição et al., 2012; Reynisdottir, Song, & Agrusa, 2008). This method minimizes starting point bias and reduces non-responses (Mitchell & Carson, 1989), and any biases with regard to 'anchoring effects', where a numerical prompt alters a respondent's stated value, can be circumvented by not truncating values available in the payment card (Rowe, Schulze, & Breffle, 1996). In the survey, respondents were asked how much they would be willing to pay, in addition to what they typically pay for a dive charter, for (1) a *potential* sighting of a giant sea bass, and for (2) a *guaranteed* sighting of a giant sea bass. Although it is impossible to guarantee a natural wildlife encounter, a *guaranteed* sighting was used in the WTP elicitation to investigate the value of a *S. gigas* sighting, not of a hypothetical *S. gigas*-viewing industry. Any surveys that were submitted, but were not entirely completed or had skipped questions regarding WTP, were excluded from the analysis.

### 2.2.3 | WTP statistical analysis

Given high variance in responses, an  $\alpha$ -trimmed mean ( $\alpha = 0.05$ ) of the WTP responses for a *S. gigas* sighting, was used. Trimmed means provide a more robust estimate of mean WTP (FAO Economic and Social Development Department, 2000; Mitchell & Carson, 1989). Both conservative and average annual non-consumptive use values of *S. gigas* were calculated by superimposing the WTP distribution from survey responses to  $D_t$ , the estimated number of boat divers in a year, and  $D_c$ , the conservative estimated number of boat divers in a year. In order to identify the potential for familiarity with *S. gigas* in altering the results, WTP was calculated and non-consumptive use values aggregated for divers who not only dived in California, but also listed California as their primary dive location (Appendix A).

A censored regression (tobit) model was used to determine predictors of diver WTP for a *guaranteed* sighting (*censReg* function, package *censReg*, R) using the dependent variables of diver experience, behaviour, and knowledge (Table A.4). Censored regressions are preferred when using payment card WTP data as the commonly used ordinary least squares (OLS) regressions for determining WTP can often result in biased estimates (Cameron & Huppert, 1989). All analyses were computed in R (R Core Team, 2015).

## 2.3 | Spatial and temporal *S. gigas* catch hotspots

The location and month for when *S. gigas* catch-per-unit-effort (CPUE) was highest along the California coast between 2006 and 2015 was determined using the landing receipt data from commercial set gill and trammel net fisheries. CPUE was calculated using catch as biomass of *S. gigas* landed per month and effort calculated as number of gill and trammel net fishing trips in that month. Self-reported catch location information from landing receipts was used to map out average *S. gigas* CPUE per year during this period, and catch date data were used to determine how average *S. gigas* CPUE varied across the months. The values were mapped onto the 547 reporting blocks (approx. 256 km<sup>2</sup>) that overlapped with the main portion of *S. gigas* range using QGIS (QGIS Development Team, 2017). For the 15 reporting blocks and month in which average *S. gigas* CPUE was highest, the monetary value of landings from species harvested in the target fishery (i.e. *A. nobilis* and *P. californicus*) was calculated from CDFW landing receipt data and compared the month's value with the overall annual value of the target fishery. For additional details on spatial and temporal hotspot determination using number of individuals caught, total *S. gigas* biomass landed, and bycatch proportion see Appendix B, Supplementary material.

## 3 | RESULTS

### 3.1 | Value to fishers

Results from landing receipts indicate that an average of  $97 \pm 15$  individuals year<sup>-1</sup> ( $\pm$  std. error) were landed between 2006 and 2015, with a mean landing price per pound of US\$2.59  $\pm$  1.31 and mean landing price per individual fish of US\$143.99  $\pm$  14.37. Average annual landing value of *S. gigas* between 2006 and 2015 in California was US\$12 606  $\pm$  1 443. The average annual landing value of the target fishery for this decade was US\$1 272 356  $\pm$  113 130, making the landing value of *S. gigas* 0.99% of the value of the target white sea bass and halibut fishery.

### 3.2 | Value to divers

#### 3.2.1 | California divers

A list of California dive boat operators known to operate south of Point Conception was compiled and operators were surveyed to obtain information on number of trips per year and average scuba diver capacity per trip for each vessel group (Table A.1). Based on the extrapolations from dive charter boat operator survey data, there are an estimated 55 280 charter boat diver days in southern California

in one year (Table A.3). The more conservative estimate, which relies on using lowest number of trips per year and lowest average capacity from interview data for each vessel size group, yielded a lower bound estimate of 37 503 charter boat diver days in one year (Table A.3).

### 3.2.2 | Scuba diver profiles

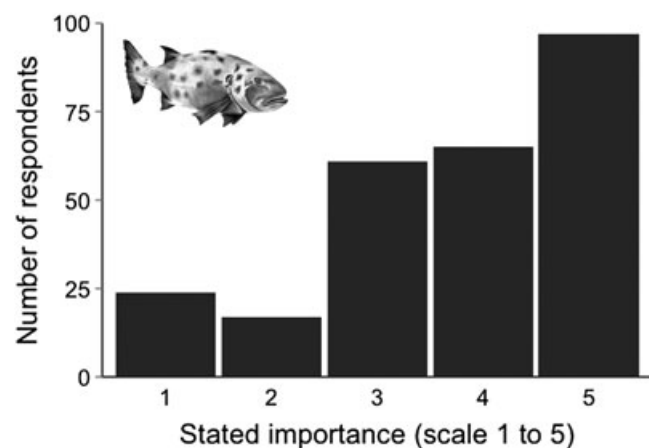
In total, 265 divers were surveyed for this analysis. Of those contacted, 331 divers accessed the on-line survey and 279 of these divers submitted a survey; however, 14 of these 279 were excluded from the analysis due to incompleteness. Almost half of the respondents (49.8%) had been scuba diving for more than 10 years and the majority (84%) stated that one of their main reasons for diving was recreation (Table A.5). A third (33.6%) of the divers had obtained a professional level dive certification (Divemaster or Instructor) and the remainder had recreational diving licences (Table A.5).

Of the 265 divers surveyed, 245 (92%) listed California as one of their most frequented dive locations. With regard to diving frequency in California, the mean number of California dives per diver in the past year was  $47.65 \pm 5.49$  (SE) and median of 25 for all diving (shore and boat), and  $18.67 \pm 2.68$  (median = 7) for diving from charter dive boats. The average amount respondents typically paid for a charter boat dive trip in California was US\$90.79  $\pm$  3.69 (median = US\$115).

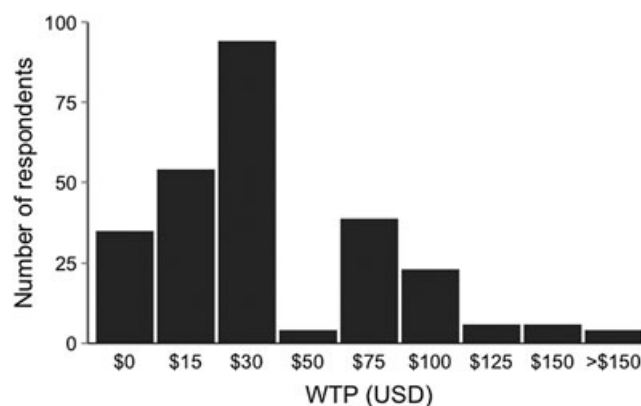
Most (99%) of the divers had previously heard of *S. gigas* and 75% had seen one in the wild. When prompted with an open-ended question asking what they knew about *S. gigas*, 30.9% mentioned the fish was rare, endangered, or overfished; 16.2% mentioned the fish was protected from recreational fishing, and 5.7% stated that *S. gigas* population was recovering. The importance of seeing *S. gigas* on a dive was ranked as 4 and 5, on a scale of 1 to 5 where 1 is 'not important at all' and 5 is 'very very important' by most (61%) of the respondents (Figure 2).

### 3.2.3 | *Stereolepis gigas* WTP

Of the surveyed divers, 86.8% reported a WTP value to see *S. gigas* that was greater than US\$0 per dive (Figure 3). The trimmed mean WTP for a guaranteed sighting of *S. gigas* was US\$39 with a median of US\$30 per dive. Overlaying the average and conservative estimated



**FIGURE 2** Distribution of responses from surveyed divers on the stated importance (on a scale of 1 (low) to 5 (high)) of seeing giant sea bass (*Stereolepis gigas*) while diving



**FIGURE 3** Distribution of responses from surveyed divers illustrating their willingness-to-pay (WTP) for a guaranteed sighting of a giant sea bass (*Stereolepis gigas*)

diver numbers on the WTP distribution, the non-consumptive use value of *S. gigas* equates to US\$2.3 million per year. The conservative estimated value, generated using lower-range diver day numbers from survey data, is US\$1.5 million per year.

The results from the censored regression suggest only three dependent variables are significant determinants of WTP (Table 2). WTP increased with the maximum amount the respondent would pay for a charter dive and the importance of seeing *S. gigas* on a dive, and decreased for respondents who reported having already seen *S. gigas* underwater (Table 2).

### 3.3 | Spatial and temporal *S. gigas* catch hotspots

Results from catch location data show that 14 of the 15 blocks with highest *S. gigas* CPUE are south of Point Conception (Figure 4a). Monthly catch data suggest that *S. gigas* CPUE is highest during the month of July ( $2.23 \pm 0.49$ ) (Figure 4b). Eight of the 14 blocks had reported no value attributed to the target fishery between 2006 and 2015 in July. Of the six blocks that did contribute to the target fishery during the month of July between 2006 and 2015, four had an average annual value of US\$3 272 (summed across four blocks).

## 4 | DISCUSSION

This study provides the first economic valuation and comparison of the consumptive and non-consumptive use value of *S. gigas*. The results show that the estimated value of a *S. gigas* sighting to the recreational scuba diving community along the California coast is more than 150 times greater than its ex-vessel value to commercial fishers. These kinds of quantifications of the value of *S. gigas* can and should be meaningfully adopted by management practitioners considering the future of this critically endangered species.

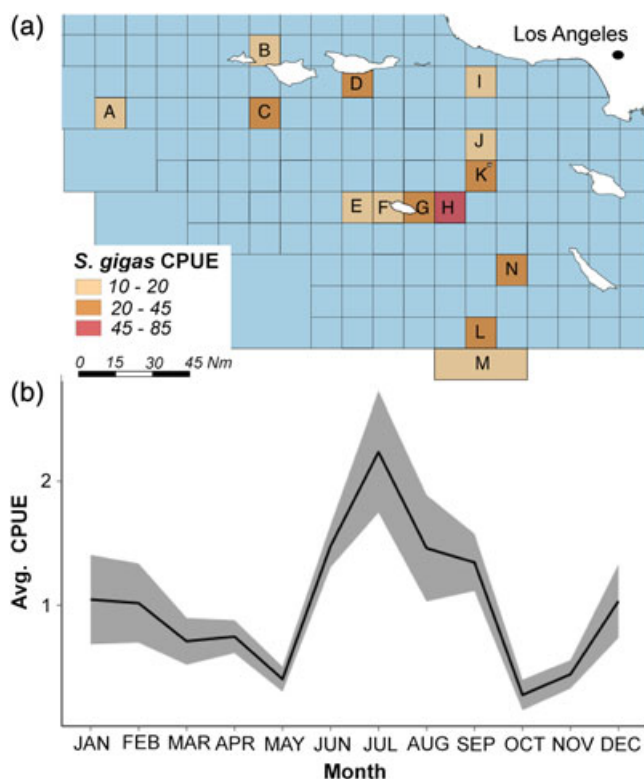
Results from the landing receipt data indicate that the average annual value of incidentally caught *S. gigas* to commercial fishers represents less than 1% of the value of the target white sea bass and halibut fishery. Available independent CADFW reviews on selected California fisheries report the average annual ex-vessel value of the white sea bass fishery (not accounting for the value of landed halibut) to be US

**TABLE 2** Results from censored regression for determinants of WTP for a guaranteed *S. gigas* sighting

Dependent variable	Estimated coefficient	Std. error	t-value	P-value
Dive years	0.193	0.214	0.903	0.366
Dives 5 years	0.009	0.011	0.816	0.415
Certification	-0.359	2.566	-0.14	0.889
Gear	-8.147	8.582	-0.949	0.343
CA diver	-18.576	9.802	-1.895	0.058
CA dives/year	-0.047	0.031	-1.541	0.123
Avg. USD/dive charter	0.01	0.048	0.212	0.832
Max USD/dive charter	0.183	0.061	2.973	0.003*
Heard of GSB	1.154	24.64	0.047	0.962
Seen GSB	-14.875	6.441	-2.309	0.021*
Considered endangered	-1.657	11.458	-0.145	0.885
Considered protected	-4.454	12.329	-0.361	0.718
Considered large	12.775	10.579	1.207	0.227
Knowledge score	2.608	9.223	0.283	0.778
GSB importance	11.885	2.012	5.907	< 0.001*

Estimated regression coefficients for the payment card responses represent marginal impacts on the dollar amount of respondents' willingness-to-pay (WTP).

\*Denotes significance.



**FIGURE 4** (a) 14 blocks in California with the highest average giant sea bass (*Stereolepis gigas*) catch-per-unit-effort (CPUE) for 2006–2015. (b) Average *S. gigas* monthly CPUE (2006–2015). Shaded area denotes inter-annual standard error. CPUE is calculated as sum of kg landed per month/number of commercial fishing trips per month

\$1.4 million for the years 2008, 2010 and 2012 (CADFG, 2009, 2011, 2013), slightly higher than the calculated average annual value of the target fishery (US\$1.2 million). In addition, the CADFW reports do not take into account the additional 7 years factored into this study's

calculation and only report values for landed white sea bass, not hali-but (the other target in the gillnet fishery). The incorporation of these two values would likely elevate the ex-vessel value of the target fishery. Thus, it seems likely that this study's calculation of the target fishery value to commercial fishers is an underestimate, which only underscores the marginal value that *S. gigas* landings yield relative to the target fishery.

In contrast, the estimated non-consumptive value of *S. gigas* reveals the high value of this species to the recreational scuba diver industry in California. This calculated value allows for more equitable and direct comparison between different industries and use types. However, it is important to note that the calculated annual non-consumptive value of US\$2.3 million does not indicate a potential direct cash flow to the economy, but rather provides a quantitative representation of recreational divers' value of *S. gigas* and represents the potential for a marginal economic value to the diving industry. In addition, although the survey was distributed via Southern California regional lists, this did not exclude all California divers. Thus, the calculation must be considered as including all California divers, not just divers in Southern California. Given the geographical range of *S. gigas*, WTP for a *S. gigas* sighting may be different if the study had been limited to Southern California divers that may encounter them more frequently. Divers who dive from shore or from privately owned vessels, which would likely increase the total non-consumptive use value, were also not included in the calculation. Finally, as the scuba diver survey was distributed electronically through various diving-related e-mail lists, it is important to note that this convenience sample might not be representative of the entire California population. For example, it may bias against divers who maintain less of an electronic presence.

The mean WTP for *S. gigas* of US\$42.81 is similar to values previously calculated for other marine megafauna. In the Great Barrier Reef, mean WTP for a guaranteed sighting of elasmobranchs ranged between US\$33.82 and US\$42.20, between US\$42.56 and US

\$44.72 for cetaceans, and between US\$24.76 and US\$32.64 for sea turtles (Farr et al., 2014). In a study conducted across the United States, scuba divers were willing to pay US\$29.63 for an increased likelihood of a sea turtle sighting on a dive and US\$35.36 for an increased likelihood of a shark sighting (White, 2008). Aggregated across the United States scuba diver population, the annual non-consumptive values of sea turtles and sharks were US\$177.8 million and US\$212.2 million, respectively (White, 2008). These aggregated annual values are considerably larger than the annual non-consumptive value estimated for *S. gigas* (US\$2.3 million); however, this study's values are substantial considering they apply only to the California diver population.

This work indicates the potential for an industry centred on *S. gigas* viewing with profits that might outweigh the current economic value of *S. gigas* as a commercial bycatch product. Shifts from consuming to viewing megafauna have proven to be lucrative to communities of stakeholders both in terrestrial and marine ecosystems. A single elephant has been estimated to draw in US\$1.6 million to travel companies, airlines and local economies as a long-lived wildlife-viewing attraction, but only US\$21 000 as a single-use consumptive resource in the ivory trade (The David Sheldrick Wildlife Trust, 2014). For the diving industry, reef sharks in Palau were found to be more than 17 times more valuable alive as a non-consumptive use resource over their lifetime than dead as a consumptive resource (Vianna et al., 2010). Globally, the estimated annual economic value of manta ray tourism is US\$140 million, which exceeds the annual value of the manta ray gill raker trade of US\$5 million by an order of magnitude (O'Malley, Lee-Brooks, & Medd, 2013).

As expected, WTP increased with the maximum amount a respondent would pay for a charter dive, which can be interpreted as the expected positive relationship between income or spending levels and WTP (Carson et al., 2001). As might be predicted, WTP also increased with the stated importance of seeing *S. gigas* on a dive. WTP was also found to decrease for respondents who reported having already seen *S. gigas* underwater. Previous studies show that people tend to value rarity both in economic markets (Lynn, 1991) and wildlife viewing (Booth, Gaston, Evans, & Armsworth, 2011); therefore it is not surprising to see this same effect manifest itself in this system. This may indicate that the total value of *S. gigas* could decrease over time if its population increases. Alternatively, a larger population size of *S. gigas* and increased probability of sighting *S. gigas* could recruit new eco-tourist clientele within and beyond local markets. Other lucrative wildlife encounter industries successfully recruit customers from the global market (Gallagher & Hammerschlag, 2011; O'Connor, Campbell, Knowles, & Cortez, 2009; Topelko & Dearden, 2005).

Based on the calculations in this study, the average annual number of landed incidentally caught *S. gigas* could represent somewhere between 2% and 19% of current local population estimates for this species (Chabot, Hawk, & Allen, 2015). Given uncertainties surrounding the fate of any *S. gigas* that may be lethally captured in gill and trammel nets above the allowable take of one fish per day, it may be prudent to view these as minimum estimates of population-level harvest. Although recent evidence suggests that *S. gigas* populations appear to be increasing (House et al., 2016; Pondella & Allen, 2008), it is unclear if the populations can sustain this

present level of bycatch-facilitated harvest. Given the high value documented here of *S. gigas* to recreational divers, more careful investigations of the implications of this catch on *S. gigas* population dynamics is perhaps merited.

Fishing and wildlife viewing are not mutually exclusive activities, and the results from the spatial and temporal hotspot data provide potential suggestions that could serve as seasonal *S. gigas* sanctuaries that may have minimal or no financial impact on target fisheries. For example, Block 'H' (Figure 4a) generates no revenue to gill and trammel net fishers for target species in the month of July, when *S. gigas* CPUE is highest. In addition, blocks B, F, E and M have a July aggregate landing value that is worth only 0.2% of the target fishery's average annual value. Although it could be potentially unnecessary to restrict fishing in entire blocks for one month, areas such as these could provide potential opportunities to strategically identify smaller-scale reefs or patches with particularly high *S. gigas* densities (e.g. aggregation zones for spawning *S. gigas*) where closures might be tenable.

The economic value surrounding *S. gigas* extends beyond scuba divers and fishers, and there are many additional factors to consider when assessing the total economic value of a species. For example, the study did not take into account operational costs for the commercial fishing or scuba diving charter vessels nor how much the recreational diving industry depends on the viewing of *S. gigas*. It also did not incorporate other factors that certainly affect and elevate consumptive use value such as higher market chain prices. Although CDFW state-compiled landing data represents the best and only source of information on *S. gigas* catch, some variability in quality is known from this type of self-reported data (Sampson, 2011; Walsh, Ito, Kawamoto, & McCracken, 2005). Further research is needed to fully understand the potential economic value of *S. gigas* in southern California to other potential coastal stakeholders beyond the two key constituencies that were engaged (commercial fishers and recreational boat divers).

Economic valuations can be used to better inform decision-makers, managers, and policy analysts regarding additional stakeholders and their value of the species in question (Sanchirico et al., 2013). This work provides an initial estimate of the total economic use of *S. gigas* and opens the door to further work further quantifying precise values to the dive industry and the economy at large. In addition, non-consumptive use values can be included in economic-based management (EBM) strategies and future management models for endangered species like *S. gigas* and in long-term marine ecosystem planning. Such approaches would allow consideration of externalities such as benefits to recreational divers, which would help strategically maximize the value of marine resources to coastal communities.

## ACKNOWLEDGEMENTS

We thank the California Department of Fish and Wildlife for providing catch data and S. Yu for helping with preliminary analysis. We are grateful to M. Nishimoto, K. Seeto, C. Jainese, and F. Joyce for helping develop and administer the survey, *California Diver Magazine* for help with distribution of the e-survey, K. Kollwitz for providing diver charter access for administering pilot survey. For funding, we are grateful to the Benioff Ocean Initiative, the Alfred P. Sloan Foundation,

UCSB Coastal Fund, and the Our World-Underwater Scholarship Society. Human research survey was approved by the UCSB Human Subjects Committee.

## ORCID

Ana Sofia Guerra  <http://orcid.org/0000-0003-3030-9765>

Daniel J. Madigan  <http://orcid.org/0000-0002-5718-562X>

Douglas J. McCauley  <http://orcid.org/0000-0002-8100-653X>

## REFERENCES

- Anderson, R. C., Adam, M. S., Kitchen-Wheeler, A.-M., & Stevens, G. (2011). Extent and economic value of manta ray watching in Maldives. *Tourism in Marine Environments*, 7, 15–27.
- Barnosky, A. D., Matzke, N., Tomiya, S., Wogan, G. O. U., Swartz, B., Quental, T. B., ... Ferrer, E. A. (2011). Has the Earth's sixth mass extinction already arrived? *Nature*, 471, 51–57.
- Booth, J. E., Gaston, K. J., Evans, K. L., & Armsworth, P. R. (2011). The value of species rarity in biodiversity recreation: A birdwatching example. *Biological Conservation*, 144, 2728–2732.
- Brick, J., & Kalton, G. (1996). Handling missing data in survey research. *Statistical Methods in Medical Research*, 5, 215–238.
- CADFG. (2009). Review of selected California fisheries for 2008: Coastal pelagic finfish, market squid, ocean salmon, groundfish, California spiny lobster, spot prawn, white seabass, kelp bass, thresher shark, skates and rays, Kellet's whelk, and sea cucumber (CalCOFI Report No. Vol. 50). California Department of Fish and Game.
- CADFG. (2011). Review of selected California fisheries for 2010: Coastal pelagic finfish, market squid, ocean salmon, groundfish, highly migratory species, dungeness crab, spiny lobster, spot prawn, Kellet's whelk, and white seabass (CalCOFI Report No. Vol. 52). California Department of Fish and Game.
- CADFG. (2013). Review of selected California fisheries for 2012: Coastal pelagic finfish, market squid, pacific herring, groundfish, highly migratory species, white seabass, pacific halibut, red sea urchin, and sea cucumber (CalCOFI Report No. Vol. 54). California Department of Fish and Game.
- CADFW. (2017). *State and federally listed endangered and threatened animals of California*. Sacramento, CA: California Department of Fish and Wildlife.
- California Fish and Game Code Section 8380. (2016). California Fish and Game Code.
- Cambiè, G., Sánchez-Carnero, N., Mingozi, T., Muiño, R., & Freire, J. (2013). Identifying and mapping local bycatch hotspots of loggerhead sea turtles using a GIS-based method: Implications for conservation. *Marine Biology*, 160, 653–665.
- Cameron, T. A., & Huppert, D. D. (1989). OLS versus ML estimation of non-market resource values with payment card interval data. *Journal of Environmental Economics and Management*, 17, 230–246.
- Carson, R. T., Flores, N. E., & Meade, N. F. (2001). Contingent valuation: Controversies and evidence. *Environmental and Resource Economics*, 19, 173–210.
- Chabot, C. L., Hawk, H. A., & Allen, L. G. (2015). Low contemporary effective population size detected in the critically endangered giant sea bass, *Stereolepis gigas*, due to fisheries overexploitation. *Fisheries Research*, 172, 71–78.
- Clua, E., Buray, N., Legendre, P., Mourier, J., & Planes, S. (2011). Business partner or simple catch? The economic value of the sicklefin lemon shark in French Polynesia. *Marine and Freshwater Research*, 62, 764–770.
- Cornish, A. (Grouper & Wrasse Specialist Group). (2004). *Stereolepis gigas* (The IUCN Red List of Threatened Species 2004) (p. e. T20795A9230697).
- Croll, D. A., Dewar, H., Dulvy, N. K., Fernando, D., Francis, M. P., Galván-Magaña, F., ... White, W. T. (2016). Vulnerabilities and fisheries impacts: The uncertain future of manta and devil rays. *Aquatic Conservation: Marine and Freshwater Ecosystems*, 26, 562–575.
- Diving Equipment and Marketing Association (DEMA). (2014). Fast facts: Recreational scuba diving and snorkeling (Diver Study).
- Domeier, M. (2001). Giant sea bass (*California's Marine Living Resources: A Status Report*). Richmond, CA: California Department of Fish and Game.
- Eschmeyer, W. N., & Herald, E. S. (1983). *A field guide to Pacific coast fishes of North America*. Boston, MA: Houghton Mifflin Company.
- FAO. (2016). *The State of World Fisheries and Aquaculture 2016: Contributing to food security and nutrition for all*. Rome, Italy: FAO.
- FAO Economic and Social Development Department. (2000). Applications of the contingent valuation method in developing countries (No. 146). Rome, Italy: FAO.
- Farr, M., Stoeckl, N., & Alam Beg, R. (2014). The non-consumptive (tourism) 'value' of marine species in the northern section of the great barrier reef. *Marine Policy*, 43, 89–103.
- Fleming, C. M., & Bowden, M. (2009). Web-based surveys as an alternative to traditional mail methods. *Journal of Environmental Management*, 90, 284–292.
- Gallagher, A. J., & Hammerschlag, N. (2011). Global shark currency: The distribution, frequency, and economic value of shark ecotourism. *Current Issues in Tourism*, 14, 797–812.
- Graham, H. S., Petersen, S. L., & Possingham, H. P. (2008). Reducing bycatch in the south African pelagic longline fishery: The utility of different approaches to fisheries closures. *Endangered Species Research*, 5, 291–299.
- House, P. H., Clark, B. L. F., & Allen, L. G. (2016). The return of the king of the kelp forest: Distribution, abundance, and biomass of giant sea bass (*Stereolepis gigas*) off Santa Catalina Island, California, 2014–2015. *Southern California Academy of Sciences Bulletin*, 115, 1–14.
- Jackson, J. B. C., Kirby, M. X., Berger, W. H., Bjørndal, K. A., Botsford, L. W., Bourque, B. J., ... Warner, R. R. (2001). Historical overfishing and the recent collapse of coastal ecosystems. *Science*, 293, 629–637.
- Jakobsson, K. M., & Dragan, A. K. (2001). The worth of a possum: Valuing species with the contingent valuation method. *Environmental and Resource Economics*, 19, 211–227.
- Lew, D. K. (2015). Willingness to pay for threatened and endangered marine species: A review of the literature and prospects for policy use. *Frontiers in Marine Science*, 2, 96.
- Lew, D. K., Himes-Cornell, A., & Lee, J. (2015). Weighting and imputation for missing data in a cost and earnings fishery survey. *Marine Resource Economics*, 30, 219–230.
- Lewison, R. L., Crowder, L. B., Read, A. J., & Freeman, S. A. (2004). Understanding impacts of fisheries bycatch on marine megafauna. *Trends in Ecology & Evolution*, 19, 598–604.
- Lewison, R. L., Crowder, L. B., Wallace, B. P., Moore, J. E., Cox, T., Zydelis, R., ... Safina, C. (2014). Global patterns of marine mammal, seabird, and sea turtle bycatch reveal taxa-specific and cumulative megafauna hotspots. *Proceedings of the National Academy of Sciences of the United States of America*, 111, 5271–5276.
- Lewison, R. L., Soykan, C. U., & Franklin, J. (2009). Mapping the bycatch seascape: Multispecies and multi-scale spatial patterns of fisheries bycatch. *Ecological Applications*, 19, 920–930.
- Lindhjem, H., & Navrud, S. (2011). Are internet surveys an alternative to face-to-face interviews in contingent valuation? *Ecological Economics*, 70, 1628–1637.
- Little, R. J. A., & Rubin, D. B. (1989). The analysis of social science data with missing values. *Sociological Methods & Research*, 18, 292–326.
- Loomis, J. B., & White, D. S. (1996). Economic benefits of rare and endangered species: Summary and meta-analysis. *Ecological Economics*, 18, 197–206.
- Lynn, M. (1991). Scarcity effects on value: A quantitative review of the commodity theory literature. *Psychology and Marketing*, 8, 43–57.

- Marta-Pedroso, C., Freitas, H., & Domingos, T. (2007). Testing for the survey mode effect on contingent valuation data quality: A case study of web based versus in-person interviews. *Ecological Economics*, 62, 388–398.
- Mitchell, R. C., & Carson, R. T. (1981). *An experiment in determining willingness to pay for national water quality improvements*. Washington, DC: Resources for the Future.
- Mitchell, R. C., & Carson, R. T. (1989). *Using surveys to value public goods: The contingent valuation method*. Washington, DC: Resources for the Future.
- National Marine Fisheries Service. (2013). *U.S. National bycatch report: First edition update 1*. Silver Spring, MD: US Department of Commerce.
- National Marine Fisheries Service. (2015). *U.S. Commercial Fishery Landings (NOAA current fishery statistics)*. Silver Spring, MD: US Department of Commerce.
- O'Connor, S., Campbell, R., Knowles, T., & Cortez, H. (2009). *Whale watching worldwide: Tourism numbers, expenditures and expanding economic benefits*. Yarmouth: International Fund for Animal Welfare.
- O'Malley, M. P., Lee-Brooks, K., & Medd, H. B. (2013). The global economic impact of manta ray watching tourism. *PLoS ONE*, 8, e65051.
- Pascual, U., Muradian, R., Brander, L., Gómez-Baggethun, E., Martín-Lopez, B., Verma, M., ... Polasky, S. (2010). The economics of valuing ecosystem services and biodiversity. In P. Kumar (Ed.), *The Economics of Ecosystems and Biodiversity: Ecological and Economic Foundations* (pp. 212–235). London, UK: EarthScan.
- Pondella, D. J., & Allen, L. G. (2008). The decline and recovery of four predatory fishes from the Southern California bight. *Marine Biology*, 154, 307–313.
- QGIS Development Team. (2017). *QGIS Geographic Information System*. Open Source Geospatial Foundation. <http://www.qgis.org>.
- R Core Team. (2015). *R: A Language and Environment for Statistical Computing*. Vienna, Austria: R Foundation for Statistical Computing.
- Ressurreição, A., Gibbons, J., Kaiser, M., Dentinho, T. P., Zarzycki, T., Bentley, C., ... Edwards-Jones, G. (2012). Different cultures, different values: The role of cultural variation in public's WTP for marine species conservation. *Biological Conservation*, 145, 148–159.
- Reynisdottir, M., Song, H., & Agrusa, J. (2008). Willingness to pay entrance fees to natural attractions: An Icelandic case study. *Tourism Management*, 29, 1076–1083.
- Richardson, L., & Loomis, J. (2009). The total economic value of threatened, endangered and rare species: An updated meta-analysis. *Ecological Economics*, 68, 1535–1548.
- Rosser, A. M., & Mainka, S. A. (2002). Overexploitation and species extinctions. *Conservation Biology*, 16, 584–586.
- Rowe, R. D., Schulze, W. D., & Breffle, W. S. (1996). A test for payment card biases. *Journal of Environmental Economics and Management*, 31(2), 178–185.
- Sampson, D. B. (2011). The accuracy of self-reported fisheries data: Oregon trawl logbook fishing locations and retained catches. *Fisheries Research*, 112(1–2), 59–76.
- Sanchirico, J. N., Lew, D. K., Haynie, A. C., Kling, D. M., & Layton, D. F. (2013). Conservation values in marine ecosystem-based management. *Marine Policy*, 38, 523–530.
- The David Sheldrick Wildlife Trust. (2014). *Dead or alive? Valuing an elephant*. Surrey, UK: iworry by The David Sheldrick Wildlife Trust.
- Topelko, K. N., & Dearden, P. (2005). The shark watching industry and its potential contribution to shark conservation. *Journal of Ecotourism*, 4, 108–128.
- Vianna, G. M. S., Meekan, M. G., Pannell, D., Marsh, S., & Meeuwig, J. J. (2010). *Wanted dead or alive? The relative value of reef sharks as a fishery and an ecotourism asset in Palau*. Perth, Australia: Australian Institute of Marine Science and University of Western Australia.
- Walsh, W. A., Ito, R. Y., Kawamoto, K. E., & McCracken, M. (2005). Analysis of logbook accuracy for blue marlin (*Makaira nigricans*) in the Hawaii-based longline fishery with a generalized additive model and commercial sales data. *Fisheries Research*, 75, 175–192.
- White, L. (2008). *Sea the value: Quantifying the value of marine life to divers (Oceana Reports)*. Washington, DC: Oceana.

## SUPPORTING INFORMATION

Additional Supporting Information may be found online in the supporting information tab for this article.

**How to cite this article:** Guerra AS, Madigan DJ, Love MS, McCauley DJ. The worth of giants: The consumptive and non-consumptive use value of the giant sea bass (*Stereolepis gigas*). *Aquatic Conserv: Mar Freshw Ecosyst*. 2017;1–9. <https://doi.org/10.1002/aqc.2837>

**Matthews, Kinsey-Contractor@fgc**

---

**From:** Ciara Ristig <[REDACTED]>  
**Sent:** Saturday, June 24, 2023 10:09 PM  
**To:** FGC  
**Subject:** Public Comment- July 20 Meeting- Item 3- Gillnet Fishery Bycatch

**WARNING:** This message is from an external source. Verify the sender and exercise caution when clicking links or opening attachments.

California Fish and Game Commission, Marine Resources Committee,

Thank you for your time and service.

I'm writing as a concerned citizen and resident of Santa Barbara County about the set gillnet fishery. As an avid diver and friends to several local spear fishermen, I value California's marine environment and hope that it is protected by unnecessary, harmful and outdated fishing equipment. The existing 37 gill net permits are allowing just that, right off of the coast here in Santa Barbara. Recent [observer coverage has been minimal](#), so it is difficult to know the full extent of damage being done.

I am aware of the large amount of bycatch resulting from these nets, including black seabass. It is concerning and hypocritical that an endangered species, which a tremendous amount of federal and state funding has gone into protecting, it also being caught up in these nets. This is far from the only protected species that is being impacted. I think California's ecosystems deserve better.

I will leave it to the experts to determine the best management solutions, but ask that action be taken to resolve this soon and find a fair solution that removes the gillnets absolutely as soon as possible.

Thank you for your time.

Sincerely,  
Ciara Ristig

**From:** Birch, Caitlynn <cbirch@oceana.org>

**Sent:** Friday, July 7, 2023 3:45 PM

**To:** FGC <FGC@fgc.ca.gov>; Ashcraft, Susan@FGC <[REDACTED]>

**Cc:** Miller-Henson, Melissa@FGC <[REDACTED]>

**Subject:** Public Comment for July MRC Agenda Item 3

Hi Susan,

Please include the attached comment letter plus attachment for inclusion in the MRC binder under **Agenda Item 3: Evaluation of bycatch in the California halibut set gillnet fishery in support of the fishery management review**. Apologies for its extreme lengthiness! Appreciate all your work leading up to the MRC and hope you have a great weekend! Stay cool in Sac next week.

Caitlynn

Caitlynn Birch | Pacific Marine Scientist



99 Pacific Street, Suite 155C

Monterey, CA 93940

D 831.332.1757 | O 907.586.4050

[cbirch@oceana.org](mailto:cbirch@oceana.org) | [www.oceana.org](http://www.oceana.org)

July 7, 2023

Mr. Eric Sklar, President  
California Fish and Game Commission  
P.O. Box, 944209  
Sacramento, CA 94244-2090

**RE: Marine Resources Committee Agenda Item 3: Set Gillnet Bycatch Evaluation**

Dear President Sklar and Members of the Commission,

California recently made strong international commitments to be a leader in biodiversity conservation at the United Nations Biodiversity Conference (COP 15).<sup>1</sup> The Marine Life Management Act (MLMA) was intended to be one of the most progressive, ecosystem-based fishery management laws in existence. This Commission, the California legislature, and California voters have all taken decisive action over recent decades to restrict or end the use of destructive, unselective fishing practices off our coast including gillnets, bottom trawls, and pelagic longlines. All around the world, set gillnets are recognized as harmful to marine ecosystems, biodiversity, and vulnerable species. Most recently, Australia<sup>2</sup> and Belize<sup>3</sup> took action to phase out set gillnets from their waters.

Despite the previous bans and current set of regulations, the multi-species California set gillnet fishery continues to have a wide suite of major bycatch concerns that threaten biodiversity, sustainability, other fisheries, and marine ecosystems throughout Southern California. Although there are uncertainties and data gaps, the best available scientific data indicates that new management measures are warranted to ensure the types and amounts of bycatch are reduced to acceptable levels.

Following the Commission's prioritization process that identified the set gillnet fisheries targeting California halibut, white seabass, and Pacific angel shark as 3 of the top 4 highest priorities of all commercial finfish fisheries based on its Ecological Risk Assessment,<sup>4</sup> we appreciate the Department's work on the bycatch analysis and the attention spent by the Marine Resource Committee (MRC) in reviewing set gillnet bycatch over the last two years. However, we are concerned the Department has submitted to the Commission a fundamentally flawed bycatch analysis that downplays serious bycatch concerns and could set a harmful precedent as the first application of the bycatch inquiry in the MLMA Master Plan for Fisheries. Its approach, criteria, and conclusions directly contradict the requirements and precautionary approach of the MLMA. To remedy this problem, we ask the Commission to use the full suite of data before you -- including available data from the federal government as well as analysis provided by other interested parties -- to craft a robust, comprehensive management package to minimize bycatch to acceptable types and amounts.

This letter 1) outlines our concerns with the CDFW Bycatch Evaluation, 2) presents the case for identifying specific types and amounts of bycatch as unacceptable under MLMA criteria, and 3) proposes three alternative suites of management options for reducing bycatch to acceptable levels as required by the MLMA Section 7085.

---

<sup>1</sup> CNRA 2022. California takes action to protect biodiversity at U.N. negotiations. <https://resources.ca.gov/Newsroom/Page-Content/News-List/California-Action-Protect-Biodiversity-UN>

<sup>2</sup> <https://www.theguardian.com/environment/2023/jun/05/conservationists-welcome-gillnet-fishing-ban-in-great-barrier-reef-world-heritage-area>

<sup>3</sup> <https://www.pressoffice.gov.bz/statutory-instrument-signed-into-law-to-ban-gill-nets-from-marine-waters/>

<sup>4</sup> <https://wildlife.ca.gov/Conservation/Marine/MLMA/Master-Plan/Prioritizing-Management-Efforts/Results-of-Fisheries-Prioritization>

## 1. Concerns with CDFW Bycatch Evaluation

The introduction of the report summarizes the MLMA and its innovative features, including “shift[ing] the burden of proof toward demonstrating that fisheries and other activities are sustainable, rather than assuming that exploitation should continue until damage has become clear.”<sup>5</sup> Given the history of set gillnets in California and this legal framework, the presumption under uncertainty must be that set gillnet bycatch is unacceptable unless evidence demonstrates it is not.

*Our overarching concerns with the bycatch report are:*

- Requiring proof that bycatch is causing harmful impacts rather than placing the burden on demonstrating sustainability as required by the MLMA
- Broadly concluding there is low to moderate impact that is justified in a detailed appendix primarily composed of opinions rather than data or analysis
- Ignoring and failing to use the best available science
- Omitting critical information needed to assess the amounts of bycatch, such as cumulative discard and discard mortality rates from the federal fishery observer data
- Not estimating total fishing effort, catch and discard amounts based on the available data, in direct conflict with the MLMA which requires information and analysis of the type and amount of bycatch (FGC 7085(a) and (b))
- Ignoring whale entanglements in California set gillnets
- Declaring all bycatch issues “low, moderate, or unknown.” and setting an impossible threshold for “high” risk
- Failing to consider or recommend management measures that would meaningfully reduce bycatch, such as limits to soak times, hard caps on bycatch, catch limits, or area closures
- Failing to clearly identify target, incidental, and bycatch species as per Step 2 of the MLMA Master Plan’s Bycatch Inquiry
- Disregarding the need to address or manage the retained “incidental catch” of dozens of species that are part of this multi-species fishery
- Failing to assess cumulative impacts of bycatch on marine ecosystems
- Analyzing 12 of the 125 species caught in set gillnets, excluding key vulnerable species such as soupfin (tope) shark, which is a depleted species with high discard mortality that is a candidate for federal Endangered Species Act listing
- Ignoring the component of the fishery targeting white seabass, even though it is managed under the same permit
- Failing to provide data or estimates of post-release mortality for all species evaluated, and failing to recognize that mortality rates from the observer data are the minimum mortality rates for each species evaluated

*Specific concerns with the bycatch evaluation report:*

- The analysis and conclusion of the report take the opposite of a precautionary approach, repeatedly arguing that there is no proof of threats to sustainability. The report concludes that bycatch risks from this fishery are low to moderate, while having no estimates of total fishing effort or total catch, a small sample of observer data, and population status information for only a handful of the over one hundred species caught in this fishery. Example statements from the report:
  - p. 20: “There is a lack of scientific evidence that concludes the amount of bycatch mortality is significantly impacting the role that each bycatch species is serving in the ecosystem.”

---

<sup>5</sup> California Marine Life Management Act. <https://wildlife.ca.gov/Conservation/Marine/MLMA>

- p. A1-40: “No humpback whale has been documented as bycatch in the halibut set gill net fishery in California.”
- p. A1-5: For brown smoothhound sharks, the report concludes there is a “Low... probability of mortality exceeding levels that have been scientifically determined to be necessary for the continued viability of the species” with the rationale that “There is no directed fishery for brown smoothhound and 8.5” halibut gillnet mesh has low risk of entanglement as indicated by observer data. The species is fast growing, matures early, and has a relatively large number of pups compared to other shark species. Fishbase.org lists brown smoothhound as having a high vulnerability to fishing.” Yet the report also states “There is no status estimate or stock assessment”, and the observer data indicates brown smoothhound has the highest number dead discards of all sharks, rays, or skates with discard mortality of 47%. A Productivity Susceptibility Analysis ranked brown smoothhound the second most vulnerable state-managed finfish behind Pacific angel shark (Swasey et al. 2016).<sup>6</sup>
- P. A1-2: The report states there are management measures to ensure sustainability for Pacific angel shark and “The Pacific angel shark is largely protected from fishing pressure. Therefore, it is presumed that the population remains relatively stable in California (ESR).” Yet it also states: “Department PSA completed in 2019 indicated angel shark ranked first in vulnerability among 36 fish and invertebrate species analyzed” and CDFW ranked the set gillnet fishery for Pacific angel shark as the number one priority of all state finfish fisheries in the Ecological Risk Assessment prioritization.<sup>7</sup>
- The analysis and conclusions are not supported by quantitative analysis of available data. Instead, the meat of the report is a series of appendices outlining the opinions of agency staff. Quantitative analysis needs to be included in the report to support the conclusions of low to moderate risk, and any conclusions of low to moderate impact require strong data on catch estimates and stock health. The bycatch evaluation is based on ancillary information and professional opinions, without significant acknowledgment or discussion of potential impacts due to the many unknowns. Step 2 of the bycatch inquiry in the MLMA requires the distinguishing of target and bycatch species. Incidental species under the MLMA must be accounted for and managed as either target species under the sustainability standard outlined in Chapter 5 or as bycatch. The Report does not distinguish between which species will be addressed and managed as target or bycatch species, or any plan for managing target species other than California halibut caught in this fishery. Species that are retained at high rates or landed in high frequency with California halibut should be considered for additional management to ensure sustainable harvest.
- The Humpback whale evaluation (Appendix 1I. on page A1-40) concludes that no humpback whales have ever been documented as entangled in this fishery, despite the current [Marine Mammal Protection Act listing of this fishery as a Category II fishery](#) driven by the take/serious injury of a humpback whale in 2007. There is ample publicly available data in NMFS reports on whale entanglements on the West Coast, which include an unidentified “gillnet” category. An unknown portion of these records are likely to be the Southern California set gillnet fishery, but this data is not presented or discussed as a potential conservation issue. The report denies that California set gillnets entangle humpback whales, contradicting NMFS conclusion in its Marine Mammal Protection Act Category II listing that the fishery entangles humpback whales. The report completely ignores the federally listed endangered humpback whale Central American Distinct Population Segment that feeds primarily in California and Oregon and contradicts the Department’s and NMFS’s precautionary whale-safe fisheries policy

---

<sup>6</sup> Swasey et al. 2016. Productivity and Susceptibility Analysis for Selected California Fisheries. [https://www.oceansciencetrust.org/wp-content/uploads/2017/07/CDFW-PSA-Report-on-Select-CA-Fisheries\\_Final-.pdf](https://www.oceansciencetrust.org/wp-content/uploads/2017/07/CDFW-PSA-Report-on-Select-CA-Fisheries_Final-.pdf)

<sup>7</sup> <https://wildlife.ca.gov/Conservation/Marine/MLMA/Master-Plan/Prioritizing-Management-Efforts/Results-of-Fisheries-Prioritization>

for attributing unidentified entanglements. However, in its draft Conservation Plan for the Dungeness Crab Fishery, CDFW recognizes that the Central American DPS feeds primarily in California and Oregon.<sup>8</sup>

- The report attempts to separate sets targeting halibut vs. white seabass in the federal observer data (the observer program tracks the set gillnet fishery as a single fishery, whereas the report analyzes the data in a halibut-centric way), and fails to provide the total number of observed sets when speaking to number of discarded animals/mortality rates in these halibut-targeting sets. While separating these sets may show minor differences in species compositions of bycatch, ultimately the management required to reduce bycatch in either fishery would have to apply to both the white seabass and halibut fishery, as there is only a general gillnet permit issued for both and the main issue with both fisheries is the high rate of bycatch and mortality. Separating these sets ultimately proved to cause further issues and confusion with the limited data, made it impossible to extrapolate observer data into estimates of total catch for the fleet, and minimized the evaluation of the cumulative impacts of the set gillnet fishery on the marine ecosystem throughout this evaluation process.
- The report does not include an evaluation of cumulative impacts, and omits fundamental data for evaluating bycatch such as the cumulative discard rate and discard mortality for the fishery. The report does not present data on the total number and types of species caught and discarded in the fishery. Cumulative impacts are important to evaluate for the ecosystem-based management approach and sustainability standards of the MLMA.
- The management options recommended in the report have promise, however stronger options that directly reduce bycatch and bycatch mortality per the MLMA are not presented. In the list of 3 options proposed, the only measure that would potentially minimize bycatch is the restriction of transferability of the permits to reduce effort over time, which the report suggests could be a short-term option (3-5 years) or a longer-term option that would eventually sunset the permits over time. The short-term option would ultimately not reduce bycatch. The report is equivocal on the question of whether legislation is necessary to implement this option. In the case with non-selective gear-types such as gillnets, reducing fishing effort may be the simplest avenue towards reducing overall bycatch rate.
- The report sets a nearly impossible and inappropriate bar, as few bycatch concerns would ever warrant a “high” risk rating except for an endangered species with a known decreasing population. Extinction is not the standard for high risk. This is the opposite of precautionary.
- The report incorrectly states “there is an FMP for brown smoothhound” (p. A1-5). No such FMP exists.

## **2. Identification of Unacceptable Types and Amounts of Bycatch in Set Gillnets**

In previous submissions to the Commission, we have identified unacceptable types and amounts of bycatch in the set gillnet fishery based on the four MLMA criteria. Attached to this letter, we provide a detailed analysis of available data to provide supporting evidence.

The following table summarizes the types and amounts of bycatch that are unacceptable in the California set gillnet fishery, identifying which MLMA unacceptability criteria each one meets:

---

<sup>8</sup> CDFW. Draft Conservation Plan for the California Dungeness Crab Fishery. 2021. p. 35

<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=195798&inline> “The Central America DPS breeds along the Pacific coasts of Costa Rica, Panama, Guatemala, El Salvador, Honduras, and Nicaragua and feeds almost exclusively off California and Oregon (81 FR 62260).”

Type and/or Amount of Bycatch	Legality	Sustainability	Other Fisheries	Ecosystem
Take of humpback whales	X	X		
Take of gray whales		X		
Cumulative discard rate of 64% and discard mortality rate of 54%		X		X
Minimum of 125 species taken as bycatch		X		X
Discard mortality of sharks, rays, skates, chimeras (spotted ratfish, brown smoothhound shark, bat ray, soupfin shark, leopard shark, California skate, Pacific angel shark, sevengill shark, gray smoothhound shark, Pacific electric ray, white shark)		X		X
Take and discard mortality of minimum of 150 California sea lions per year		X		X
Discard mortality of California halibut (12% discard rate with 40% mortality rate) and white seabass (91% mortality rate)		X	X	
Discard mortality of Rock Crab and Pacific mackerel			X	
Incidental catch of giant sea bass		X	X	
Incidental catch of juvenile white sharks (25 per year)		X		X
Discard mortality of barred sand bass			X	
Take and Discard mortality of cormorants		X		
Discard and discard mortality of lingcod, cabezon, sheephead, bocaccio rockfish, barracuda, kelp bass, white croaker, yellowfin croaker, ocean whitefish, king salmon, Humboldt squid, spiny dogfish)			X	
Incidental catch of species without management measures to ensure sustainability (bat ray, spider crab, common thresher shark, California skate, longnose skate, shovelnose guitarfish, soupfin shark)		X		
Catch of federally managed species that is not accounted for in or subject to federal annual catch limits (Pacific mackerel, leopard shark, longnose skate, California scorpionfish, big skate, bocaccio rockfish, copper rockfish, cowcod rockfish, king salmon)	X	X		
Discard mortality of crustaceans (rock crab, spider crab, pointer crab, red rock crab, unidentified crabs and crustaceans)		X		
Lost gear (ghost fishing and marine debris)		X		X

### 3. Management Recommendations

The lack of at-sea monitoring programs in state fisheries to assess bycatch and integrate data into population and stock models seriously impedes the ability to ensure species are being managed to the sustainability requirements of the MLMA. Where evidence for significant or potentially harmful discards exists, a risk-averse and adaptive management approach is required under the MLMA. Fish and Game Code Section 7085(c) states: “In the case of unacceptable amounts or types of bycatch, conservation and management measures that, in the following priority, do the following: (1) Minimize bycatch. (2) Minimize mortality of discards that cannot be avoided.”

We are concerned with approaches that focus only on improved data collection with a plan to revisit the fishery bycatch data at a future date. Our organization has requested additional management measures in the set gillnet fishery since 2012 and have engaged through the Bycatch Work Group, MLMA Master Plan Revision, Fishery Prioritization, Scaled Management Process for California Halibut, and the Bycatch Evaluation. Given the number of fishery priorities requiring attention and resource constraints at the Department and Commission, we have low confidence that such a re-evaluation will occur, or that any meaningful management would result. There is ample evidence before you to act and we strongly urge additional management measures be put in place now to minimize bycatch in this fishery.

To meet the MLMA requirement to minimize bycatch to acceptable types and amounts, we see three alternative pathways forward. The sheer number of species and bycatch concerns in the fishery means that comprehensive and

intensive management is necessary if the fishery is going to continue. Option 1 is to implement a comprehensive suite of management measures to bring the fishery into the 21<sup>st</sup> century and ensure sustainability as per the MLMA. Option 2 is to initiate a near-term phase out of the fishery, which would be the simplest solution and minimize management costs. Option 3 is a hybrid approach that phases out the fishery in the long-term, while putting in reasonable measures to control bycatch. We request the Commission analyze and consider each of these options. The following table summarizes the elements of each approach, and each element is described below.

	<b>Option 1: Comprehensive management to MLMA sustainability requirements</b>	<b>Option 2: Near-term phase out and transition program</b>	<b>Option 3: Long-term phase-out with bycatch reduction measures</b>
<b>Active measures to reduce bycatch and/or bycatch mortality</b>	<ul style="list-style-type: none"> <li>• 24-hour soak time</li> <li>• Bycatch hard caps</li> <li>• Sustainability measures for incidental species</li> <li>• Prohibition on landings of giant seabass and white shark (with an exception for donating dead white sharks for research)</li> </ul>	<ul style="list-style-type: none"> <li>• Permits expire in 5 years</li> </ul>	<ul style="list-style-type: none"> <li>• Permits fully non-transferable</li> <li>• Retire latent permits</li> <li>• 24-hour soak time</li> <li>• Prohibition on landings of giant seabass and white shark (with an exception for donating dead white sharks for research)</li> </ul>
<b>Data collection and monitoring</b>	<ul style="list-style-type: none"> <li>• 100% Bycatch monitoring (observers and/or video)</li> <li>• Gear marking</li> <li>• Electronic logbooks</li> <li>• Electronic vessel tracking</li> <li>• Data-limited assessments for priority species</li> <li>• Assess gear loss rates</li> </ul>	<ul style="list-style-type: none"> <li>• EFPs to identify new low-bycatch methods</li> </ul>	<ul style="list-style-type: none"> <li>• Pilot observer program with partial, random coverage</li> <li>• Gear marking</li> <li>• Electronic logbooks</li> <li>• Assess lost gear rates</li> <li>• EFPs to identify new low-bycatch methods</li> </ul>
<b>Legal Requirements</b>	<ul style="list-style-type: none"> <li>• Secure Incidental Take Permit for ESA-listed humpback whales</li> </ul>	<ul style="list-style-type: none"> <li>• N/A</li> </ul>	<ul style="list-style-type: none"> <li>• Secure Incidental Take Permit for ESA-listed humpback whales</li> </ul>

### ***Fishing Effort Reduction through Permit Phase out.***

Gillnets, due to their non-selective design and use in areas of high biodiversity, necessitate complex management due to their high rates of bycatch and use in multispecies fisheries. If such management is not practical due to resource constraints, it may be necessary to phase out permits. In 2018, the Commission supported this approach for the drift gillnet swordfish fishery through the passage of Senate Bill 1017 which established a drift gillnet transition program. This program phased out all state permits over a five-year period, established a transition fund, and collected drift gillnets for recycling. In 2022, with support of this Commission, President Biden signed federal legislation to phase out the remaining federal permits for swordfish drift gillnets.

Alternatively, a longer-term phase out of fishing effort over time would reduce bycatch and discard mortality. Retiring latent permits would ensure the fishery does not increase in size. Prohibiting the transfer of permits for the currently active permit holders of the fishery would slowly decrease effort over the long-term, eventually sunseting the fishery. However, unlike a near-term phase out, a longer-term approach must be accompanied with additional bycatch reduction and measures and monitoring. This would over-time reduce fishing effort and therefore reduce bycatch impacts; and allow for the natural transition to a cleaner gear-type to supply California halibut.

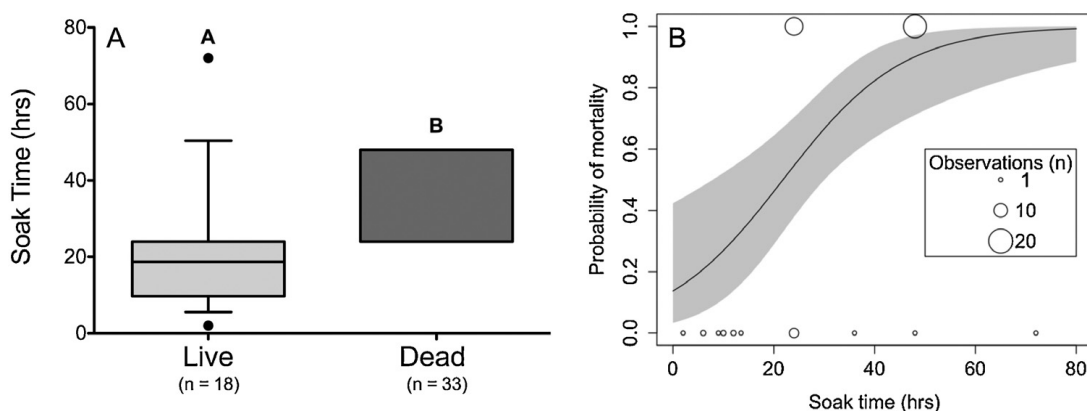
We have heard concerns that phasing out set gillnets would harm fishing communities and result in increased importation of seafood from other countries that may have higher bycatch and/or less regulation. However, there is no evidence to substantiate any of these claims from the experience with the previous bans on set gillnets in state waters in 1994 or off Central California in 2002.

### ***Developing New Methods to Reduce Bycatch***

Hook and line gear is already a profitable and viable method for selectively catching California halibut, white seabass, and many other species caught with set gillnets. It has far lower bycatch and lower discard mortality, limiting bycatch to acceptable types and amounts. Many commercial halibut fishermen and all recreational halibut and white seabass fishermen already use hook and line gear. However, we see value in building on this successful method by exploring the potential to scale up the catch rates and volumes of this sustainable gear. For example, in the Pacific halibut fishery in the Pacific northwest, British Columbia, and Alaska, the primary gear type is bottom longlines (trawls and set gillnets are prohibited). In our discussions with current hook and line California halibut fishermen, we have learned that there may be potential to examine this gear type to evaluate whether it can catch California halibut at higher catch rates while minimizing bycatch. The Commission should encourage interested fishermen to develop and test new low-bycatch methods to catch California halibut and white seabass at higher volumes through experimental fishing permits.

### ***24-hour maximum soak time***

Reducing the amount of time gear is set underwater can reduce the stress, injury and mortality impacts on more sensitive species. Reducing soak time could also reduce depredation impacts on target and bycatch species, and marine mammal and seabird entanglements from opportunistic predators like sea lions and cormorants. There is direct evidence from the Southern California set gillnet fishery supporting a 24-hour limit on set gillnet soak time to reduce fishing mortality. Lyons et al. 2013 analyzed the effect of several factors on mortality rates of juvenile white sharks in California set gillnets. They concluded soak time was the most important factor determining mortality rates, with statistical significance (See Lyons et al. 2013 Fig. 8). Data provided by the Department on soak times reported in set gillnet fishery logbooks from 2007 to 2022 indicated that 72% of sets are less than 24 hours, while the remaining 28% of sets are greater than 24 hours. Based on these numbers and the significant difference in mortality rates, we estimate that the overall juvenile mortality rate would decrease by approximately 50% if soak times were limited to 24 hours or less (see Table). Arguably this finding would be applicable to other species. For example, other sensitive species with high discard mortality such as the Soupfin shark (64% discard mortality from the Federal observer data)<sup>9</sup> may also benefit from reduced soak durations. Similar to gear tending requirements in other fisheries, there would be an exception during extreme weather events.



**Lyons et al. 2013. Fig. 8.** The effect of gillnet soak time (all fisheries combined) on juvenile white shark bycatch mortality where (A) average gillnet soak times are compared for gillnet-caught white sharks landed live versus dead and (B) the probability of gillnet-caught white shark mortality relative to gillnet soak times. Panel A: Whiskers represent 10–90<sup>th</sup> percent quartiles; however, soak times for deceased sharks were only reported as either 24 or 48 h. Letters above bars indicate a significant difference at  $p < 0.001$ . Panel B: The probability of mortality increased significantly with increases in soak time ( $n = 51$ ;  $p = 0.00153$ ; shaded areas represent 95% confidence intervals).

<sup>9</sup> NMFS. CA Set Gillnet Observer program, observed catch 2007 – 2017. Available :. Accessed June 2023.

	Soak Time	>24 hrs	<24 hrs	Overall mortality rate
Current management	% of sets	2%	72%	40%
	Mortality Rate	90%	20%	
24 hour max soak time	% of sets	0%	100%	20%
	Mortality Rate	90%	20%	

Table. Example calculations based on Lyons et al. 2013<sup>10</sup> white shark mortality rates by soak time and CDFW soak time data from fishery logbooks for California set gillnets targeting California and white seabass 2007-2022.<sup>11</sup> Mortality estimates are approximate. Columns refer to cumulative soak times greater than or less than 24 hours.

### ***Bycatch monitoring by fishery observers and electronic video monitoring***

To address the data collection needs for managing this fishery, some version of bycatch monitoring is needed. Bycatch monitoring could be accomplished through a pilot state-run observer program that would document catch and discards of marine animals, as well as information on mesh size, panel length, soak duration, and number of observed sets. Alternatively, the state could work with the existing NMFS West Coast Gillnet Observer Program to increase federal observer coverage and improve data collection protocols. Electronic video monitoring could eventually also be used to collect this data, or a combination of both EM and state observers could be used. 100% observer coverage is necessary to detect and obtain accurate estimates of rare event bycatch of species such as leatherback sea turtles, loggerhead sea turtles, and white sharks.<sup>12</sup>

### ***Bycatch Hard Caps***

In the absence of a permit phase-out, hard caps on the bycatch of priority and sensitive species are an essential tool ensure that bycatch in the fishery does not exceed specified levels to ensure sustainability and acceptable types and amounts of bycatch. Hard caps can be set at the fleetwide or vessel level and require 100% bycatch monitoring using human observers and/or electronic video monitoring. There is strong precedent for this approach in fisheries with bycatch concerns. The federal west coast groundfish bottom fishery requires 100% observer coverage or electronic video monitoring to enforce individual quotas (“catch shares”) by species for each vessel. The Hawaii shallow-set pelagic longline fishery requires 100% observer coverage to enforce hard caps on endangered leatherback and loggerhead sea turtle interactions. Species for which hard caps should apply in the set gillnet fishery include humpback whales, gray whales, white sharks, sea lions, giant seabass, tope sharks, seabirds, sea turtles, dolphins, and others.

### ***Gear marking***

We support the Department report recommendation to require set gillnet gear marking to allow for identification of gillnets involved in wildlife entanglements. The set gillnet fishery operates in Biologically Important Areas for several whale species that migrate and feed on the West Coast, and NMFS has designated the fishery a Category II fishery under

<sup>10</sup> Lyons, K., et al., The degree and result of gillnet fishery interactions with juvenile white sharks in southern California assessed by fishery-independent and -dependent methods. Fish. Res. (2013) <http://dx.doi.org/10.1016/j.fishres.2013.07.009>

<sup>11</sup> CDFW data request, 2023. Soak Duration in the CA Set Gillnet Fishery, 2007-2022.

<sup>12</sup> Carretta and Curtis paper.

the Marine Mammal Protection Act due to interactions with ESA listed humpback whales.<sup>13</sup> It is currently unlikely to identify gillnet whale entanglements to the California set gillnet fishery due to inadequate gear-marking of the current fisheries and the difficulty of the disentanglement operations to get clear photos of the gear. In addition to current gear-marking requirements, a unique mesh-netting should be selected for the California set gillnet fishery that would distinguish the nets from other gillnet fisheries (such as Mexico's CA halibut set gillnet fishery). A standardized mesh net color, in addition to unique identification numbers or patterns along cork lines and buoys, may help address concerns related to unidentified set gillnets in marine mammal entanglements. Gear-marking improvements should be reviewed by NMFS's entanglement response team to ensure the changes meet their identification needs during whale entanglement operations.

#### ***Additional Logbook data requirements***

Additional logbook requirements that would support management of the fishery should be implemented. In addition to ensuring current logbook requirements are enforced, logbook reporting should also include the net length, mesh size, and soak duration for each set, as well as the number of sets that occurred during each fishing trip. This data would inform total fleetwide fishing effort estimates, and total catch and bycatch estimates.

#### ***Data-limited assessments for priority species***

One of the primary focal points of the MLMA Master Plan Revisions was to develop new data-limited tools to assess species sustainability. Priority species should be identified for data-limited assessments, with particular attention on species that are incidentally landed and/or discarded at high rates.

#### ***Lost Gear***

Set gillnets are collected in the California Lost Fishing Gear Recovery Project. Lost set gillnets, sometimes referred to as "ghost gear" are marine debris that are documented off California to entangle fish, crabs, lobster, and birds.<sup>14</sup> This represents additional bycatch mortality that is not included in fishery observer data estimates of bycatch. The Department needs to monitor gear tags which are required to be placed on each set gillnet and must be returned to CDFW at the end of each 1-2 fishing seasons. Unreturned tags would indicate lost gear.

#### ***Incidental Take Permit for ESA-Listed Humpback Whales***

The legality of bycatch is one of the four criteria in determining bycatch acceptability under the MLMA. The federal Endangered Species Act prohibits the take of an endangered species without an incidental take permit (ITP). The set gillnet fishery takes humpback whales in California, which include the endangered Central American DPS and the threatened Mexico DPS. Recently, the lack of an ITP for the California Dungeness crab fishery to entangle endangered whales and sea turtles resulted in litigation and a subsequent court settlement. As a result, the Department is currently applying for an ITP and submitting a Conservation Plan to NMFS for that fishery. The Department must also initiate a similar process for the California set gillnet fishery and other fisheries that entangle endangered whales and sea turtles.

---

<sup>13</sup> NMFS. CA Halibut, White Seabass and Other Species Set Gillnet (>3.5 in mesh) - MMPA List of Fisheries. Available: <https://www.fisheries.noaa.gov/national/marine-mammal-protection/ca-halibut-white-seabass-and-other-species-set-gillnet-35-mesh> Accessed: June 2023.

<sup>14</sup> UC Davis Lost Gear Retrieval. 2022. Accessed Feb 2023. <https://www.ucdavis.edu/climate/news/tons-lost-fishing-gear-recovered-southern-california-coast>

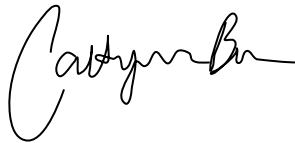
## Conclusion

A precautionary approach is required under the MLMA where evidence is lacking to demonstrate sustainability. It is clear there need to be management changes to reduce bycatch in the California set gillnet fishery. We remain committed to working through this process with the Department, the Commission, fishery participants, and other stakeholders to find a path forward that minimizes bycatch while promoting robust fishing communities and opportunities. Together, we can build on all the work to date to ensure California remains a leader in biodiversity protection and ecosystem-based fishery management under the MLMA.

Sincerely,



Geoffrey Shester, Ph.D.  
California Campaign Director & Senior Scientist



Caitlynn Birch  
Pacific Marine Scientist

*Attachment: Oceana Bycatch Data Analysis of the California Set Gillnet Fishery by Caitlynn Birch and Geoff Shester*

## Oceana Bycatch Data Analysis of The California Set Gillnet Fishery

By Caitlynn Birch and Geoffrey Shester, Ph.D.

July 7, 2023

### Background

All around the world, set gillnets are recognized as harmful to marine ecosystems, biodiversity, and vulnerable species.<sup>1</sup> Compared to other gear-types, bottom set gillnets continue to pose some of the most complex management and conservation challenges.<sup>2</sup>

Through the state's scaled management process as outlined in the Marine Life Management Act's (MLMA) Master Plan for Fisheries, the California set gillnet fishery rose to the top of the priority list of fisheries in need of updated management due to potential ecosystem risk.

The commercial California set gillnet fishery is a single permit fishery (General Gill/Trammel Net Permit issued by CDFW) that targets and lands multiple species. Under this permit, fishermen may fish with 6.5 inch mesh to target white seabass or 8.5 inch mesh to target California halibut. However, multiple species are retained with both mesh sizes and the fishery is considered a multi-species target fishery. Nets may be up to 6,000 feet long and are anchored to the seafloor at each end. After nearshore and depth restriction closures in Southern and Central California in 1994 and 2002, the current fishery operates in Southern California federal waters (3-200 nautical miles [nm]) south of Point Arguello and in state waters outside of 1nm from the Channel Islands. In 2022, there were 100 set gillnet permit holders, and of these there are 32 active vessels in the set gillnet fishery that have recently landed halibut. This fishery is under jurisdiction of and managed by the state of California through the California Fish and Game Commission (CFG) and California Department of Fish and Wildlife (CDFW).

This document is intended to support a holistic view of the publicly available information on bycatch and catch compositions in the California set gillnet fishery, and to support the MLMA Master Plan's bycatch inquiry<sup>3</sup> to help inform bycatch acceptability under the MLMA criteria (MLMA Section 7085) as part of the state's ecosystem-based management objectives.

---

<sup>1</sup> Forney KA. et al.2001. Central California gillnet effort and bycatch of sensitive species, 1990-1998. Proceedings of Seabird Bycatch: Trends, Roadblocks, and Solutions. University of Alaska Sea Grant. AK-SG-01-01. <https://swfsc-publications.fisheries.noaa.gov/publications/CR/2001/2001For.pdf>.

<sup>1</sup> Read AJ et al. 2006. Bycatch of marine mammals in U.S. and global fisheries. *Conserv Biol* 20: 163–169

<sup>1</sup> Daniel J. Pondella and Larry G. Allen. "The decline and recovery of four predatory fishes from the Southern California Bight" *Marine Biology* Vol. 154 Iss. 2 (2008) Available at: [http://works.bepress.com/daniel\\_pondella/15/](http://works.bepress.com/daniel_pondella/15/)

<sup>1</sup> Zydels, R. et al. 2009. Bycatch in gillnet fisheries—an overlooked threat to waterbird populations. *Biol. Conserv.* 142, 1269– 1281.

<sup>1</sup> Rodríguez-Quiroz, G. et al. 2012. Fisheries and Biodiversity in the Upper Gulf of California. *Oceanography*. pp. 281-296.

<sup>1</sup> Regular, P. et al. (2013) 'Canadian fishery closures provide a largescale test of the impact of gillnet bycatch on seabird populations', *Biology Letters*, 9(4). doi: 10.1098/rsbl.2013.0088.

<sup>1</sup> Reeves RR. et al.2013 Marine mammal bycatch in gillnet and other entangling net fisheries, 1990–2011.*Endanger. Spec. Res.*20, 71–97. (doi:10.3354/esr00481)

<sup>1</sup> Wallace BP. et al. 2013 Impacts of fisheries bycatch on marine turtle populations worldwide: toward conservation and research priorities. *Ecosphere* 4, 40. (doi:10.1890/es12-00388.1)

<sup>1</sup> Forney et al. 2020. A multidecadal Bayesian trend analysis of harbor porpoise (*Phocoena phocoena*) populations off California relative to past fishery bycatch. *Mar Mam Sci.* 2021; 37: 546– 560. <https://doi.org/10.1111/mms.12764>

<sup>2</sup> Alverson D, et al. 1994. A global assessment of fisheries bycatch and discards. United Nations Food and Agriculture Organization Fisheries Technical Paper 339

<sup>2</sup> Cook R. 2003. The magnitude and impact of by-catch mortality by fishing gear. In: Valdimarsson G, Sinclair M (eds) *Responsible fisheries in the marine ecosystem*. FAO, Rome

<sup>2</sup> Chuenpagdee, R. et al. 2003). Shifting gears: assessing collateral impacts of fishing methods in US waters. *Frontiers in Ecology and the Environment*. 1. 517-524.

<sup>2</sup> Shester GG, Micheli F. Conservation challenges for small-scale fisheries: Bycatch and habitat impacts of traps and gillnets. *Biol Conserv.* 2011;14(5):1673–1681

<sup>2</sup> Micheli, F. et al. 2014. A risk-based framework for assessing the cumulative impact of multiple fisheries. *Biological Conservation*, 176, pp.224-235.

<sup>3</sup> Marine Life Management Act, Master Plan for Fisheries, Chapter 6. Ecosystem Based Objectives: limiting bycatch to acceptable types and amounts. <https://mlmamasterplan.com/6-ecosystem-based-objectives/#limiting>

## Available Data

### **Publicly Available Federal Observer Data**

We analyzed publicly available federal observer data collected by National Marine Fisheries Service (NMFS), which placed trained independent fishery observers on the commercial California halibut and white seabass set gillnet fishery from 2007 to 2017 for set gillnet vessels operating in southern California.<sup>4</sup> Observer data is available back to 1990, however, the 2007-2017 period reflects the fishery under current regulations. Over this 11-year period, the observer program was active in 6 years: 2007, 2009-2013, and 2017. This data is reported by number of animals caught, kept, and returned. Observers evaluate the mortality of all individual animals returned (discarded) (returned dead, returned alive, returned unknown). The bycatch and catch are not recorded by weight. NMFS observers are placed on vessels for the primary purpose of estimating marine mammal interactions, under the authority of the Marine Mammal Protection Act. However, all species caught are recorded and documented. California halibut and white seabass are targeted via different mesh sizes, however, the observer program aggregates all data from both mesh sizes. NMFS considers the set gillnet fishery a single fishery under their Marine Mammal Protection Act List of Fisheries. The observer program measures fishing effort in number of sets. A set is a single deployment and retrieval of a set gillnet. One or more sets may occur on each fishing trip. Observed sets are aggregated by year, and do not provide spatial information, soak duration (duration net is left underwater to fish), or panel length. In addition, the observer program records the number of sets observed during each year, and estimates the total number of fleetwide sets in 3 of the 6 observed years, but did not estimate fleetwide sets for the last 3 years (2012, 2013, 2017).

Year	Number Sets Observed	Estimated Total Sets	Percentage Observed
2007	248	1,387	17.8%
2010	216	1,724	12.5%
2011	171	2,123	8.1%
2012	250	Not estimated	Unknown
2013	169	Not estimated	Unknown
2017	204	Not estimated	Unknown

*Table 1. National Marine Fisheries Service (NMFS) Set Gillnet Observer program 2007 – 2017; number of sets observed each year during that period, and the NMFS estimated total number of fleetwide sets for 2007, 2010, and 2011. NMFS was unable to estimate total number of fleetwide sets for the years 2012, 2013, and 2017. Total sets observed over the 6 years observed are 1,258 sets.*

### **Total Landings Days Data**

Total landings days, or trips, were provided by the California Department of Fish and Wildlife for the set gillnet fishery for the period of 2007 – 2021 (Table 2).<sup>5</sup> This data was summarized by year and by mesh size. Since multiple sets may occur on each trip, the number of sets these trips represent is unknown. For 2007 - 2016 the large-mesh and small-mesh set gillnet trips were combined due to logbook reporting at the time. Logbook reporting requirements changed after 2016 and were then separated by mesh-size, although some trips were still reported as combined small and large mesh in the subsequent years after the reporting change. Large mesh (>8in) set gillnet trips are considered California halibut

<sup>4</sup> National Marine Fisheries Service. Accessed 2022. California Set Gillnet Observer Program, Observed Catch 2007-01-01 to 2017-12-31. Available: <https://media.fisheries.noaa.gov/2022-01/setnet-catch-summaries-2007-2010-2013-2017.pdf> \*observer data is recorded by number of animals

<sup>5</sup> CDFW data request. Total Landing days/trips annually in the CA set gillnet fishery. 2022.

targeting trips and small-mesh (6-7.9in) trips considered white seabass and yellowtail targeting trips. As the publicly available federal observer data does not distinguish between halibut and white seabass targeting trips, both large-mesh and small-mesh trips were combined to produce an estimate of total effort in number of total fleetwide trips per year for the set gillnet fishery.

Year	Set* (small & large)	Large-mesh Set	Small-mesh Set	Total Set Net Trips
2007	1,945			1,945
2008	1,936			1,936
2009	2,131			2,131
2010	1,587			1,587
2011	2,096			2,096
2012	1,752			1,752
2013	1,720			1,720
2014	1,243			1,243
2015	1,076			1,076
2016	1,136	214	115	1,465
2017	112	859	379	1,350
2018	91	1,178	387	1,656
2019		1,395	299	1,694
2020		1,312	284	1,596
2021		1,356	196	1,552

Table 2. Total landing days or trips annually in the California set gillnet fishery. Data were summarized as count of unique date/captain/vessel/gear combinations by year, each indicating one day of landing (i.e. one trip) by a single individual. Provided by CDFW, 2022.

### Protected Species Data

In addition to protected species counts and species documented in the federal observer data, we sourced expanded estimates of marine mammal, seabird and white shark take, and whale entanglement records (not expanded) from federal reports.

#### Marine mammals

We sourced expanded estimates of marine mammal take associated with the set gillnet fishery based on observed interactions from the most recent Stock Assessment Reports for the four marine mammal species in the federal observer data: CA sea lion<sup>6</sup>, harbor seal<sup>7</sup>, long beaked common dolphin<sup>8</sup>, short beaked common dolphin<sup>9</sup>.

Whale entanglement records were sourced from the Marine Mammal Protection Act List of Fisheries<sup>10</sup> as well as NOAA Fisheries Whale Entanglement Records on the U.S. West Coast.<sup>11</sup>

<sup>6</sup> NMFS. 2019. Marine Mammal Stock Assessment Reports by Species/Stock: CALIFORNIA SEA LION (*Zalophus californianus*): U.S. Stock. NOAA Fisheries.

[https://media.fisheries.noaa.gov/dam-migration/ca\\_sea\\_lion\\_final\\_2018\\_sar.pdf](https://media.fisheries.noaa.gov/dam-migration/ca_sea_lion_final_2018_sar.pdf). Accessed November 2022. \*estimates by fishery located in Table 1.

<sup>7</sup> NMFS. 2014. Marine Mammal Stock Assessment Reports by Species/Stock: HARBOR SEAL: California Stock. NOAA Fisheries. [https://media.fisheries.noaa.gov/dam-migration/po2014sehr-ca\\_508.pdf](https://media.fisheries.noaa.gov/dam-migration/po2014sehr-ca_508.pdf)

<sup>8</sup> NMFS. 2021. Marine Mammal Stock Assessment Reports by Species/Stock: LONG-BEAKED COMMON DOLPHIN (*Delphinus delphis bairdii*): California Stock.

<https://media.fisheries.noaa.gov/2022-08/2021-LONG-BEAKED%20COMMON%20DOLPHIN-California%20Stock.pdf> Accessed 2023

<sup>9</sup> NMFS. 2021. Marine Mammal Stock Assessment Reports by Species/Stock: SHORT-BEAKED COMMON DOLPHIN (*Delphinus GHOSKLVdelphis*):

California/Oregon/Washington Stock. <https://media.fisheries.noaa.gov/2022-08/2021-shortbeak-common-dolphin-CaliforniaOregonWashington%20Stock.pdf>

<sup>10</sup> NOAA Fisheries. MMPA List of Fisheries: CA Halibut, White Seabass and Other Species Set Gillnet (>3.5in mesh). Available:

<https://www.fisheries.noaa.gov/national/marine-mammalprotection/ca-halibut-white-seabass-and-other-species-setgillnet-35-mesh>. Accessed 2023

<sup>11</sup> NMFS. 2021. Large whale entanglements off the U.S. West Coast, from 1982-2017. Saez, L., D. Lawson, and M. DeAngelis.

NOAA Tech. Memo. NMFS-OPR-63A, 50 p. Updated through 2022 by NMFS. 2023. NOAA Fisheries Whale Entanglement Response Program. Official Report. L. Saez,. Jan 2023.

### *Seabirds*

In addition to observed seabirds in the federal observer data, we sourced expanded seabird estimates from the National Bycatch Report database, though expanded estimates are only available for two of the six years observed (2011, 2012).<sup>12</sup>

### *White shark*

We sourced expanded estimates of white shark catch from the Status Review of the Northeastern Pacific Population of White Sharks (*Carcharodon Carcharias*) under the Endangered Species Act, which estimated total juvenile white shark catch from fishery logbooks.<sup>13</sup> Data from this report was sourced from Table 4.3, and expanded estimates are only available through 2011. We requested updated data from CDFW, however, data since 2011 were not released due to asserted confidentiality concerns.

## **Methods**

### ***Catch Compositions***

To calculate catch compositions from the federal fishery observer data we analyzed the species groups present in the catch, examined the composition of catch that is kept versus discarded, and evaluated discard mortality across species and species groups.

### *Species Groups*

We categorized the observer data into several species groups for different purposes: taxonomic or ecological similarities and management considerations. Taxonomic groups included marine mammals, seabirds, bony fish, Chondrichthyes (sharks, skates, rays, chimeras), and invertebrates. Management consideration categories differed depending on the purpose of analysis. Under the MLMA, incidentally caught species must be managed as either bycatch or as target species. For this purpose we identified incidentally caught and landed species that should be considered for management as “target species” due to their high catch volume and retainment rate. For catch composition analyses, incidentally caught and retained individuals were separated from incidentally caught and discarded individuals.

### *Composition of Catch Kept vs. Discarded*

The observer data was used to determine the composition of the catch that is kept by the fishers versus the portion that is discarded. Kept catch refers to the species that are retained for sale or consumption, while discarded catch includes species that are discarded at sea due to various reasons, such as regulatory requirements, market preferences, damaged individuals, or undersized individuals. To understand the portion of retained catch that is considered “target” species catch versus “incidental” species catch, we also separated the retained catch by target and non-target species in some cases.

### *Discard Rate and Mortality Rate*

We calculated discard rate by species, by species group, and in aggregate as the number of individuals discarded divided by the total number of individuals caught.

Discard mortality rate is available for all species in the federal observer dataset, defined as the number of individuals discarded dead divided by the total number of individuals discarded. Discard mortality rate can be achieved through observer programs which document the mortality of the animal as it is discarded. Post-release mortality is additional mortality that occurs after the species is released alive, caused by injury, stress or predation. Post-release mortality is

---

<sup>12</sup> NMFS. National Bycatch Report Database, Seabird Bycatch by Fishery 2011, 2012, Update 2. <https://appsst.fisheries.noaa.gov/stapex/f?p=243:101:29602220642274:> Accessed August 2022

<sup>13</sup> Dewar et al. 2013. Status Review of the Northeastern Pacific Population of White Sharks (*Carcharodon Carcharias*) under the Endangered Species Act, 2013. <https://repository.library.noaa.gov/view/noaa/17705>. Table 4.3 Average estimated catches from U.S. west coast set nets 2001-2011.

generally not known and requires species and fishing-gear specific studies conducted in labs, with tracking devices, or tanks on vessels. However, post-release discard mortality can be a significant source of additional mortality. In the absence of post-release mortality information, the discard mortality rate must be understood as the minimum mortality rate for the species discarded.

We calculated discard mortality rate for the total observer dataset across all species combined, across species groups, and for individual species.

### *Catch Composition Across Species*

Calculating catch composition across different species involves analyzing the observer data to determine the relative proportions of each species within the overall catch. By aggregating the data annually or across total observed years, we generated catch composition estimates for different species. These estimates can be expressed as proportions or percentages of the total catch, providing insights into the species' relative contribution to the overall catch.

By analyzing catch compositions across species groups, the composition of catch kept versus discarded, and across different species, valuable information is obtained for fisheries management, conservation, and scientific assessments. These simple calculations aid in understanding the species interactions, identifying bycatch concerns, evaluating the impact of fishing practices, and can inform effective management strategies.

### *Spatial and Soak Time Data*

We requested data on soak durations of the CA set gillnet fishery from CDFW which was provided as a range of soak times and frequency reported in logbooks for sets occurring in the California set gillnet fishery (CA halibut and white seabass) from 2007 to 2022.<sup>14</sup> This was analyzed to understand the proportion of sets with soak times under 25 hours already occurring in the set gillnet fishery.

Spatial extent of the fishery was estimated using GIS from known depth restrictions for the gear, and current regulations. CDFW also provided a map of fishing effort by block and halibut landings for comparison.<sup>15</sup>

### *Total Effort and Total Catch Estimates*

A management challenge with the California set gillnet fishery and the available data is estimating total fishing effort in consistent metrics with observed effort. The Bycatch Inquiry of the MLMA states that the "types and amounts" of bycatch must be evaluated to determine the acceptability of the bycatch. To achieve accurate "amounts" of bycatch the available observer data must be extrapolated to estimate total fleetwide catch and discarded catch using estimates of total effort.

Estimating total fishing effort can be done in several different approaches depending on the gear type and availability of data. For gillnets for which net length and soak duration are variable for each set, the best estimate of standardized fishing effort is net soak hours and net length per unit set, which could be extrapolated to the total fleetwide sets deployed during a given period.

The publicly available observer data collected from 2007 – 2017 is recorded by number of sets observed, and does not include soak duration or net length. Additionally, the observer program only estimated total number of fishing sets per year for 3 of the 6 years observed, and both CDFW and NMFS analysts have indicated those estimates of total sets are highly uncertain.

---

<sup>14</sup> CDFW data request, 2023. Soak Duration in the CA Set Gillnet Fishery, 2007-2022.

<sup>15</sup> CDFW, pers. comms. 2023. Set gillnet fishing effort associated with CA halibut landings 2007 – 2017.

Further complicating total effort estimates, The California Department of Fish and Wildlife (CDFW) has been tracking total effort of the fishery in number of trips, or number of times a vessel lands catch. In 1 trip, multiple sets may be occurring depending on where the fisher is fishing, how many times the nets were deployed and retrieved, weather conditions and success of fishing effort.

Due to data gaps in fishing effort, accurate catch per unit effort (CPUE), a standard metric in fishery management used to achieve both target and non-target total catch in a given fishery, is difficult to achieve for the set gillnet fishery.

Based on the limits in available data, one approach is to use the CDFW annual trip counts to develop a minimum, lower-bound estimate of total effort that can be used to generate minimum, lower-bound estimates of total catch and discards. Following this approach, we assumed that 1 trip is equivalent to 1 set, and used the CDFW provided total number of fishing trips per year as an estimate of total fishing sets per year. From this, we calculated the annual mean number of sets that occurred over that period. We multiplied the annual mean effort by the previously calculated CPUE based upon observer data, and were able to estimate total annual fleetwide catch. These estimates should be considered minimum estimates with the understanding that one trip can represent multiple sets. This method for developing minimum total catch estimates based on assuming 1 trip = 1 set was recommended as a viable approach in consultations with Department and Commission data analysts and a NMFS bycatch data analyst. They should not be viewed as central or absolute estimates.

In the future management of this fishery, fishery managers should consider better data collection efforts to estimate total fleetwide fishing effort. Total fishing effort is a standard tool of fishery management to assess impacts on both target species and bycatch species, as well as inform better stock assessments and more informed management decisions.

### ***Spatial Extent of Fishing Effort***

The California set gillnet fishery operates in Southern California federal waters (3-200nm offshore) and outside of 1nm of the Channel Islands. Depths deeper than 60 fathoms are typically too deep to fish using set gillnets.

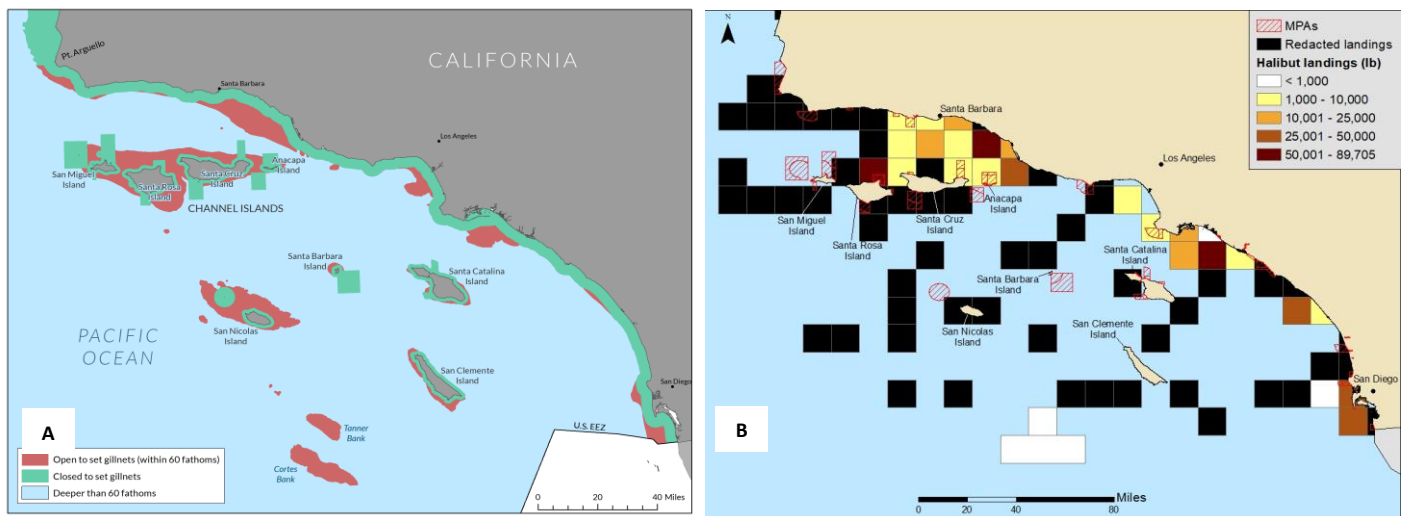


Figure 1. Map (A) produced by Oceana depicts a spatial approximates of areas of potential set gillnet fishing (for both CA halibut and white seabass) in Southern California based on depths (shallower than 60 fathoms) and current regulations. Areas in red are areas open to set gillnet fishing and shallower than 60 fathoms. Map (B) produced by the California Department of Fish and Wildlife shows fishing effort in California halibut landings by spatial block for the CA halibut set gillnet fishery (CDFW, 2023).<sup>16</sup> Black blocks indicate areas where set gillnet effort occurred, but do not show landings for confidentiality purposes.

<sup>16</sup> CDFW, pers. comms. 2023. Set gillnet fishing effort associated with CA halibut landings 2007 – 2017.

## Results and Discussion

### Soak Time

The duration that nets are set and left underwater can have an impact on mortality of the catch. From available soak time data, approximately 73% of sets occurring in the fishery are less than 25 hours in length, 26% of sets are between 26-50 hours in length, and 6% of sets are left to soak for more than 50 hours.

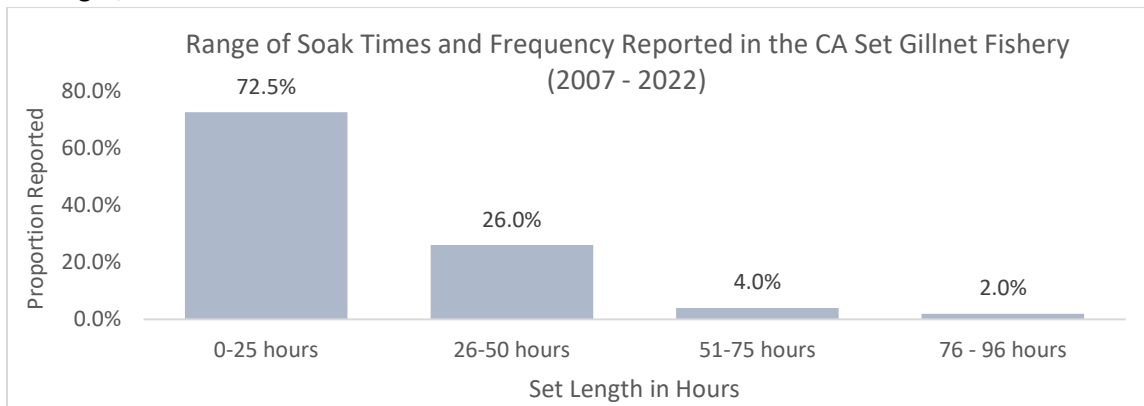


Figure 2. Range of soak times and frequency reported for sets occurring in the California set gillnet fishery (CA halibut and white seabass) from 2007 to 2022 (CDFW, 2023)<sup>17</sup>. Reported soak times may be subject to inaccuracies as they are based on self-reported data from gillnet logbooks. In cases where data were provided as <1%, we assumed 0.5%.

### Catch and Bycatch Compositions from Raw Observer data

Federal observer data was used to understand general catch and bycatch compositions, discard mortality, and trends in which species are generally kept or discarded.

Over the 6 years of available data, 1,258 sets were observed in the CA set gillnet fishery, or an average of 210 sets per year observed. Over these 1,258 sets, 18,255 animals were caught, 6,530 were retained, and 11,725 were discarded. Of the 11,725 animals discarded, 6,359 were discarded dead, 5,127 were alive at the time of discard, and 239 had an unknown mortality status upon discarding (Table 9, Appendix).

Discard rate, or the proportion of total catch that is not retained, is generally used as a measure of waste or ecological impact, allowing for comparisons across fisheries.<sup>18</sup> From federal observer data of the set gillnet fishery, the aggregate discard rate across all species ranges from 51% to 72% over the 6 years observed, and retention rates range from 28% to 49% (Table 3).

Year	% Discarded	% Retained	% Discard mortality
2007	65	35	50
2010	70	30	71
2011	51	49	57
2012	63	37	36
2013	72	28	43
2017	61	39	56
<b>Total across all years</b>	<b>64</b>	<b>36</b>	<b>54</b>

Table 3. Annual discard rate and percent discard mortality rate aggregated for all catch for each year observed based on federal observer data of the CA set gillnet fishery.

<sup>17</sup> CDFW data request, 2023. Soak Duration in the CA Set Gillnet Fishery, 2007-2022.

<sup>18</sup> U.S. National Bycatch Report. Corporate Author(s): U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service; Published Date: 2011; Series: NOAA technical memorandum NMFS-F/ SPO; 117E.

Aggregated over the 6 years, 64% of all catch has been discarded and 36% retained. Of the total percent retained for all years, 21% is made up of California halibut and white seabass, the primary target species, and 15% consists of other incidentally retained species (Figure 3.)

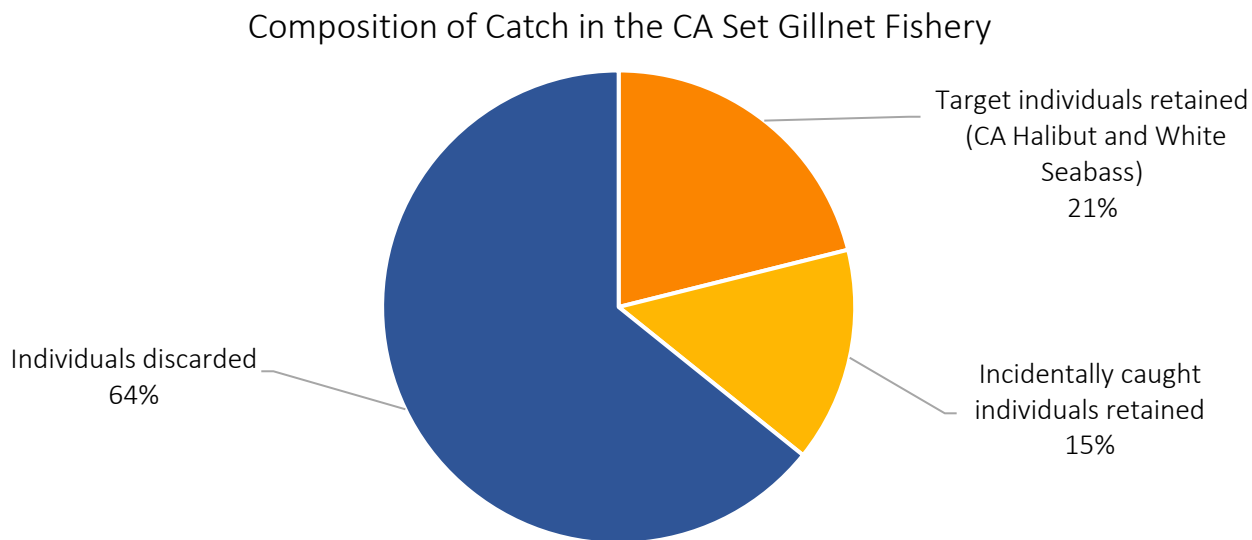


Figure 3. Catch composition of observed catch by number of animals, separated into three categories: retained CA halibut and white seabass, retained incidental individuals, and discarded individuals. Based upon 6 years of federal observer data 2007 – 2017.<sup>19</sup>

Of the total discarded catch by number of animals, the majority (41%) is made up of invertebrate species, followed by cartilaginous fish (Chondrichthyes) species (29%) and bony fish species (29%). Marine mammal and seabirds, from the observer data, make up 1% of total discarded catch by number of animals (Figure 4).

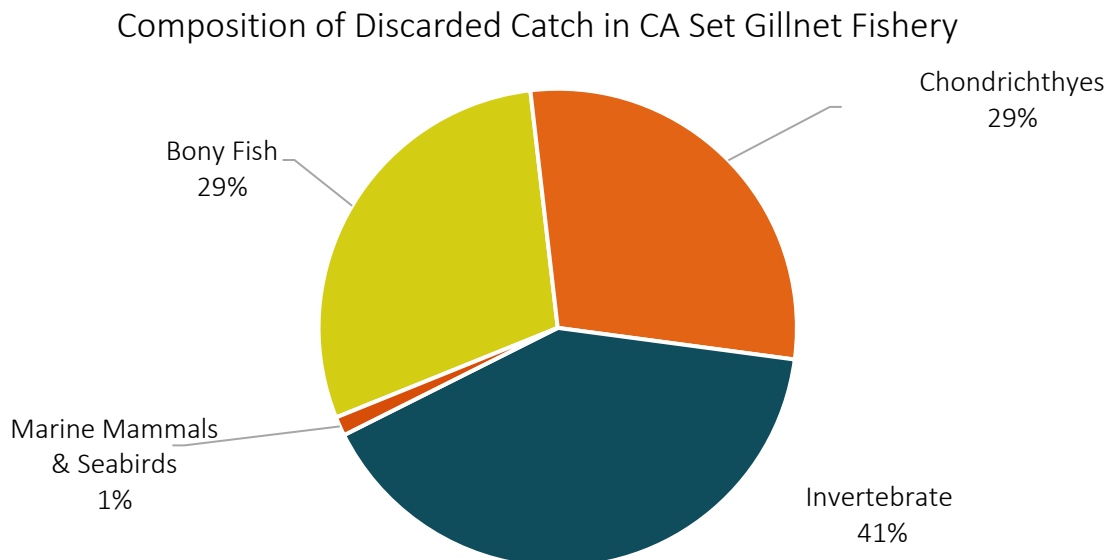


Figure 4. Composition of discarded catch in the CA set gillnet fishery based upon federal observer data 2007 – 2017.<sup>15</sup> Categories of catch include bony fish, marine mammals and seabirds, Chondrichthyes, and invertebrates.

<sup>19</sup> National Marine Fisheries Service. Accessed 2022. California Set Gillnet Observer Program, Observed Catch 2007-01-01 to 2017-12-31. Available: <https://media.fisheries.noaa.gov/2022-01/setnet-catch-summaries-2007-2010-2013-2017.pdf> \*observer data is recorded by number of animals

Of the top most frequently discarded species in the observer data, 9 are Chondrichthyes species (sharks, skates, rays and chimeras), 8 are invertebrate species (crab, squid, sea stars, and sea snails), and 3 are bony fish species (P. mackerel, Scorpionfish, and California halibut).

Top Discarded Species	Observed Discarded (over 1,258 sets)	Discard Mortality Rate
1. Pacific Mackerel	2126	98.7%
2. Rock Crab	1280	56.4%
3. Jumbo (Humboldt) Squid	847	88.9%
4. Spider Crab	845	49.8%
5. Swell Shark	731	2.1%
6. Pointer Crab	646	81.4%
7. California Skate	391	8.7%
8. Sea Star	382	0.3%
9. Bat Ray	376	20.5%
10. Spiny Dogfish	336	35.7%
11. Longnose Skate	307	23.1%
12. Brown Smoothhound Shark	284	47.2%
13. Whelk	240	2.1%
14. Pacific Angel Shark	216	13.9%
15. Spotted Ratfish	199	67.3%
16. Red Rock Crab	179	92.2%
17. Yellow Crab	137	58.4%
18. California Halibut	121	39.7%
19. California Scorpionfish	119	41.2%
20. Leopard Shark	108	45.4%

Table 4. Top 20 discarded species ranked by number of animals discarded in the federal observer data.<sup>20</sup>

### Discard Mortality

For this fishery based on observer data, total discard mortality rate across all six years for all species discarded is 54.2%, meaning that of all sets observed, over half of the animals thrown back were considered dead by the observer upon discarding. These do not include any estimates or assumptions of post-release mortality. The discard mortality rate varies across years however, and ranges from as low as 36% and up to 71% in certain years. The overall discard mortality rate can be driven by certain species that are caught and discarded in high numbers and have high mortality rates.

Discard mortality rate varies greatly across species groups and for individual species (Figure 5 & Table 5). Marine mammals and seabirds had the highest observed discard mortality rate at 97%. Bony fish species across the 1,258 sets observed had a 78% discard mortality rate; invertebrate species had a discard mortality rate of 62%, and Chondrichthyes had a discard mortality rate of 22%.

<sup>20</sup> National Marine Fisheries Service. Accessed 2022. California Set Gillnet Observer Program, Observed Catch 2007-01-01 to 2017-12-31. Available: <https://media.fisheries.noaa.gov/2022-01/setnet-catch-summaries-2007-2010-2013-2017.pdf> \*observer data is recorded by number of animals

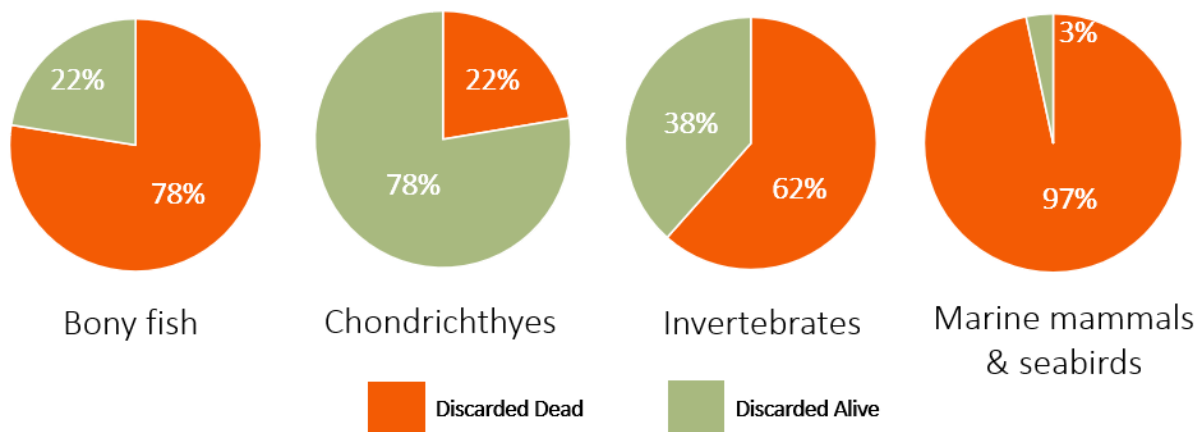


Figure 5. Discard mortality rate based on federal observer data across species groups: Bony fish, Chondrichthyes, Invertebrates, and Marine Mammals and Seabirds.<sup>21</sup>

The high discard mortality rate among the observed bony fish is likely being driven by Pacific mackerel, which have a high discard mortality rate (98.7%) and are caught in high numbers in some observed years. Conversely, the low discard mortality rate across all Chondrichthyes species caught is likely being driven by the high rate of survival of the most caught and discarded sharks species, the swell shark, which has a discard mortality rate of 2%. Other shark and ray species have much higher discard mortality rates, such as the Soupfin shark (64% discard mortality rate) and the Leopard shark (45% discard mortality rate), but are caught less frequently. Lyons et al. 2013 found that the discard mortality rate of juvenile white sharks is significantly related to soak time, with higher discard mortality rates in longer soaks.<sup>22</sup>

Example Species	Higher Discard Mortality Rate	Example Species	Lower Discard Mortality Rate
Pacific Mackerel	98%	Thornback Ray	3%
Rock Crab	56%	Whelk	2%
CA Halibut	40%	Swell Shark	2%
Giant seabass	50%	Spiny Lobster	4%
Brown Smoothhound Shark	47%	Cabazon	11%
Leopard Shark	45%	Pacific Angel Shark	14%
Spotted Ratfish	67%	Sea Cucumber	7%
Soupfin Shark	64%	California Skate	9%

Table 5. Example species with high discard mortality rates and lower discard mortality rates from the federal observer data. Discard mortality rates are aggregated across all years of available data.<sup>17</sup>

A chart of all observed species and their discard mortality rate can be found in the Appendix (Table 9).

### Post-release Mortality

Few studies exist on post-release mortality for species caught in the CA set gillnet fishery. There is a post-release mortality study examining spiny dogfish (*S. acanthias*) mortality in gillnets, a species also caught in the CA set gillnets. Rulifson (2007) caught *S. acanthias* by commercial otter trawl and gillnet, with sampled fish left on deck for 10–15 min (to simulate fishing processes) before being categorized as live or dead. Sub-samples (n=480 for each gear type) were then placed in sea pens that were anchored for 48 hours.<sup>23</sup> The direct capture mortality was 0% for trawl (0.5–1.5 h tow

<sup>21</sup> National Marine Fisheries Service. Accessed 2022. California Set Gillnet Observer Program, Observed Catch 2007-01-01 to 2017-12-31. Available: <https://media.fisheries.noaa.gov/2022-01/setnet-catch-summaries-2007-2010-2013-2017.pdf> \*observer data is recorded by number of animals

<sup>22</sup> Lyons, K., et al., The degree and result of gillnet fishery interactions with juvenile white sharks in southern California assessed by fishery-independent and -dependent methods. Fish. Res. (2013), <http://dx.doi.org/10.1016/j.fishres.2013.07.009>

<sup>23</sup> Rulifson, R. A. (2007). Spiny dogfish mortality induced by gill-net and trawl capture and tag and release. North American Journal of Fisheries Management 27, 279–285.

duration) and 17.5% for gillnet (19.5–23.5 h soak time). After 48 hours in the sea pens, there was no further mortality of trawl-caught *S. acanthias*, whereas there was a further 33% mortality for those caught by gillnet.

A study estimating post-release mortality of a shark species (*M. antarcticus*) in the same family (Triakidae) as many of the shark species caught in the set gillnet fishery may give an approximate indication of additional mortality in the fishery for closely related species. Lyle et al. (2014) conducted a study in the Tasmanian gillnet fisheries, where post-release survival for the *M. antarcticus* shark was estimated to be 58.7%, indicating an additional post-release mortality of 41.3%.<sup>24</sup> Species in the California set gillnet fishery most closely related to *M. antarcticus* are the smoothhound shark species, such as the brown smoothhound and gray smoothhound. Other shark species that are in the same Triakidae family are the leopard shark and soupfin (tope) shark. Several studies indicate variable survival of this family in fisheries, and note post-release mortality is an important source of overall mortality associated with fishing.<sup>20,25,26</sup>

Hyatt et al. (2012) looked at the blood chemistry of carcharhiniform sharks caught in experimental gillnets and longlines, with higher lactate concentrations and a greater pH in gillnet-caught sharks, underlining the greater physiological effect of capture in gillnets.<sup>27</sup>

While a proportion of fish can survive capture and release from gillnets, some individuals escaping from this gear may retain monofilament netting around parts of the body,<sup>28,29</sup> but it is uncertain as to how frequent this is and the subsequent effects of these events.

Studies conducted on post-release mortality in gillnet fisheries suggest potential bycatch mitigation measures to reduce overall mortality in gillnet fisheries could include spatial and temporal restrictions, restrictions on net lengths, limiting soak times, changes to mesh size, hanging ratio and height of the net and modifications to the thickness and color of the netting.<sup>30,31</sup>

### ***Incidentally Retained Species***

The CA set gillnet fishery is considered a multi-species fishery and many species that are legal and marketable are retained in addition to the primary target species CA halibut and white seabass. There are several species from the observer data that appear to be clear secondary targets -- caught in high numbers relative to other species and high rates of retainment. These species are yellowtail, CA barracuda, and common thresher shark. These three species are retained over 75% of the time and make up a significant proportion of non-target species retained.

There are many species in the observer data frequently caught and retained, but a significant proportion of the catch of these species is also discarded. This may be due to differing fisher preferences or availability of markets for certain species. Many of these species are Chondrichthyes, and include the bat ray (44% retained), pacific angel shark (37% retained), and California skate (22% retained) among others. Many species in the dataset are caught and discarded more often than they are retained, with a small number of individuals retained over the 6 years of data. A full table of the top retained species (ranked by observed number retained) can be found in Table 6. From observer data, incidentally retained catch (excluding California halibut and white seabass) comprises 15% of the total catch of the set gillnet fishery

---

<sup>24</sup> Lyle, J. M., Bell, J. D., Chuwen, B. M., Barrett, N., Tracey, S. R. & Buxton, C. D. (2014). Assessing the impacts of gillnetting in Tasmania: implications for by-catch and biodiversity. Institute for Marine and Antarctic Studies, University of Tasmania. Fisheries Research and Development Corporation (FRDC) Project No. 2010/016. Available at [http://dipwwe.tas.gov.au/Documents/GillNetting\\_Impacts\\_Tas\\_Bycatch\\_Biodiversity\\_FRDC2010.pdf/](http://dipwwe.tas.gov.au/Documents/GillNetting_Impacts_Tas_Bycatch_Biodiversity_FRDC2010.pdf/)

<sup>25</sup> Frick, L. H., Reina, R. D. & Walker, T. I. (2010a). Stress related changes and post-release survival of Port Jackson sharks (*Heterodontus portusjacksoni*) and gummy sharks (*Mustelus antarcticus*) following gill-net and longline capture in captivity. *Journal of Experimental Marine Biology and Ecology* 385, 29–37.

<sup>26</sup> Frick, L. H., Walker, T. I. & Reina, R. D. (2012). Immediate and delayed effects of gill-net capture on acid–base balance and intramuscular lactate concentration of gummy sharks, *Mustelus antarcticus*. *Comparative Biochemistry and Physiology A* 162, 88–93.

<sup>27</sup> Hyatt, M. W., Anderson, P. A., O'Donnell, P. M. & Berzins, I. K. (2012). Assessment of acid–base derangements among bonnethead (*Sphyrna tiburo*), bull (*Carcharhinus leucas*) and lemon (*Negaprion brevirostris*) sharks from gillnet and longline capture and handling methods. *Comparative Biochemistry and Physiology A* 162, 113–120.

<sup>28</sup> Schwartz, F. J. (1984). A blacknose shark from North Carolina deformed by encircling monofilament line. *Florida Scientist* 47, 62–64

<sup>29</sup> Seitz, J. C. & Poulakis, G. R. (2006). Anthropogenic effects on the smalltooth sawfish (*Pristis pectinata*) in the United States. *Marine Pollution Bulletin* 52, 1533–1540.

<sup>30</sup> Thorpe, T. & Frierson, D. (2009). Bycatch mitigation assessment for sharks caught in coastal anchored gillnets. *Fisheries Research* 98, 102–112

<sup>31</sup> Baeta, F., Batista, M., Maia, A., Costa, M. J. & Cabral, H. (2010). Elasmobranch by-catch in a trammel net fishery in the Portuguese west coast. *Fisheries Research* 102, 123–129.

and contributes 41.6% of the total retained catch for the fishery. For each top retained species, we evaluated whether there are management measures in the set gillnet fishery to ensure sustainability, such as size limits, catch limits, or closed seasons. Some species managed under federal Fishery Management Plans (FMP) have annual catch limits when targeted in federal fisheries, but those limits do not apply to the set gillnet fishery and set gillnet catch is not applied to those federal limits. Those species include Pacific mackerel, leopard shark, longnose skate and California scorpionfish.

Species	FMP	Assessed	Management measures for sustainability	ESR	Observed Retained	Observed Discarded	Discard Mortality Rate	Percent Retained
Seabass, White (target)	Yes (State FMP)	Yes (2016)	Size limit	Yes	2975	74	91%	98%
Halibut, California (target)	No	Yes (2011)	Size limit	Yes	878	121	40%	88%
Crab, Spider	No	No	None	No	321	845	50%	28%
Ray, Bat	No	No	None	No	296	376	20%	44%
Mackerel, Pacific	Yes (CPS FMP)	Yes (2021)	None *	No	228	2126	99%	10%
Crab, Rock	No	No	None	Yes	221	1280	56%	15%
Yellowtail	No	No	Size limit	Yes	192	4	100%	98%
Whelk	No	No	None	No	137	240	2%	36%
Barracuda, California	No	No	Size limit	Yes	134	43	98%	76%
Shark, Common Thresher	Yes (HMS FMP)	Yes	None	No	130	14	29%	90%
Shark, Pacific Angel	No	No	Size limit	Yes	125	216	14%	37%
Skate, California	No	No	None	No	110	391	9%	22%
Shark, Leopard	Yes (G FMP)	No	None*	No	106	108	45%	50%
Skate, Longnose	Yes (G FMP)	Yes	None*	No	78	307	23%	20%
Guitarfish, Shovelnose	No	No	None	No	68	28	4%	71%
Shark, Brown Smoothhound	No	No	Size limit	Yes	55	284	47%	16%
Scorpionfish, California	Yes (G FMP)	Yes (2017)	Size limit	No	55	119	41%	32%
Crab, Pointer	No	No	None	No	54	646	81%	8%
Shark, Swell	No	No	None	No	52	731	2%	7%
Shark, Soupfin	Ecosystem Component Species GFMP	No	None	No	40	86	64%	32%
Squid, Jumbo (Humboldt)	No	No	None	No	27	847	89%	3%
Bass, Giant Sea	No	No	1 per trip in set nets (closed fishery)	No	26	8	50%	76%

Table 6. Top incidentally retained species, ranked by number of observed animals retained.<sup>32</sup> Percent retained and discard mortality rate is included to better understand total mortality of each species, along with relevant management information for each species. \* Species has a federal Annual Catch Limit, but set gillnet catch is not counted toward or subject to such limit.

Many species caught in this fishery as bycatch or as incidentally landed species (that are not target species) do not have stock assessments or other indicators of stock status, or basic management for sustainability in place under guidelines of the MLMA. The CA set gillnet fishery is considered a multi-species fishery, which can be difficult in terms of management under the Marine Life Management Act, which manages species in fisheries as either “targets” or “bycatch”. The MLMA states this in terms of incidental fisheries catch:

“Incidental catch is defined as fish caught incidentally during the pursuit of the primary target species, but legal and desirable to be sold or kept for consumption. Some may define these species as secondary targets or retained bycatch. For purposes of FMP development these species should be accounted for and must be managed either as target species under the sustainability standards outlined in Chapter 5, or as bycatch under the bycatch standard described below.” (MLMA Master Plan for Fisheries, Chapter 6)<sup>33</sup>

<sup>32</sup> National Marine Fisheries Service. Accessed 2022. California Set Gillnet Observer Program, Observed Catch 2007-01-01 to 2017-12-31. Available: <https://media.fisheries.noaa.gov/2022-01/setnet-catch-summaries-2007-2010-2013-2017.pdf> \*observer data is recorded by number of animals

<sup>33</sup> Marine Life Management Act Master Plan for Fisheries, Chapter 6: Ecosystem-based Objectives. <https://mlmamasterplan.com/6-ecosystem-based-objectives/>

Many species retained incidentally are also discarded, making their total mortality (retained + discard mortality) potentially significant, and should be considered for additional management to ensure sustainable harvest.

### ***Target species***

California halibut and white seabass are considered the primary targets of this multispecies gillnet fishery, and combined, both target species landed out of the total catch of the fishery comprise 21% of the total catch. California halibut caught makes up 5.5% of the total catch by number of animals in the observer data. Retained CA halibut comprises 4.8% of the total catch of the fishery, and comprises 13.4% of total retained catch. California halibut has a discard rate of 12%, and a discard mortality of 39.7%. White seabass comprises 16.7% of the total catch by number of animals in the observer data. Retained white seabass comprises 16.3% of total animals caught, and makes up 45.6% of total retained catch of the fishery. White seabass has a discard rate of 2.4% and discard mortality rate of 90.5%.

California halibut does not have a current stock assessment (last assessment in 2011), and is not yet managed under a Fishery Management Plan (FMP) with catch quotas, though the state is currently working on a state FMP and updated stock assessment. The California halibut stock in Southern California is depleted, and efforts in all fishing sectors should be explored to reduce bycatch impacts on such a commercially important species in California. From observer data, 12% of halibut caught are discarded, which have a discard mortality rate of 39.7%. Discard mortality does not consider depredation that may be occurring of this resource while the nets are soaking by sea lions and other natural predators, nor does it consider post-release mortality.

White seabass is managed under a state FMP and has a 2016 stock assessment. The most recent stock assessment for white seabass estimates the stock is at 27% of its unfished biomass, indicating depletion, though not “overfished” as defined by the Pacific Fishery Management Council as below 25% of a stock’s unfished biomass.

### ***Protected Species***

#### ***Marine Mammals***

This fishery is a Category II fishery under the Marine Mammal Protection Act (MMPA) for its interactions with protected marine mammals. The primary rationale for the Category II listing is the take of ESA-listed humpback whales.<sup>34</sup> The observer program that monitors this fishery has authority under the MMPA.

Marine mammals this fishery has interacted with historically include the southern sea otter, northern elephant seal, and harbor porpoise. In the current observer data (2007 – 2017) there are 4 identified species of marine mammals the fishery has interacted with during this period: CA sea lion (n= 90), harbor seal (n = 9), long-beaked common dolphin (n = 2), and the short-beaked common dolphin (n = 2). From observer data, all marine mammals caught are discarded and have a near 100 percent discard mortality rate (99%). These numbers are observed marine mammal interactions and are not expanded. An unknown number of marine mammals breakaway with portions of netting still entangled around their body, and additional mortality and injury of these marine mammal stocks should be considered.

NMFS provides expanded estimates of marine mammal fishery related death and injury in their Stock Assessment Reports for marine mammals.<sup>35</sup> From these reports an estimated 150 CA sea lions are killed each year in the CA set gillnet fishery, out of a total 197 estimated fishery related mortalities from observed fisheries.<sup>36</sup> An estimated 23 harbor seals are killed annually in the CA set gillnet fishery, though the California Harbor seal stock has not been evaluated since

---

<sup>34</sup> NOAA Fisheries. MMPA List of Fisheries: CA Halibut, White Seabass and Other Species Set Gillnet (>3.5in mesh). Available: <https://www.fisheries.noaa.gov/national/marine-mammalprotection/ca-halibut-white-seabass-and-other-species-setgillnet-35-mesh>. Accessed 2023

<sup>35</sup> NMFS. Marine Mammal Stock Assessment Reports by Species/ Stock. <https://www.fisheries.noaa.gov/national/marinemammal-protection/marine-mammal-stock-assessmentreports-species-stock>

<sup>36</sup> NMFS. 2019. Marine Mammal Stock Assessment Reports by Species/Stock: CALIFORNIA SEA LION (*Zalophus californianus*): U.S. Stock. NOAA Fisheries. [https://media.fisheries.noaa.gov/dammigration/ca\\_sea\\_lion\\_final\\_2018\\_sar.pdf](https://media.fisheries.noaa.gov/dammigration/ca_sea_lion_final_2018_sar.pdf). Accessed November 2022. \*estimates “by fishery” located in Table 1.

2013. An estimated  $\geq 1.6$  Long beaked common dolphins, and  $\geq 3$  short beaked common dolphins are killed annually in the fishery.

The NMFS West Coast Entanglement program has identified the take of a humpback whale in 2007, and a gray whale in 2020, to the Southern California set gillnet fishery.<sup>37</sup> Large whale entanglements are an ongoing problem on the U.S. West Coast and have become more common over the last decade, but due to a lack of unique gear marking requirements for the CA set gillnet fishery and other fisheries, most whale entanglements remain unidentified to the fishery-level. Efforts to implement better gear-marking and identification protocols in many fishing sectors in California and other states are ongoing. From known records of whale entanglements on the West Coast 2001 – 2022, 22 gray whales, 12 humpbacks, and 1 unidentified whale have been entangled in unidentified gillnets.<sup>38</sup> Unidentified gillnets are commercial gillnets that could not be identified down to the fishery level, and could be set gillnet entanglements from the Southern California fishery, among a number of other gillnet fisheries on the West Coast and Mexico. In this analysis, any identified drift gillnet or Tribal gillnet is excluded.

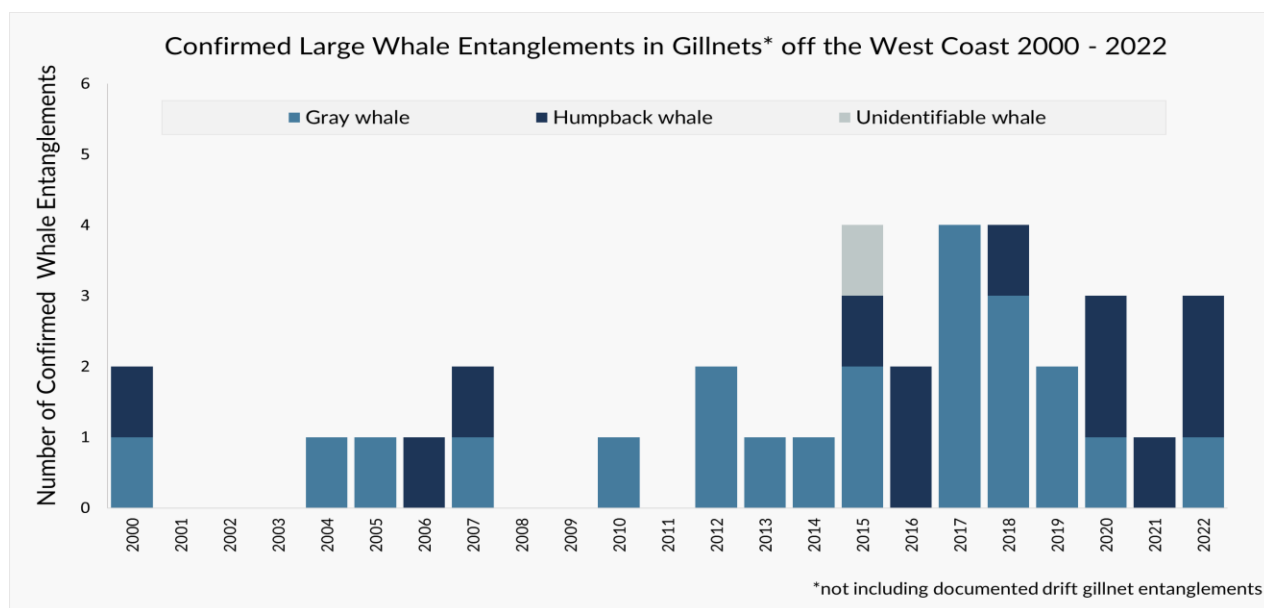


Figure 6. Confirmed Large Whale Entanglements in Gillnets off the West Coast 2000 – 2022. Entanglement records were only included if the entanglement could reasonably be attributed to the California set gillnet (CA halibut and white seabass) fishery. We have included all the “Gillnet” records, excluding any that are drift gillnet, tribal gillnet, or where the “Gear set location code” is OR, WA, Central California and Northern California. Gear-set location filters are set only to “unknown”, “California unknown” or “Southern California”.

<sup>37</sup> NOAA Fisheries. MMPA List of Fisheries: CA Halibut, White Seabass and Other Species Set Gillnet (>3.5in mesh). Available:

<https://www.fisheries.noaa.gov/national/marine-mammalprotection/ca-halibut-white-seabass-and-other-species-setgillnet-35-mesh>. Accessed 2023

<sup>38</sup> NMFS. 2021. Large whale entanglements off the U.S. West Coast, from 1982-2017. Saez, L., D. Lawson, and M. DeAngelis. NOAA Tech. Memo. NMFS-OPR-63A, 50 p. Updated through 2022 by NMFS. 2023. NOAA Fisheries Whale Entanglement Response Program. Official Report. L. Saez, Personal communication. Jan 2023.

### Seabirds

From observer data, there are 4 identified seabird species caught by the fishery and 3 unidentified seabird species. These include the Brandt's Cormorant (n=11), the Common Murre (n=3), the Double-crested Cormorant (n= 1) and the Pelagic Cormorant (n= 1). Unidentified species in the observer data are the unidentified Gull (n=2), unidentified Cormorant (n = 23) and unidentified seabird (n =3). Total seabirds caught from the observer data 2007 - 2017 are 44 birds.

The National Bycatch Report Update 2 database<sup>39</sup> provides expanded estimates for seabirds catch in the set gillnet fishery for 2011 and 2012. In 2011, an estimated 247 seabirds were caught in the set gillnet fishery (49 Brandt's Cormorants and 198 unidentified seabirds); a total of 458 estimated seabirds were caught in 2011 in all observed West Coast fisheries (7 fisheries), indicating set gillnets caught 54% of the estimated seabird catch in 2011 (Table 7). However, the Coefficient of Variance (CV) for the estimates in the set gillnet fishery are high, indicating uncertainty in the extrapolations. In 2012, an estimated 72 seabirds were caught in the set gillnet fishery (18 Pelagic Cormorants and 54 unidentified seabirds); a total of 439 estimated seabirds were caught in 2012 in all observed West Coast fisheries (7 fisheries), indicating set gillnets caught 16% of the estimated seabird catch in 2012 (Table 8). Again, the Coefficient of Variance (CV) for estimates in the set gillnet fishery is high, indicating uncertainty in the extrapolations.

California Halibut/White Seabass and Other Species Set Gillnet (>3.5 in Mesh):						
Common Name	Scientific Name	Year	Bycatch	Unit	CV	Footnote(s)
Brandt's cormorant	Phalacrocorax penicillatus	2011	49.00	INDIVIDUAL	0.61	
Seabirds (unidentified)	Laridae	2011	198.00	INDIVIDUAL	1.03	
<b>Fishery total</b>			<b>247.00</b>			

Table 7. National Bycatch Report Update 2: 2011, expanded estimates of seabird bycatch by fishery; estimated seabird bycatch for the CA halibut/white seabass and other species set gillnet fishery for 2011.

California Halibut/White Seabass and Other Species Set Gillnet (>3.5 in Mesh):						
Common Name	Scientific Name	Year	Bycatch	Unit	CV	Footnote(s)
Pelagic cormorant - Pacific	Phalacrocorax pelagicus	2012	18.00	INDIVIDUAL	0.98	
Seabirds (unidentified)	Laridae	2012	54.00	INDIVIDUAL	0.72	
<b>Fishery total</b>			<b>72.00</b>			

Table 8. National Bycatch Report Update 2: 2012, expanded estimates of seabird bycatch by fishery; estimated seabird bycatch for the CA halibut/white seabass and other species set gillnet fishery for 2012.

### White Sharks

The NMFS status report of the Northeastern white shark population estimates an average of 25 white sharks were caught annually in the CA set gillnet fishery from 2001 – 2011, representing the most recent estimate of annual white shark catch.<sup>40</sup> Most white sharks reported in logbooks over the data period (1982 – 2012) were young of year. White shark mortality increases with soak duration of the nets.<sup>41</sup> This take of white sharks represents 93% of all white shark catch estimated in observed West Coast fisheries.

<sup>39</sup> NMFS. National Bycatch Report Database, Seabird Bycatch by Fishery 2011, 2012, Update 2. <https://appsst.fisheries.noaa.gov/stapex/f?p=243:101:29602220642274:::> Accessed July 2023

<sup>40</sup> Dewar et al. 2013. Status Review of the Northeastern Pacific Population of White Sharks (Carcharodon Carcharias) under the Endangered Species Act, 2013. <https://repository.library.noaa.gov/view/noaa/17705>. Table 4.3 Average estimated catches from U.S. west coast set nets 2001-2011.

<sup>41</sup> Lyons, K., et al., The degree and result of gillnet fishery interactions with juvenile white sharks in southern California assessed by fishery-independent and -dependent methods. Fish. Res. (2013), <http://dx.doi.org/10.1016/j.fishres.2013.07.009>

### ***Data and Management Gaps***

The lack of comprehensive monitoring programs in state fisheries to assess bycatch and integrate data into population and stock models seriously impedes a full understanding of bycatch consequences and impacts on target and incidentally retained species. However, where evidence for significant bycatch exists, a risk-averse and adaptive management approach is clearly warranted.

In addition to identified sustainability concerns and ecosystem risk, this analysis highlights several key areas of uncertainty that warrant improved data collection. These include:

- Gear marking to enable positive and negative attribution of gillnet wildlife entanglements to the California set gillnet fishery.
- Consistent and regular observer coverage and/or electronic video monitoring to increase sample sizes.
- Collection of data on the number and duration of sets, the set location, and length of each net for each set to enable total effort calculations and accurate estimates of total catch and discards.
- Stock assessments or data-limited assessments for incidentally caught and retained species as well as discards.
- Differentiating observer coverage based on set gillnet mesh sizes to compare catch compositions in halibut-targeting vs. white seabass-targeting sets.
- Evaluating the effects of soak time on discard mortality.

Despite these uncertainties and data gaps, the publicly available data on bycatch in the California set gillnet fishery indicates a wide suite of conservation concerns across the MLMA Criteria for determining acceptable levels of bycatch. The high number of species caught in the fishery suggests that significant management improvements are necessary to ensure sustainability and keep bycatch to acceptable types and amounts under the MLMA.

## Appendix

Table 9. NMFS Set Gillnet Observer Data;<sup>42</sup> totals have been compiled over the 6 years of available data 2007 – 2017 over 1,258 sets observed. Included in the table is the Discard Mortality Rate based on observer data, Percent Retained based on observer data, and total extrapolated estimates for 2007 – 2021 based upon the 1set:1trip ratio explained in the *total effort methods* section above. Total extrapolated estimates of catch, discard, and discard mortality are based upon an estimated 24,699 sets from 2007 – 2021. Average annual estimated sets over this period are 1,653.

Species	Total Observed Catch (2007 - 2017)	Observed Retained	Observed Discarded	Observed Returned Dead	Observed Returned Alive	Observed Returned Unknown	Discard Rate (Total discarded/total caught)	Discard Mortality Rate (total discarded dead/total discarded)	Rate Retained (total retained/total caught)	Min Catch Estimate (2007 - 2021)	Min Discard Estimate (2007 - 2021)	Min Discard Mortality Estimate (2007 - 2021)
Seabass, White	3049	2975	74	67	6	1	2.4%	90.5%	97.6%	60,105	1,459	1,321
Mackerel, Pacific	2354	228	2126	2098	28	0	90.3%	98.7%	9.7%	46,404	41,910	41,358
Crab, Rock	1501	221	1280	722	546	12	85.3%	56.4%	14.7%	29,589	25,233	14,233
Crab, Spider	1166	321	845	421	409	15	72.5%	49.8%	27.5%	22,985	16,658	8,299
Halibut, California	999	878	121	48	73	0	12.1%	39.7%	87.9%	19,693	2,385	946
Squid, Jumbo (Humboldt)	874	27	847	753	32	62	96.9%	88.9%	3.1%	17,229	16,697	14,844
Shark, Swell	783	52	731	15	713	3	93.4%	2.1%	6.6%	15,435	14,410	296
Crab, Pointer	700	54	646	526	120	0	92.3%	81.4%	7.7%	13,799	12,735	10,369
Ray, Bat	672	296	376	77	295	4	56.0%	20.5%	44.0%	13,247	7,412	1,518
Skate, California	501	110	391	34	357	0	78.0%	8.7%	22.0%	9,876	7,708	670
Skate, Longnose	385	78	307	71	231	5	79.7%	23.1%	20.3%	7,590	6,052	1,400
Sea Star	382	0	382	1	376	5	100.0%	0.3%	0.0%	7,530	7,530	20
Whelk	377	137	240	5	223	12	63.7%	2.1%	36.3%	7,432	4,731	99
Dogfish, Spiny	357	21	336	120	210	6	94.1%	35.7%	5.9%	7,038	6,624	2,366
Shark, Pacific Angel	341	125	216	30	186	0	63.3%	13.9%	36.7%	6,722	4,258	591
Shark, Brown Smoothhound	339	55	284	134	150	0	83.8%	47.2%	16.2%	6,683	5,599	2,642
Shark, Leopard	214	106	108	49	57	2	50.5%	45.4%	49.5%	4,219	2,129	966
Ratfish, Spotted	201	2	199	134	65	0	99.0%	67.3%	1.0%	3,962	3,923	2,642
Yellowtail	196	192	4	4	0	0	2.0%	100.0%	98.0%	3,864	79	79
Crab, Red Rock	180	1	179	165	11	3	99.4%	92.2%	0.6%	3,548	3,529	3,253
Barracuda, California	177	134	43	42	1	0	24.3%	97.7%	75.7%	3,489	848	828
Scorpionfish, California	174	55	119	49	69	1	68.4%	41.2%	31.6%	3,430	2,346	966
Shark, Common Thresher	144	130	14	4	8	2	9.7%	28.6%	90.3%	2,839	276	79
Crab, Yellow	139	2	137	80	55	2	98.6%	58.4%	1.4%	2,740	2,701	1,577
Shark, Soupfin	126	40	86	55	31	0	68.3%	64.0%	31.7%	2,484	1,695	1,084
Crab, Unidentified	107	0	107	95	12	0	100.0%	88.8%	0.0%	2,109	2,109	1,873
Lobster, California Spiny	103	2	101	4	97	0	98.1%	4.0%	1.9%	2,030	1,991	79
Bass, Barred Sand	101	3	98	36	62	0	97.0%	36.7%	3.0%	1,991	1,932	710
Thornback	99	1	98	3	95	0	99.0%	3.1%	1.0%	1,952	1,932	59

<sup>42</sup> National Marine Fisheries Service. Accessed 2022. California Set Gillnet Observer Program, Observed Catch 2007-01-01 to 2017-12-31. Available: <https://media.fisheries.noaa.gov/2022-01/setnet-catch-summaries-2007-2010-2013-2017.pdf> \*observer data is recorded by number of animals

Guitarfish, Shovelnose	96	68	28	1	27	0	29.2%	3.6%	70.8%	1,892	552	20
California Sea Lion	90	0	90	89	1	0	100.0%	98.9%	0.0%	1,774	1,774	1,754
Sea Cucumber	88	16	72	5	29	38	81.8%	6.9%	18.2%	1,735	1,419	99
Cabezon	77	14	63	7	55	1	81.8%	11.1%	18.2%	1,518	1,242	138
Lingcod	68	5	63	30	33	0	92.6%	47.6%	7.4%	1,340	1,242	591
Skate, Big	65	3	62	0	62	0	95.4%	0.0%	4.6%	1,281	1,222	0
Invertebrate, Unid.	47	9	38	8	4	26	80.9%	21.1%	19.1%	927	749	158
Tunicates, Pelagic	45	0	45	20	0	25	100.0%	44.4%	0.0%	887	887	394
Crustacean, Unidentified	43	6	37	25	12	0	86.0%	67.6%	14.0%	848	729	493
Bass, Giant Sea	34	26	8	4	4	0	23.5%	50.0%	76.5%	670	158	79
Rockfish, Bocaccio	31	0	31	18	10	3	100.0%	58.1%	0.0%	611	611	355
Sheephead, California	28	9	19	7	12	0	67.9%	36.8%	32.1%	552	375	138
Hake, Pacific	27	0	27	27	0	0	100.0%	100.0%	0.0%	532	532	532
Sardine, Pacific	27	0	27	27	0	0	100.0%	100.0%	0.0%	532	532	532
Shark, Horn	26	4	22	1	21	0	84.6%	4.5%	15.4%	513	434	20
Sea Urchin	26	2	24	3	19	2	92.3%	12.5%	7.7%	513	473	59
Butterfish, Pacific	25	12	13	8	5	0	52.0%	61.5%	48.0%	493	256	158
Sole, English	25	2	23	3	20	0	92.0%	13.0%	8.0%	493	453	59
Sole, Fantail	21	6	15	3	12	0	71.4%	20.0%	28.6%	414	296	59
Sanddab, Pacific	21	1	20	7	13	0	95.2%	35.0%	4.8%	414	394	138
Shark, Gray Smoothhound	20	8	12	3	9	0	60.0%	25.0%	40.0%	394	237	59
Cormorant, Unidentified	20	0	20	16	4	0	100.0%	80.0%	0.0%	394	394	315
Sole, Slender	19	2	17	8	9	0	89.5%	47.1%	10.5%	375	335	158
Whitefish, Ocean	19	2	17	4	13	0	89.5%	23.5%	10.5%	375	335	79
Octopus, Unidentified	19	1	18	1	17	0	94.7%	5.6%	5.3%	375	355	20
Crab, Marble	19	0	19	17	2	0	100.0%	89.5%	0.0%	375	375	335
Skate, Starry	19	0	19	2	16	1	100.0%	10.5%	0.0%	375	375	39
Shark, Shortfin Mako	17	17	0	0	0	0	0.0%	retained	100.0%	335	0	0
Stingray, Round	17	3	14	1	13	0	82.4%	7.1%	17.6%	335	276	20
Sculpin, Unidentified	17	1	16	3	13	0	94.1%	18.8%	5.9%	335	315	59
Crab, Dungeness	16	0	16	8	8	0	100.0%	50.0%	0.0%	315	315	158
Crab, California King	14	11	3	0	3	0	21.4%	0.0%	78.6%	276	59	0
Rockfish, Vermilion	14	1	13	9	4	0	92.9%	69.2%	7.1%	276	256	177
Croaker, White	14	0	14	11	3	0	100.0%	78.6%	0.0%	276	276	217
Flatfish, Unidentified	13	3	10	2	8	0	76.9%	20.0%	23.1%	256	197	39
Turbot, Hornyhead	12	4	8	3	5	0	66.7%	37.5%	33.3%	237	158	59
Bass, Kelp	12	0	12	2	9	1	100.0%	16.7%	0.0%	237	237	39
Rockfish, Copper	12	0	12	8	3	1	100.0%	66.7%	0.0%	237	237	158
Bonito, Pacific	11	10	1	1	0	0	9.1%	100.0%	90.9%	217	20	20
Cormorant, Brandt's	11	0	11	11	0	0	100.0%	100.0%	0.0%	217	217	217
Croaker, Yellowfin	9	3	6	1	5	0	66.7%	16.7%	33.3%	177	118	20

Sanddab, Longfin	9	3	6	6	0	0	66.7%	100.0%	33.3%	177	118	118
Crab, Decorator	9	0	9	4	5	0	100.0%	44.4%	0.0%	177	177	79
Salmon, King	9	0	9	8	1	0	100.0%	88.9%	0.0%	177	177	158
Turbot, Diamond	9	0	9	0	9	0	100.0%	0.0%	0.0%	177	177	0
Harbor Seal	9	0	9	9	0	0	100.0%	100.0%	0.0%	177	177	177
Octopus	8	0	8	0	8	0	100.0%	0.0%	0.0%	158	158	0
Ray, California Butterfly	8	0	8	1	7	0	100.0%	12.5%	0.0%	158	158	20
Shark, Prickly	8	0	8	0	8	0	100.0%	0.0%	0.0%	158	158	0
Snail, Unidentified	8	0	8	0	8	0	100.0%	0.0%	0.0%	158	158	0
Sole, Rock	7	6	1	0	1	0	14.3%	0.0%	85.7%	138	20	0
Lizardfish, California	7	2	5	4	1	0	71.4%	80.0%	28.6%	138	99	79
Skate, Unidentified	7	0	7	1	5	1	100.0%	14.3%	0.0%	138	138	20
Flounder, Starry	6	5	1	1	0	0	16.7%	100.0%	83.3%	118	20	20
Shad, American	6	4	2	2	0	0	33.3%	100.0%	66.7%	118	39	39
Crab, Opossum	6	1	5	2	3	0	83.3%	40.0%	16.7%	118	99	39
Shark, Sevengill	6	1	5	3	2	0	83.3%	60.0%	16.7%	118	99	59
Turbot, Curlfin	6	0	6	3	3	0	100.0%	50.0%	0.0%	118	118	59
Sole, Sand	5	1	4	2	2	0	80.0%	50.0%	20.0%	99	79	39
Fish, Unidentified	5	0	5	5	0	0	100.0%	100.0%	0.0%	99	99	99
Mackerel, Bullet	5	0	5	5	0	0	100.0%	100.0%	0.0%	99	99	99
Ray, Pacific Electric	5	0	5	2	3	0	100.0%	40.0%	0.0%	99	99	39
Rockfish, Canary	5	0	5	1	3	1	100.0%	20.0%	0.0%	99	99	20
Sole, Petrale	4	3	1	1	0	0	25.0%	100.0%	75.0%	79	20	20
Anchovy, Northern	4	0	4	4	0	0	100.0%	100.0%	0.0%	79	79	79
Crab, Sand	4	0	4	2	2	0	100.0%	50.0%	0.0%	79	79	39
Mackerel, Jack	4	0	4	2	1	1	100.0%	50.0%	0.0%	79	79	39
Midshipman, Specklefin	4	0	4	0	4	0	100.0%	0.0%	0.0%	79	79	0
Rockfish, Cowcod	4	0	4	0	4	0	100.0%	0.0%	0.0%	79	79	0
Rockfish, Unidentified	4	0	4	3	1	0	100.0%	75.0%	0.0%	79	79	59
Shark, Unidentified	4	0	4	2	2	0	100.0%	50.0%	0.0%	79	79	39
Sole, Bigmouth	4	0	4	1	3	0	100.0%	25.0%	0.0%	79	79	20
Turbot, C-O	4	0	4	1	3	0	100.0%	25.0%	0.0%	79	79	20
Tuna, Yellowfin	3	3	0	0	0	0	0.0%	retained	100.0%	59	0	0
Fish, Other Identified	3	2	1	0	1	0	33.3%	0.0%	66.7%	59	20	0
Turbot, Spotted	3	1	2	0	2	0	66.7%	0.0%	33.3%	59	39	0
Bird, Unidentified	3	0	3	3	0	0	100.0%	100.0%	0.0%	59	59	59
Crab, Hermit	3	0	3	0	3	0	100.0%	0.0%	0.0%	59	59	0
Crab, Northern Kelp	3	0	3	2	1	0	100.0%	66.7%	0.0%	59	59	39
Mollusk, Unidentified	3	0	3	0	3	0	100.0%	0.0%	0.0%	59	59	0
Murre, Common	3	0	3	3	0	0	100.0%	100.0%	0.0%	59	59	59
Rockfish, Gopher	3	0	3	2	1	0	100.0%	66.7%	0.0%	59	59	39

Rockfish, Treefish	3	0	3	1	2	0	100.0%	33.3%	0.0%	59	59	20
Shark, Blue	3	0	3	0	3	0	100.0%	0.0%	0.0%	59	59	0
Skate, Other Identified	3	0	3	0	3	0	100.0%	0.0%	0.0%	59	59	0
Unidentified Cormorant	3	0	3	3	0	0	100.0%	100.0%	0.0%	59	59	59
Rockfish, Grass	2	2	0	0	0	0	0.0%	retained	100.0%	39	0	0
Halfmoon	2	0	2	2	0	0	100.0%	100.0%	0.0%	39	39	39
Mola, Common	2	0	2	0	2	0	100.0%	0.0%	0.0%	39	39	0
Needlefish, California	2	0	2	0	2	0	100.0%	0.0%	0.0%	39	39	0
Rockfish, Bank	2	0	2	0	1	1	100.0%	0.0%	0.0%	39	39	0
Rockfish, Brown	2	0	2	0	2	0	100.0%	0.0%	0.0%	39	39	0
Sablefish	2	0	2	1	1	0	100.0%	50.0%	0.0%	39	39	20
Short Beak Common Dolphin	2	0	2	2	0	0	100.0%	100.0%	0.0%	39	39	39
Surfperch, Other Ident.	2	0	2	2	0	0	100.0%	100.0%	0.0%	39	39	39
Surfperch, Pink	2	0	2	2	0	0	100.0%	100.0%	0.0%	39	39	39
Surfperch, Rubberlip	2	0	2	2	0	0	100.0%	100.0%	0.0%	39	39	39
Long Beak Common Dolphin	2	0	2	2	0	0	100.0%	100.0%	0.0%	39	39	39
Shark, White	1	1	0	0	0	0	0.0%	retained	100.0%	20	0	0
Cormorant, Double-crested	1	0	1	1	0	0	100.0%	100.0%	0.0%	20	20	20
Croaker, Spotfin	1	0	1	1	0	0	100.0%	100.0%	0.0%	20	20	20
Echinoderm, Unidentified	1	0	1	0	1	0	100.0%	0.0%	0.0%	20	20	0
Fringehead, Sarcastic	1	0	1	0	1	0	100.0%	0.0%	0.0%	20	20	0
Garibaldi	1	0	1	0	1	0	100.0%	0.0%	0.0%	20	20	0
Guitarfish, Banded	1	0	1	0	1	0	100.0%	0.0%	0.0%	20	20	0
Gull, Unidentified	1	0	1	1	0	0	100.0%	100.0%	0.0%	20	20	20
Hagfish, Pacific	1	0	1	1	0	0	100.0%	100.0%	0.0%	20	20	20
Pelagic Cormorant	1	0	1	1	0	0	100.0%	100.0%	0.0%	20	20	20
Pinniped, Unidentified	1	0	1	1	0	0	100.0%	100.0%	0.0%	20	20	20
Pipefish, Bay	1	0	1	0	1	0	100.0%	0.0%	0.0%	20	20	0
Rockfish, Bronzespotted	1	0	1	0	0	1	100.0%	0.0%	0.0%	20	20	0
Rockfish, Kelp	1	0	1	1	0	0	100.0%	100.0%	0.0%	20	20	20
Rockfish, Rosy	1	0	1	0	0	1	100.0%	0.0%	0.0%	20	20	0
Salmon, Other Identified	1	0	1	1	0	0	100.0%	100.0%	0.0%	20	20	20
Sanddab, Speckled	1	0	1	0	1	0	100.0%	0.0%	0.0%	20	20	0
Sanddab, Unidentified	1	0	1	0	1	0	100.0%	0.0%	0.0%	20	20	0
Searobin, Lumptail	1	0	1	0	1	0	100.0%	0.0%	0.0%	20	20	0
Shark, Sixgill	1	0	1	0	1	0	100.0%	0.0%	0.0%	20	20	0
Sole, Rex	1	0	1	1	0	0	100.0%	100.0%	0.0%	20	20	20
Triggerfish, Finescale	1	0	1	0	1	0	100.0%	0.0%	0.0%	20	20	0
Unidentified Gull	1	0	1	1	0	0	100.0%	100.0%	0.0%	20	20	20
<b>Total</b>	<b>18254</b>	<b>6530</b>	<b>11724</b>	<b>6358</b>	<b>5127</b>	<b>239</b>	<b>64.2%</b>	<b>54.2%</b>	<b>35.8%</b>	<b>359,842</b>	<b>231,116</b>	<b>125,335</b>

Table 10. Chondrichthyes species recorded in the observer data including any current management, stock assessments, and general information from the observer data.

Chondrichthyes Species	Enhanced status report	PSA Vulnerability Score (Degrees of vulnerability, as follows: lowest, V < 1.8; medium, 1.8 < V < 2.0; high, 2.0 < V < 2.2; and highest, V > 2.2)	Fishery Management Plan (FMP)	Stock Assessment (in the last 10 years)	Stock Status	Discard Mortality Rate	Observed Discarded Dead	Observed Retained	Observed total catch
Spotted Ratfish	No		<a href="#">Ecosystem Component Species GFMP</a>	No	None	67%	134	2	201
Brown Smoothhound Shark	<a href="#">Enhanced Status Report</a>	1.77	No FMP	No	None	47%	134	55	339
Spiny Dogfish	No		<a href="#">"In the fishery" of the GFMP</a>	<a href="#">Spiny Dogfish Stock Assessment</a>	<a href="#">42% of unexploited levels</a>	36%	120	21	357
Bat Ray	No		No FMP	No	None	21%	77	296	672
Longnose Skate	No		<a href="#">"In the fishery" of the GFMP</a>	<a href="#">Longnose Skate (CA, OR, WA) Stock Status</a>	<a href="#">57% unexploited levels</a>	24%	71	78	385
Soupin Shark	No		<a href="#">Ecosystem Component Species GFMP</a>	No	None	64%	55	40	126
Leopard Shark	No		<a href="#">"In the fishery" of the GFMP</a>	No	None	46%	49	106	214
California Skate	No		<a href="#">Ecosystem Component Species GFMP</a>	No	None	9%	34	110	501
Pacific Angel Shark	<a href="#">Enhanced Status Report</a>	2.02	No FMP	No	None	14%	30	125	341
Swell Shark	No		No FMP	No	None	2%	15	52	783
Common Thresher Shark	No		<a href="#">"In the fishery" of the HMS FMP</a>	<a href="#">Common Thresher Stock Assessment</a>	<a href="#">Not overfished or subject to overfishing</a>	33%	4	130	144
Sevengill shark	No		No FMP	No	None	60%	3	1	6
Gray Smoothhound Shark	No		No FMP	No	None	25%	3	8	20
Thornback	No		No FMP	No	None	3%	3	1	99
Pacific Electric Ray	No		No FMP	No	None	40%	2	0	5
Starry Skate	No		No FMP	No	None	11%	2	0	19
California Butterfly Ray	No		No FMP	No	None	13%	1	0	8
Round Stingray	No		No FMP	No	None	7%	1	3	17
Horn Shark	No		No FMP	No	None	5%	1	4	26
Shovelnose Guitarfish	No		No FMP	No	None	4%	1	68	96
Banded Guitarfish	No		No FMP	No	None	NA	0	0	1

Prickly Shark	No		No FMP	No	None	NA	0	0	8
Sixgill Shark	No		No FMP	No	None	NA	0	0	1
White Shark	No		No FMP	Central Coast Abundance estimates	286 adults/subadults	NA	0	1	1
Shortfin Mako	No		<a href="#">"In the fishery" of the HMS FMP</a>	<a href="#">Shortfin Mako North Pacific Stock Assessment through 2016</a>	# of mature females 36% higher # of mature females at MSY	0%	0	17	17
Blue Shark	No		<a href="#">"In the fishery" of the HMS FMP</a>	<a href="#">Blue Shark Stock Assessment NPO</a>	Not in an overfished state	0%	0	0	3
Big Skate	No		<a href="#">"In the fishery" of the GFMP</a>	<a href="#">Stock status of big skate US Pacific Coast</a>	79.2% of Unfished spawning biomass	0%	0	3	65

Table 11. Example species and information pertinent to the MLML Bycatch Inquiry for assessing sustainability and acceptability of bycatch.

Bycatch Inquiry Factor	Souppfin (Tope) Shark	Brown Smoothhound	Bat Ray
Ecosystem Importance	Sharks are apex predators, maintaining healthy and balanced ecosystems through predator top-down control.  Depletion of shark populations is known to limit ecosystem function and resilience.	Sharks are apex predators, maintaining healthy and balanced ecosystems through predator top-down control.  Depletion of shark populations is known to limit ecosystem function and resilience.	As predatory species, skates play pivotal roles in the regulation of lower trophic level organisms and, therefore, of marine ecosystems, especially after the decline of the largest top predators such as large pelagic sharks (Shepherd and Myers, 2005, Myers et al., 2007, Baum and Worm, 2009)
Population Status	No population assessment ESA candidate species IUCN Critically Endangered Population crashed in 1940s (Vitamin A fishery) Remains depleted	No population assessment.	No population assessment.  Status of California rays and skates highly uncertain
Inherent Vulnerability	Triennial reproductive cycle (reproduces once every 3 years)  Southern California nursery grounds (females and juveniles caught in SoCal)  Late sexual maturity  Fishbase: Very high vulnerability (76 of 100)	A Productivity Susceptibility Analysis ranked brown smoothhound the second most vulnerable state-managed finfish behind Pacific angel shark (Swasey et al. 2016). Fishbase: High Vulnerability (58 of 100)	Late onset maturity, low fecundity, and slow growth.  Fishbase: Very high vulnerability (75 of 100)
Impacts from Set Gillnet Fishery	Minimum estimate of 1,695 sharks discarded from 2007 – 2021 (based on 1 set to 1 trip extrapolation)  High discard mortality rate (64%)  Historic regional depletions in Southern CA due to set net impacts	47% discard mortality Most discarded dead of all Chondrichthyes by number of animals	21% discard mortality Minimum of ~7,400 discarded 2007 – 2021 (based on 1 set to 1 trip extrapolation)  Caught and landed at high rates with no catch limits (present in ~13% of set gillnet sets targeting CA halibut; not including white seabass targeting sets) (Chris Free Bycatch Report 2022)

---

**From:** Birch, Caitlynn <cbirch@oceana.org>

**Sent:** Friday, July 7, 2023 03:51 PM

**To:** FGC <FGC@fgc.ca.gov>; Ashcraft, Susan@FGC <[REDACTED]>

**Subject:** RE: Public Comment for July MRC Agenda Item 3

Please also include the attached sign-on letter for inclusion in the MRC binder under Agenda Item 3: Set gillnet bycatch evaluation. Thanks!!

Caitlynn

**From:** Birch, Caitlynn

**Sent:** Friday, July 7, 2023 3:45 PM

**To:** FGC <fgc@fgc.ca.gov>; Ashcraft, Susan@FGC <[REDACTED]>

**Cc:** Miller-Henson, Melissa@FGC <[REDACTED]>

**Subject:** Public Comment for July MRC Agenda Item 3

Hi Susan,

Please include the attached comment letter plus attachment for inclusion in the MRC binder under **Agenda Item 3: Evaluation of bycatch in the California halibut set gillnet fishery in support of the fishery management review**. Apologies for its extreme lengthiness! Appreciate all your work leading up to the MRC and hope you have a great weekend! Stay cool in Sac next week.

Caitlynn

Caitlynn Birch | Pacific Marine Scientist



99 Pacific Street, Suite 155C

Monterey, CA 93940

D 831.332.1757 | O 907.586.4050

[cbirch@oceana.org](mailto:cbirch@oceana.org) | [www.oceana.org](http://www.oceana.org)

July 7, 2023  
Mr. Eric Sklar, President  
California Fish and Game Commission  
P.O. Box 944209  
Sacramento, CA 94244-2090

RE: Marine Resource Committee Agenda Item 3: Set Gillnet Bycatch Evaluation

Dear President Sklar and Members of the Commission,

We the undersigned scientists see a strong need to address and minimize bycatch in state managed fisheries. Effectively assessing and minimizing bycatch is a fundamental cornerstone of sustainable, ecosystem-based fishery management (Pew Oceans Commission). The unintended catch and discarding of marine life – known as bycatch – is widely considered among the top ecological impacts of fisheries (Hall et al. 2000, Davies et al. 2009, Donaldson et al. 2011). Fisheries bycatch can have ecosystem-level effects by changing the abundance of non-target species, alter biodiversity by removing predator and prey species at unsustainable levels, and becomes a particularly visible conservation concern when it involves threatened groups (e.g. sharks, seabirds, marine mammals) (Hall et al. 2000, Cook 2001, Gilman et al. 2008). Biodiversity is a key component in stable ecosystems which are facing unprecedented stressors from warming ocean temperatures, habitat loss, and other anthropogenic impacts (Worm et al. 2006, Heip et al 2009).

Bycatch in gillnets has long been recognized as a global conservation concern. The low selectivity and high mortality rates of bycatch in gillnets has been implicated in regional and population level declines of many vulnerable species in marine ecosystems globally (Forney et al. 2001, Read 2006, Pondella and Allen 2008, Zyldeis et al. 2009, Rodríguez-Quiroz et al. 2012, Regular et al. 2013, Reeves et al. 2013, Wallace et al. 2013, Lewison et al. 2014, Herrera et al. 2017). Relative to other fisheries, bottom set gillnets continue to pose some of the greatest management and conservation challenges, particularly when mortality and species impacts are not monitored (Berrow 1994, Alverson et al. 1994, Cook 2003, Forney et al. 2001, Dunn et al. 2009, Shester and Micheli 2011, Micheli et al. 2014).

Non-selective gear types such as bottom gillnets that are fished in diverse ecosystems like the Southern California Bight have the potential to significantly impact the diversity, function, and resilience of the ecosystem if not thoughtfully managed. The California set gillnet fishery has high rates of bycatch and discard mortality, and impacts over 125 species including marine mammals, sharks, rays, skates, and other fish, many of which have unassessed populations and vulnerable life histories that make them susceptible to depletion. A key principle of ecosystem-based fisheries management is the need to protect ecosystems and populations by applying the precautionary principle (Dayton 1998, Chuenpagdee et al. 2003). California fisheries must forge the path towards ecosystem-based and sustainable management of fish and wildlife stocks, target and non-target species. A growing body of scientific research shows us the fragile nature of the oceans, and the defaunation processes that currently threaten marine ecosystems (Pauly et al. 2002, Myers et al. 2007, McCauley et al. 2015). In this context, it is imperative to consider the ecological impacts of fisheries that have disproportionate impacts on wildlife and fish stocks. There is a strong need to consider all ecosystem stressors and impacts when considering fisheries management in the 21<sup>st</sup> century. Precautionary and adaptive management approaches are warranted. We urge to California Fish and Game Commission to

thoughtfully consider the impacts of this fishery in the context of an ecosystem-based approach, and take further management actions to minimize harmful bycatch.

Sincerely,

Fiorenza Micheli, Ph.D., Professor, Hopkins Marine Station of Stanford University

Neil Hammerschlag, Ph.D., Founder, Atlantic Shark Expeditions

Judith Weis, Ph.D., Professor Emerita, Rutgers University

Douglas McCauley, Ph.D., Professor, University of California Santa Barbara

Katie Lubarsky, Staff Researcher, Scripps Institution of Oceanography

Joseph J. Cech, Jr., Ph.D., Professor Emeritus of Fisheries Biology, University of California Davis

Kathryn Matthews, Ph.D., Chief Scientist, Oceana

Francine Kershaw, Ph.D., Senior Scientist, Natural Resource Defense Council

Kimberly Bolyard, Ph.D., Assoc. Professor of Biology and Environmental Science, Bridgewater College

Gretchen C. Daily, Ph.D., Bing Professor of Environmental Science, Stanford University

Ken Caldeira, Ph.D., Senior Scientist (Emeritus), Carnegie Institution for Science

Mario Mota, Ph.D., Associate Professor, National University

Joy Kumagai, PhD Candidate, Hopkins Marine Station of Stanford University

David Costalago, Ph.D., Marine Scientist, Oceana

Andrea Schreier, Ph.D., Adjunct Associate Professor, University of California Davis

Giulio De Leo, Ph.D., Professor, Hopkins Marine Station of Stanford University

Natalie Arnoldi, PhD candidate, Biology, Hopkins Marine Station of Stanford University

Melissa Palmisciano, PhD Candidate, Stanford University

Maurice Goodman, PhD Student, Stanford University

## References:

- Alverson D, Freeberg M, Murawski S, Pope J (1994) A global assessment of fisheries bycatch and discards. United Nations Food and Agriculture Organization Fisheries Technical Paper 339
- Berrow, Simon. (1994). Incidental capture of elasmobranchs in the bottom-set gill-net fishery off the south coast of Ireland. *Journal of the Marine Biological Association of the United Kingdom*. 74. 837 - 847.  
10.1017/S0025315400090081.
- Chuenpagdee, R & Morgan, Lance & Maxwell, Sara & Norse, EA & Pauly, D. (2003). Shifting gears: assessing collateral impacts of fishing methods in US waters. *Frontiers in Ecology and the Environment*. 1. 517-524.
- Cook R (2003) The magnitude and impact of by-catch mortality by fishing gear. In: Valdimarsson G, Sinclair M (eds) *Responsible fisheries in the marine ecosystem*. FAO, Rome
- Daniel J. Pondella and Larry G. Allen. "The decline and recovery of four predatory fishes from the Southern California Bight" *Marine Biology* Vol. 154 Iss. 2 (2008) Available at: [http://works.bepress.com/daniel\\_pondella/15/](http://works.bepress.com/daniel_pondella/15/)
- Dawson, S.M., Northridge, S., Waples, D. and Read, A.J. (2013) To ping or not to ping: the use of active acoustic devices in mitigating interactions between small cetaceans and gillnet fisheries. *Endangered Species Research* 19, 201– 221.
- Donaldson, A., Gabriel, C., Harvey, B.J., and Carolsfeld, J. 2012. Impacts of Fishing Gears other than Bottom Trawls, Dredges, Gillnets and Longlines on Aquatic Biodiversity and Vulnerable Marine Ecosystems. World Fisheries Trust, Inc., Canadian Science Advisory Secretariat.
- Dunn, D.C., et al., A regional analysis of coastal and domestic fishing effort in the wider Caribbean. *Fish. Res.* (2009), doi:10.1016/j.fishres.2009.10.010
- Forney KA, Benson SR, Cameron GA. 2001. Central California gillnet effort and bycatch of sensitive species, 1990-1998. *Proceedings of Seabird Bycatch: Trends, Roadblocks, and Solutions*. University of Alaska Sea Grant. AK-SG-01-01. <https://swfsc-publications.fisheries.noaa.gov/publications/CR/2001/2001For.pdf>.
- Gilman, E., Clarke, S., Brothers, N., Alfaro-Shigueto, J., Mandelman, J., Mangel, J., Petersen, S., Piovano, S., Thomson, N., Dalzell, P., Donoso, M., Goren, M., & Werner, T. 2008. Shark interactions in pelagic longline fisheries. *Marine Policy*, 32(1):1-18.
- Hall, M.A., Alverson, D.L. and Metuzals, K.I., 2000. By-catch: problems and solutions. *Marine pollution bulletin*, 41(1-6), pp.204-219.
- Herrera, Y; Sanjurjo E. and Glass, C. (2017). A comprehensive review of the research on alternative gear to gillnets in the Upper Gulf of California (2004 – 2016). *Expert Committee on Fishing Technology (ECOFT)*. Working paper num. 1: 35pp
- Heip, C., Hummel, H., Van Avesaath, P., Appeltans, W., Arvanitidis, C., Aspden, R., Austen, M., Boero, F., Bouma, T.J., Boxshall, C. and Buchholz, F., 2009. *Marine biodiversity and ecosystem functioning*.
- Jefferson, T.A., Curry, B.E., 1994. A global review of porpoise (Cetacea: Phocoenidae) mortality in gillnets. *Biol. Conserv.* 67, 167–183.
- Lewison R et al. 2014 Global patterns of marine mammal, seabird, and sea turtle bycatch reveal taxa-specific and cumulative megafauna hotspots. *Proc. Natl Acad. Sci. USA* 111, 5271–5276.
- Michael W. Hyatt, Paul A. Anderson, Patrick M. O'Donnell, Ilze K. Berzins, Assessment of acid–base derangements among bonnethead (*Sphyrna tiburo*), bull (*Carcharhinus leucas*), and lemon (*Negaprion brevirostris*) sharks from

gillnet and longline capture and handling methods, *Comparative Biochemistry and Physiology Part A: Molecular & Integrative Physiology*, Volume 162, Issue 2, 2012, Pages 113-120, ISSN 1095-6433, <https://doi.org/10.1016/j.cbpa.2011.05.004>.

Micheli, F., De Leo, G., Butner, C., Martone, R.G. and Shester, G., 2014. A risk-based framework for assessing the cumulative impact of multiple fisheries. *Biological Conservation*, 176, pp.224-235.

Paul K. Dayton, Reversal of the Burden of Proof in Fisheries Management. *Science*, 6 February 1998, Vol. 279 (5352): 821

Pauly, D., Christensen, V., Gu  nette, S., Pitcher, T.J., Sumaila, U.R., Walters, C.J., Watson, R. and Zeller, D., 2002. Towards sustainability in world fisheries. *Nature*, 418(6898), pp.689-695.

Pew Oceans Commission. 2003. America's Living Oceans: Charting a Course for Sea Change. A Report to the Nation. May 2003.

Reeves RR, McClellan K, Werner TB. 2013 Marine mammal bycatch in gillnet and other entangling net fisheries, 1990–2011. *Endanger. Spec. Res.* 20, 71–97. (doi:10.3354/esr00481)

Read AJ, Drinker P, Northridge S (2006) Bycatch of marine mammals in U.S. and global fisheries. *Conserv Biol* 20: 163–169

Regular, P. et al. (2013) 'Canadian fishery closures provide a largescale test of the impact of gillnet bycatch on seabird populations', *Biology Letters*, 9(4). doi: 10.1098/rsbl.2013.0088.

Rodr  guez-Quiroz, G.; Arag  n-Noriega, E.A.; Cisneros-Mata, M.A.; Or - tega-Rubio, A. (2012) Fisheries and Biodiversity in the Upper Gulf of California. *Oceanography*. pp. 281-296.

Shester GG, Micheli F. Conservation challenges for small-scale fisheries: Bycatch and habitat impacts of traps and gillnets. *Biol Conserv.* 2011;14(5):1673–1681

Wallace BP, Kot CY, DiMatteo AD, Lee T, Crowder LB, Lewison RL. 2013 Impacts of fisheries bycatch on marine turtle populations worldwide: toward conservation and research priorities. *Ecosphere* 4, 40. (doi:10.1890/es12-00388.1)

Worm, B., Barbier, E.B., Beaumont, N., Duffy, J.E., Folke, C., Halpern, B.S., Jackson, J.B., Lotze, H.K., Micheli, F., Palumbi, S.R. and Sala, E., 2006. Impacts of biodiversity loss on ocean ecosystem services. *science*, 314(5800), pp.787-790.

Zydelis, R., Bellebaum, J.,   sterblom, H., Vetemaa, M., Schirmeister, B., Stipniece, A., Dagys, M., van Eerdenh, M., Garthei, S., 2009. Bycatch in gillnet fisheries—an overlooked threat to waterbird populations. *Biol. Conserv.* 142, 1269– 1281.

## Matthews, Kinsey-Contractor@fgc

---

**From:** Blacow, Ashley <ablacow@oceana.org>  
**Sent:** Friday, July 7, 2023 10:06 AM  
**To:** FGC  
**Subject:** public comment letter: Agenda Item 3: Evaluation of bycatch in the California halibut set gillnet fishery  
**Attachments:** public comment letter\_Agenda Item 3 Evaluation of bycatch in the California halibut set gillnet fishery.pdf

**WARNING:** This message is from an external source. Verify the sender and exercise caution when clicking links or opening attachments.

Dear President Sklar and Commissioners,

Please find attached a letter signed by 1,427 California residents in support of reducing bycatch in California's set gillnet fishery. This is in accordance with *Agenda Item 3: Evaluation of bycatch in the California halibut set gillnet fishery in support of the fishery management review* for the July 20 MRC meeting.

Best,  
Ashley Draeger

Ashley Blacow-Draeger | Pacific Policy and Communications Manager



99 Pacific Street, Suite 155-C  
Monterey, CA 93940  
T [+1.831.643.9220](tel:+18316439220) | C [+1.831.224.7484](tel:+18312247484) | F [+1.907.586.4944](tel:+19075864944)  
E [ablacow@oceana.org](mailto:ablacow@oceana.org) | W [www.oceana.org](http://www.oceana.org)



July 6, 2023

California Fish and Game Commission  
715 P Street, 16th Floor  
Sacramento, CA 95814

Dear President Sklar and Commissioners:

We write urging you to address the unacceptable bycatch in California's set gillnet fishery. Set gillnets are responsible for injuring and killing more than 125 species of ocean animals — most of which are tossed overboard as waste, many already dead or dying. I am concerned that set gillnet fishing gear is compromising the health and biodiversity of the unique ocean ecosystem off Southern California.

Set gillnets are a threat to whales — including humpback and gray whales — and kill more sea lions than all other observed West Coast fisheries combined. Nearly three out of every four sharks, rays, and skates caught are tossed overboard — vulnerable and ecologically important species which grow slowly and reproduce few young. The population status for most of these species has not been assessed.

In many respects, California is a world leader when it comes to addressing ocean health and protecting marine biodiversity. However, one of the most harmful and indiscriminate fishing methods in the country is still being allowed in ocean waters off Southern California including the Channel Islands — a globally important haven for biodiversity often referred to as “the Galapagos of North America.”

We appreciate the Commission's past actions to address bycatch in this fishery by prohibiting these nets in central coast waters and your current prioritization to evaluate ongoing bycatch in the set gillnet fishery off Southern California. We urge you to formally determine that the bycatch with this fishing method is unacceptable under the criteria in the Marine Life Management Act and take action to reduce bycatch and ensure that the unique ocean ecosystem off California can continue to thrive into the future.

Sincerely,

1,427 California residents

<u>First Name</u>	<u>Last Name</u>	<u>City</u>	<u>State</u>	<u>Postal Code</u>
Sara	Abbott			
Rachel	Abdel			
Jennifer	Abernathy			
Alberto	Acosta			
James	Adams			
Elizabeth	Adan			
Steven	Aderhold			
Carolina	Adler			
Natalie	Aharonian			
Kim	Akeman			
Elena	Albanese			
Linda	Albarran			
Susan	Albrecht			
Zubair	Ali			
Julie	Alicea			
Jennifer	Allenprather			
Paul	Almond			
Gregory	Alper			
Mitch	Altieri			
Linda	Alvarado			
Maria	Aminger			
Liz	Amsden			
Jon	Anderholm			
Janis	Andersen			
Barbara	Anderson			
Benjamin	Anderson			
Lorien	Anderson			
Sandra	Anderson			
Sharyl	Andreatta			
S	Andregg			
Tina	Ann			
G.S.	Anson			
Miguel	Apodaca			
Patricia	Appel			
Catherine	Archbold			
Susan	Ardigo			
Gene	Arias			
Laura	Arias			
Elisabeth	Armendarez			
Erika	Armin			
Alisa	Arnold			
Tina	Arnold			
Alejandro	Artigas			
Candi	Ausman			
Joshua	Auth			
Phyllis	Avilla			

Luke	Baade
Jennifer	Baak
Paul	Babbini
Christina	Babst
Kimberly	Bach
Ahna	Backstrom
Lois	Bacon
Ellen	Baer
Jennifer	Bair
Gwyn	Baker
Steven	Bal
Disa	Balderama
Patricia	Baldwin
Barbara	Ballenger
Michele	Banks
Giulia	Barbarito
Liz	Barillas
Allie	Barkalow
Joanne	Barnes
Michael	Barnes
Candice	Barnett
Judith	Barnett
Cara	Barnhill
Melia	Barnum
Nina	Barrios
Elizabeth	Barris
Sandra	Barros
Tim	Bartell
Regina	Basurto
Lori	Bates
Ayse	Batova
Jacqueline	Baudouin
Valerie	Baugher
Gary	Baxel
Jo	Baxter
Heidi	Bean
Jackie	Bear
Deanna	Beck
Carol	Becker
Suzanne	Becket
Victoria	Behar
Rawhi	Beituni
Richard	Bejarano
Mary	Bell
Cassandra	Bellantoni
Michael	Belli
Daniel	Benador

Jan	Bender
Kathryn	Bender
Barb	Benedict
Jeff	Bennett
Annette	Benton
Myra	Berario
Cheryl	Berg
Miriam	Berg
Juliann	Berman
Leah	Berman
Guillermo	Bermudez
June	Bernal
Adam	Bernstein
Kelly	Berry
Yolanda	Berumen
Mark	Beseda
Donald	Betts
Vicky	Bhej
Benjamin	Billhardt
Barbara	Bills
Janet	Bindas
Jennifer	Bindel
Elissa	Binsky
Meredith	Birkhead
Monica	Bishop
Ian	Bixby
Richard	Blain
D	Bleecher
Patricia	Blevins
Kirk	Bloomgarden
Laurel	Blossom
Jessamy	Boas
Trina	Bodine
Kathryn	Boeddiker
Kathy	Boettcher
Robert	Bogart
Susan	Bogdanovich
Casey	Bohrisch
Richard	Bold
Debbie	Bolsky
Michael	Bordenave
Marty	Bostic
Vic	Bostock
William	Boucher
Rob	Boughton
Michael	Bowersox
Ted	Boyce

Carol	Boyd
Ellen	Boyd
Jeannie	Boyd
Richard	Boyer
Jill	Boyle
Taryn	Braband
Victoria	Brandon
Kelly	Brannigan
Karen	Brant
Michael	Braude
Rosa	Bravo
Colleena	Brazen
Joan	Breiding
Nathan	Brenner
Tina	Brenza
Michael	Brewer
William	Briggs
Susan	Brisby
Mary	Brooks
Jennifer	Broughel
Elizabeth	Brown
Emma	Brown
Meg	Brown
Bruce	Bryan
Melissa	Bryan
Leo	Buckley
Nancy	Bukowski
Mike	Bullock
Tammy	Bullock
Clinton	Burdette
Deborah	Burge
Russell	Burke
Ruth	Burman
Terrence	Butler
Tim	Butler
Anne	Byers
Linda	Calbreath
Kyle	Calcagno
Charles	Calhoun
Katie	Cali
John	Cameron
Sharon	Camhi
Candace	Campbell
Norma	Campbell
Cheryl	Caplow
Karen	Carl
Shelley	Carlisle

Sharon	Carlson
Jim	Carnal
Gina	Carollo
Lulu	Carpenter
Monica	Carrero
John	Carroll
Suellen	Carroll
Angela	Carter
Grace	Carter
Lynn	Carter
Loretta	Caruana
Edward	Cassidy
James	Castaldi
Ana	Castanos
Margaret	Cechettini
Alex	Cecola
Jayne	Cerny
Ivana	Cerovecki
Nicole	Cervantes
Katherine	Cha
Carina	Chadwick
Claire	Chambers
Christine	Chapman
Elaine	Charkowski
Stacie	Charlebois
Anik	Charron
Ranga	Chary
Allan	Chen
Justin	Chernow
Debi Y	Chew
Antonia	Chianis
Deborah	Chill
Patricia	Ching
Karen	Chinn
Bob	Chirpin
Beng	Chiu
Joseph	Chlubna
AJ	Cho
Andrew	Choubelden
James	Christian
Steven	Christianson
Sandra	Christopher
Natalie	Chronister
Jonathan	Chu
Elaine	Chung
Christina	Ciesla
Raquel	Cito

Rebecca	Clark
Beth	Clary
Angela	Clayton
Kathy	Clements
Ruth	Clifford
Luz	Cobarrubias
Charlotte	Cohen
Joanne	Cohen
Tina	Colafranceschi
Cayla	Coleman
Laura	Collins
Deborah	Collodel
Gina	Comin
Gary	Connaught
Thomas	Conroy
Rhianna	Contreras
Elaine	Cook
Jenny	Cook
Thea	Cook
Enoe	Corado
Cecly	Corbett
Natalie	Corkhill
Stacy	Cornelius
Stephanie	Corona
Theresa	Corrigan
Debbie	Corsiglia
Erlinda	Cortez
Francisco	Cortez
Deborah	Cosentino
Bruce	Coston
Michelle	Coulter
Linda	Cowgill
Lorena	Cox
Peter	Cox
A	Craig
Ashley	Craig
Cecelia	Crane
Donna	Crane
Marty	Crane
Jen	Cranne
Rebecca	Crea
Phillip	Cripps
Sonianoemi	Cross
Jean	Crossley
Kurt	Cruger
Sherrell	Cuneo
Grace	Cunningham

Chris	Curtis
Michael	Curtis
Silvio	Curtis
Romona	CzichosSlaughter
Brittney	Dales
Jennifer	Dalton
Emerson	Damiano
Krista	Dana
Elizabeth	Daniels
Marianne	Daranskykanter
Aimee	Darrow
Robyn	Davidoff
Amy	Davis
Carla	Davis
Daniel	Davis
Patti	Davis
Phallon	Davis
Patricia	Day
Joanne	Deanfreemire
Glen	Deardorff
Michael	Dearth
Yves	Decargouet
Pam	Decharo
Ester	Deel
Nan	Dejarlais
Roxanne	Delgado
Rocio	Delira
Rachael	Denny
Richard	Desantis
Elisse	Desio
Linda	Detels
Viola	Deters
Alli	Detwiler
Jean	Devito
Paul	Dewolf
Alison	Dice
Martha	Dickinson
Jeff	Dickson
Lawrence	Dillard
Terry	Dillard
Sanja	Dimitrijevic
Larry	Dinger
Sheila	Dixon
Mary	Doane
Irene	Dobrzanski
Carolyn	Dolen
Renate	Dolin

Alexander	Donofero
Shel	Doonan
Dawna	Dorcas-Werner
Denise	Dorey
Victoria	Douglass
Paulette	Doulatshahi
Stephen	Dousman
Gordon	Dow
Robert	Downer
Sharon	Downs
Ramona	Draeger
Harry	Drandell
Laura	Dufel
Glenda	Dugan
Neville	Dunn
Arnaud	Dunoyer
Nicolas	Duonn
Cindy	Dupray
Brent	Durand
Kira	Durbin
Samuel	Durkin
Claude	Duss
R.C.	Dutra
Laura	Dutton
Ruth	Duvalle
Scott	Eckels
Elaine	Edell
Rick	Edmondson
Johnna	Edmunds
Rich	Elam
Evan	Elias
Evelyn	Ellis
Tracy	Ely
Scott	Emsley
Helen	Engledow
Ruth	Ereza
Kelle	Erwin
Vanessa	Escamilla
Emily	Ettinger
John	Everett
Richard	Falzalorw
Valerie	Fannin
Aisha	Farhoud
Gail	Farina
Linda	Farnell
Wendy	Fears
Samantha	Fedycki

Jami	Feldman
Joan	Fellers
Cindy	Ferguson
Judith	Ferm
Gabriela	Fernandez
Lisa	Ferreira
Mariateresa	Ferrero
Asano	Fertig
Malia	Fesler
Cheryl	Figueroa
Chris	Figueroa
Jason	Fish
Aaron	Fisher
Melanie	Fisher
Ted	Fishman
Stan	Fitzgerald
Tyler	Fitzgerald
Robert	Flagg
Michele	Fletcher
Jessica	Flores
Brooke	Florian
Katie	Flynn
Nancy	Fomenko
Teri	Forester
Erin	Foret
Shasta	Fortin
Nicole	Fountain
Margaret	Fowler
Joy	Fox
Michelle	Fox
Darren	Frale
Mary	Franceschini
Imara	Francioni
Rita	Franco
Peter	Frank
Jessica	Franklin
Katie	Franklin
William	Franklin
Lynn	Franks
Mary	Franz
Mark	Frappier
Marivee	Frayar
Barbara	Frazer
Rea	Freedom
Linda	Freeman
Elaine	Frey
Jan	Friel

Friend	Friend
Danielle	Fritch
Dianne	Fritsche
Jeff	Fromberg
Lisa	Frost
Monica	Fruedman
Kathy	Fujimoto
Kristina	Fukuda
Judy	Fukunaga
Marilyn	Fuller
Karen	Furniss
Sherrill	Futrell
Joyce	Galantai
Daryl	Gale
Justin	Ganz
Marcia	Garceau
Dawn	Garcia
Espana	Garcia
Jeffery	Garcia
Ramiro	Garcia
Ked	Garden
David	Gardner
Michael	Garitty
Ann	Garside
Kris	Gata
Jessie	Gates
Celina	Gentry
Michael	Gertz
Mike	Getz
Lisa	Gherardi
Annette	Ghezzi
Pamela	Gibberman
Christina	Gill
Nancy	Gillis
Valerie	Girard
Paula	Glaser
Stephanie	Glatt
Luann	Glatzmaier
Ned	Gleason
Robert	Glover
Wyatt	Glynn
Gary	Goetz
Geoff	Goins
Kathleen	Goldman
Paula	Goldsmid
Scott	Goldstein
Kim	Golis

Christopher	Golson
Hanh	Gonh
Linda	Gonzales
Tara	Gonzales
Nerin	Gonzalez
Shauna	Gonzalez
Denise	Goodman
Cynthia	Goodwin
Mark	Gotvald
Nancy	Gowani
Kathlyn	Grabenstein
Katarina	Grabowsky
Fred	Granlund
Gia	Granucci
Nath	Gras
Erin	Grasse
Gabriel	Graubner
Randy	Gray
Jamie	Green
June	Green
Pamela	Green
Corinne	Greenberg
Stephen	Greenberg
Tara	Grenier
Michelle	Grimes
David	Grimshaw
Kathy	Grissom
Maria	Gritsch
Malcolm	Groome
Sandy	Gross
Lorna	Groundwater
Ann	Grow
Joseph	Gualtieri
Geralyn	Gulseth
Riya	Gupta
David	Gutierrez
Alexa	Guzman
Perry	Gx
Ian	Haddow
Janine	Haefer
Sean	Hagstrom
Brenda	Haig
Jim	Haley
Christopher	Hall
Diana	Hall
Holly	Hall
Sue	Hall

Therese	Hall
Margie	Halladin
Nowlin	Haltom
Gary	Hamel
Frederick	Hamilton
Jeremy	Hamilton
Robin	Hamlin
Sharon	Handa
Khai	Hang
Susan	Hanger
Rebecca	Hanna
Sally	Hanson
Joe	Hardin
Natasha	Harding
Jana	Harker
Rey	Harmon
Omar	Haro
Barbara	Harper
Silva	Harr
Brooke	Harris
John	Harris
Laurel	Harris
Randall	Hartman
Erfin	Hartojo
Pratiksha	Hasji
Nadine	Hatcher
Artineh	Havan
John	Hawkins
Sharon	Hawkinson
Shannon	Healey
Patt	Healy
Ross	Heckmann
Sharon	Hefke
Naomi	Heiman
Christine	Hein
Janet	Heinle
Bridgett	Heinly
Rebecca	Helems
Lesle	Helgason
Jude	Hellewell
Miranda	Helly
Carol	Hemingway
Karla	Henderson
Kelly	Henderson
Nancy	Henderson
Anne	Henkes
Debbie	Hennessey

Teresa	Hensley
Janet	Herbruck
David	Hermanns
Nathalia	Hernandez
Laura	Herndon
Diane	Hestich
Eleanor	High
Jerri	Hildebrand
Debra	Hill
Eloise	Hill
Pat	Hill
Terry	Hill
Dana	Hinkle
Coni	Hintergardt
Ah	Ho
Linh	Hoang
Alex	Hobbs
Suzanne	Hodges
John	Hoffman
Michael	Hogan
Howard	Holko
Roger	Hollander
Sterling	Hollins
Candace	Hollisfranklyn
Stephen	Holman
Lukas	Holsen
Mike	Honda
Celeste	Hong
Malina	Hong
Wendy	Horvath
Cyndi	Houck
Janet	Howe
Linda	Howie
Li	Huang
Ronnie	Huber
Troy	Huff
Lucy	Hughes
Vicki	Hughes
Adrian	Hurley
Gill	Hurley
Mark	Hurst
Jacob	Huskey
Frank	Huttinger
Jinx	Hydeman
Caridad	Ignarra
Neil	Illiano
Pec	Indman

Marian	Isaac
Julia	Ivanova
Gregory	Jackson
Kari	Jackson
Trudy	Jacobs
Laura	Jacobson
Gina	Jager
Ramsey	Jammal
Cathy	Janacua
Hillie	Janssen
Richard	Jaramillo
Robert	Jardine
Julien	Jegou
S	Jensen
Dorothy	Jimenez
Lexi	Jimenez
Laurie	Jiobu
Claire	Joaquin
Indeera	Johnn
Deanna	Johnson
Elizabeth	Johnson
Evelyn	Johnson
Joel	Johnson
Reid	Johnson
Shawn	Johnson
Linda	Johnston
Michael	Johnston
Miles	Johnstone
Diana	Jones
Amie	Jordan
Stacey	Joslin
Dave	Juergens
Kathie	Jung
Lindsey	Kalfsbeek
Sharon	Kantanen
Eliot	Kaplan
Chad	Kapusta
Marianna	Karamanli
Lise	Kastigar
Paula	Katz
Andrea	Kaufman
Michael	Kaufman
Michael	Kavanaugh
Robert	Keats
Gloria	Keller
April	Kelley
Lisa	Kellman

Lisa	Kelly
Teri	Kelly
Shannon	Kemena
Erik	Kemper
John	Kerby
Catherine	Kermer
James	Kerr
Carol	Kerridge
Kelly	Kessl
Laren	Kessler
Lynda	Key
N	Khalsa
Caroline	Kim
Elli	Kimbauer
Sonia	King
Sue	King
Timothy	Kinthead
Carol	Kinser
Jeff	Kinsey
Saran	Kirschbaum
Karen	Kirschling
Betty	Kissilove
Margaret	Kitts
Julie	Klabin
Leslie	Klein
Renee	Klein
Diana	Kliche
Lily	Kloepfer
Deanna	Knickerbocker
Lindsay	Knights
Tatyana	Kobzak
Valeria	Kobzak
Cindy	Koch
Ina	Komins
Kathy	Kosinski
Dennis	Kostyk
Rick	Koury
Michael	Krikorian
MJ	Kubala
Mark	Kupke
Jerine	Kurashige
Laszlo	Kurucz
Sheri	Kuticka
Laakea	Laano
Tim	Lachman
Sally	Lacy
Rochelle	Lafrinere

Frances	Lam
Jessica	Lam
Alexandra	Lamb
Diane	Lamont
Alissa	Lancebyrne
Dennis	Landi
Lizz	Lang
Jeri	Langham
Joann	Lapolla
Robert	Lappo
Stephanie	Larro
Linda	Larsen
Nadine	Larsen
Natacha	Lascano
Lisa	Lashaway
Lynne	Latham
Kristin	Laughtindunker
Jennifer	Lawson
Robert	Lea
Harlan	Lebo
Brenda	Lee
Peter	Lee
Kim	Leigh
Miriam	Leiseroff
Allison	Lenoil
Lauren	Leonarduzzi
Bob	Leppo
Linda	Leruth
Jim	Leske
Virginia	Leslie
Carol	Leuenberger
Jeff	Levicke
Lisa	Lewis
Patricia	Lewis
Sherman	Lewis
John	Liddy
Louise	Lieb
Andrea	Lieberman
Amy	Liebman
Jessica	Likens
Darrick	Lin
Stephanie	Linam
James	Lindgren
Carrie	Lindh
Robyn	Little
Bruce	Littleton
David	Liu

Marilyn	Livote
Colleen	Lobel
Rosemary	Lojo
Margaret	Lomba
Lynne	Long
Adela	Lopez
Giselle	Lopez
Frank	Lorch
Judith	Lotz
Rachel	Loui
Kathleen	Love
Lanelle	Lovelace
Shalomar	Loving
Marsha	Lowry
Gina	Lozano
Diana	Lubin
Penny	Luce
George	Ludwig
Carl	Luhring
Judy	Lukasiewicz
David	Luna
Bill	Lundeen
Alexandria	Luostari
Andy	Lupenko
Steve	Lustgarden
Lynn	Luther
Michal	Lynch
Rosann	Lynch
Edward	Macan
Nina	Macdonald
Jocelyn	Macho
Sherry	Macias
Brian	Mackerer
Kristy	Madden
Sally	Madigan
Linda	Maggy
Mario	Magpale
Mary	Maher
Victor	Maisano
Glenn	Majeski
Janet	Maker
Martin	Male
Ginabella	Mallari
Karen	Mallis
Wila	Mannella
Robert	Mantia
Wendi	Marchesi

Abbey	Markham
Tina	Markowe
Autumn	Marr
Sherry	Marsh
Dorrine	Marshall
Brittany	Martinez
Mario	Martinez
Scott	Mason
Lee	Mastro
Mary	McAuliffe
Carole	McCarthy
Karen	McCaw
Bob	McCleary
Barney	McComas
Douglas	McCormick
Maria	McCready
Abbi	McCue
Evan	McDermitt
Robert	McDonnell
Kelley	McDowell
Molly	McEnerney
Nicola	McGillicuddy
Kerri	McGoldrick
Michael	McGowan
Bithiah	McGriff
Michele	McGuckin
Cynthia	McHugh
Heather	McHugh
Lisa	McJenkin
Caephren	McKenna
Bruce	McKinley
Laurie	McLaughlin
Jonathan	McLeod
Alexa	McMahan
Michael	McMahan
Sparrow	McMorran
Philip	McMorrow
Heidi	McRae
Gard	Meddaugh
Kathleen	Medina
Don	Meehan
Ken	Meersand
Randi	Mello
Beth	Merrill
George	Meyer
Tanya	Meyer
Veronica	Michael

Patti	Mickelsen
Nicole	Mikals
Heidi	Miller
Kellie	Miller
Rhianna	Miller
Erin	Millikin
Randy	Mills
Christine	Minnich
Nina	Minsky
Evangeline	Miranda
Laura	Mire
Margaret	Mischner
Bonnie	Mitchell
Desiree	Mitchell
Jessica	MitchellShihabi
Cody	Mitcheltree
April	Modesti
Allison	Moffett
Angela	Moini
Bianca	Molgora
Nelson	Molina
Carol	Mone
Dana	Monroe
James	Monroe
Michelle	Montano
Elaine	Monteton
Jill	Montillano
Stephanie	Moore
Kathy	Mora
Mario	Mora
John	Moreau
Liza	Morell
Yvonne	Moreno
Sandra	Morey
Christine	Morgan
Linda	Morgan
Melvis	Morris
Sharon	Morris
Sam	Morrison
Leeann	Morrissey
Bonita	Mugnani
Sharon	Mullane
Glenn	Mullins
Annette	Murch
Lauren	Murdock
Cassie	Murphy
Dana	Murphy

Melissa	Murphy
Barbara	Murray
Charla	Murry
Ann	Myers
Deborah	Myers
Mecky	Myers
Sue	Nadell
Ella	Naidoo
Midori	Nakayama
Laura	Nardozza
Raquel	Narvios
Biz	Nasharr
Jeanette	Navarro
Deborah	Nelson
Dency	Nelson
Pamela	Nelson
Scott	Nelson
Gina	Ness
Alice	Neuhauser
Sharon	Nicodemus
Nancy	Nilssen
Pamela	Nitsos
Sheree	Noeth
Katherine	Nolan
Kristin	Norby
Valerie	Nordeman
Claire	Nordvik
Maria	Nowicki
Thomas	Nulty
Adriana	Nunez
Carlos	Nunez
Marci	Nunez
Stephanie	Nunez
Max	Nupen
Joan	Nygaard
Abraham	Oboruemuh
Kathy	O'Brien
David	Ohrberg
Anne	Oklan
Alyssa	Olivas
Frances	Oliver
Krister	Olsson
Chris	O'Malley
Polly	O'Malley
Gerald	Orcholski
Henry	Ortiz
Mariby	Ortiz

Hillary	Ostrow
Donna	Owens
Cinzia	Paganuzzi
Georgette	Paine
Ashley	Palacios
John	Paladin
Aeryn	Palmer
Heidi	Palmer
Sharon	Paltin
Tony	Paredes
Benjamin	Park
Elaine	Parker
Leotien	Parlevliet
Elodie	Patarias
Lynne	Pateman
James	Patton
Lisa	Patton
Brandon	Paul
Deborah	Paul
Kathy	Paul
Caryl	Pearson
Sarah	Peck
Greg	Pennington
Linda	Penrose
Sandra	Peregrina
Paula	Pereira
Jenny	Perez
Nadia	Perez
Marilyn	Perona
Kevin	Perry
Barbara	Peters
Kim	Peterson
Matthew	Peterson
Damir	Pevec
Jamie	Pfister
Scott	Pham
Tami	Phelps
Jennifer	Philips
Annie	Phillips
Ivor	Phillips
Rochelle	Phillips
Brian	Pierson
Lynn	Pique
Polly	Pitsker
Joseph	Pluta
Barbara	Poland
Kathy	Popoff

Tania	Popov
Chris	Popp
Kristy	Porteous
Erika	Porter
Melissa	Porter
Penny	Potter
Doreen	Poulson
Antonia	Powell
Kathleen	Powell
Matt	Powell
Judith	Poxon
Wendy	Pratt
Michael	Price
Rosalie	Prieto
Menkit	Prince
Noelle	Prince
Micaela	Pronio
Annette	Punimata
Sharon	Quan
Valerie	Quan
Debra	Quandt
Robert	Quarrick
Jennifer	Quednau
Marilyn	Quindo
Audrey	Quintero
Paul	Rabjohns
Alex	Rader
Mary	Ragsdale
Sandra	Rakestraw
Chezi	Ram
Andy	Ramirez
Graciela	Ramirez
Sue	Ramirez
Paul	Ramos
Sigrid	Ramos
Elizabeth	Ramsey
Walter	Ramsey
Carolyn	Rand
Dee	Randolph
Denise	Ranidae
Wallace	Ransom
Jenise	Rauser
Edward	Redig
Penny	Redman
Lauren	Rednour
Kaylynn	Reeb
Kathryn	Reichard

Peter	Reimer
Kurt	Renfro
Carlene	Reuscher
Christian	Reyes
Mike	Reyes
Javier	Reza
Jill	Rhiannon
Janet	Rhodes
Genevieve	Riber
Jennifer	Ricchiazzi
Mark	Ricci
Robert	Ricewasser
Kim	Richmeier
Jean	Riehl
Carol	Rigrod
Cyndi	Ringoot
Marianna	Riser
Michael	Risolia
Jessenia	Rivas
Lori	Rivas
Jacquelyn	Roberts
Jennifer	Roberts
Joyce	Roberts
Francis	Robertson
Kirstin	Robertson
Laura	Robichek
Nancy	Robinson
Lisa	Robles
Candace	Rocha
Silvia	Rocha
Sophie	Rocheleau
Phil	Rockey
Cheryl	Rockwell
Marykay	Rodarte
Karen	Roegner
Pamela	Rogers
Shanna	Rojas
Mary	Rojeski
Jack	Rollens
Michele	Roma
Sonia	Romero
Valerie	Romero
Veronica	Romero
Greg	Rosas
Robert	Rosenblum
Olivia	Rosestone
Amani	Ross

Melanie	Ross
Jodi	Rowe
Zach	Rowlands
Yuliya	Rudnik
Mox	Ruge
Sylvia	Ruiz
William	Ruppert
Cathy	Russell
Denise	Russo
Brian	Rutkin
Therese	Ryan
Anoushka	Sahai
Rajinder	Saini
Lisa	Salazar
Mimi	Salili
Jackie	Samallo
Brooke	Sampson
Jonathan	Sampson
Kimberly	Sanchez
Sylvia	Sanchez
Tom	Sanchez
Pam	Sandberg
Michele	Sanderson
Danni	Sangston
Michelle	Santy
Emily	Sapp
Natasha	Saravanja
Vicki	Sarnecki
Rondi	Saslow
Angelina	Saucedo
Pamela	Saulter
Irene	Saurwein
Linda	Savitz
Carol	Schaffer
Susan	Schairer
Andrea	Schauer
Christy	Schauf
Ginger	Schedler
Myra	Schegloff
Barbara	Scheinman
Mary	Scheller
Nancy	Schelling
Janice	Schenfisch
Jonathan	Scher
Lauren	Schiffman
Bob	Schildgen
Christy	Schilling

Paulette	Schindele
Heather	Schlichter
Jennifer	Schmidt
Michael	Schnabel
William	Schoene
Laura	Schuman
Ron	Schutte
Emma	Schuyler
Amanda	Schwartz
Katherine	Schwartz
Louise	Schwartz
Sherry	Sclafani
Anneke	Scott
Bruce	Scott
Ellen	Segal
Harold	Segelstad
Lisa	Segnitz
Casey	Sell
Lynn	Sentenn
Elliott	Sernel
Linda	Shadle
Mariam	Shahrais
Eileen	Shahzada
Kaelan	Shannon
Madeline	Shapiro
Lindsay	Sharp
Peggy	Sharp
Diane	Shaw
Donna	Shaw
Al	Shayne
Gabriel	Sheets
Margaret	Shekell
Marilyn	Shepherd
Margo	Sherbainbridge
Lisa	Sherman
Erika	Shershun
Geoff	Shester
Saahil	Sheth
Shireen	Shipman
Summer	Shippy
Jennifer	Shontz
Marguerite	Shuster
Lauren	Siadek
Nancy	Sidebotham
Martha	Siegel
Jeff	Sierra
DG	Sifuentes

Sheila	Silan
Stephan	Silen
Dan	Silver
Julian	Siminski
Ari	Simke
Joyce	Simonds
Nan	Singhbowman
Randle	Sink
Christine	Sirias
Holly	Sletteland
Susan	Sloan
Skye	Smirnov
Belinda	Smith
Cynthia	Smith
Grace	Smith
Kathleen	Smith
Margaret	Smith
Michele	Smith
Scott	Smith
Stephani	Smith
Megan	Snipes
Renee	Snyder
Todd	Snyder
Magda	Socorro
Amanda	Solomon
Karen	Sommer
Cyndi	Sood
John	Sorenson
Jeffrey	Spangler
Rick	Sparks
Michelle	Sparksgillis
Terry	Spellman
Barbara	Spencer
Darla	Spencer
Jane	Spini
Leslie	Spoon
Catheryn	Sproull
Kathryn	St John
Danuta	Stachowiak
Ken	Stack
Carol	Stafford
Paul	Stanley
Cathy	Stansell
Wayne	Steffes
Sallye	Steiner
Gabriel	Steinfeld
Judith	Steinhart

Peter	Steinhart
Therese	Steinlauf
Shelley	Sterrett
Bob	Stevens
Jasmine	Stewart
Margaret	Stewart
Michael	Stewart
Peggy	Stewart
Tai	Stillwater
Helen	Stone
Russell	Stone
Brenda	Street
Mark	Strickland
Aaron	Stroh
Bruce	Stubbs
Robin	Sturmthal
Tad	Sullivan
Olivia	Summers
Stacie	Surabian
Rachel	Swan
Virginia	Swan
Patricia	Sweet
Brittany	Sweeting
Calder	Swiderski
Richard	Swift
Barbara	Tacker
Carol	Taggart
Robert	Taggart
Trina	Takahashi
Michael	Talbot
Susan	Tamura
Carol	Tao
Karla	Tapia
Ted	Tarnowski
Fred	Tashima
Thomas	Tataranowicz
Leslie	Tate
Tammy	Taunt
Sasha	Taus
Alison	Taylor
Melinda	Taylor
Melvin	Taylor
John	Teevan
James	Tejani
Mark	Temkin
Rick	Teneyck
Warren	Tenhouten

Tamara	Thebert
Rita	Thio
Anita	Thomason
Brenda	Thompson
Doug	Thompson
Geraldine	Thompson
Melanie	Thompson
Sandra	Thompson
Nancy	Thomsen
Alastair	Thorburn
Cathy	Thornburn
Cortney	Thornton
Loretta	Tiefen
Erhyen	To
Jan	Todd
April	Toller
Margaret	Tollner
Andy	Tomsky
Eileen	Tonzi
Ava	Torrebueno
Susie	Tortell
Carla	Tourville
Cheryl	Townsend
Carol	Toye
Kate	Transchel
Diane	Trautman
Charles	Tribbey
Jeremy	Trimm
Tia	Triplett
Liana	Trock
Nira	Trock
Yael	Trock
Gina	Truex
Michael	Tullius
Anthony	Tupasi
Danielle	Turner
Virginia	Turner
Wendell	Turner
Susan	Turney
Sabina	Ubell
Janice	Uehlein
Georja	Umano
Stacie	Umetsu
Robert	Underwood
Chanda	Unmack
Marcie	Usselman
Monique	Ussini

Sylvia	Vairo
Alexia	Valdora
Cara	Vallot
Anne	Vanalstyne
Berington	Vancampen
Gabrielle	Vandenbosch
Sara	Vandusen
Janet	Vankanegan
Steve	Vankanegan
Shana	Vanmeter
Kris	Vanstralen
Teresa	Vanzeller
Melissa	Vasconcellos
Sherry	Vatter
Rosewind	Veilove
Vianney	Ventura
Cynthia	Villegas
Carlene	Visperas
Herbert	Vogler
Deepak	Vohra
Pablo	Voitzuk
Melanie	Vollbrecht
Janice	Vonitter
Carol	Vonsederholm
Jennifer	Wagner
Alex	Wagonfeld
Kaitlin	Walker
Mitch	Walker
Suzi	Walker
Duane	Wall
Lauren	Wallace
Patrice	Wallace
Ernie	Walters
Jennifer	Walters
Judy	Wang
Maria	Wanless
Penelope	Ward
Christopher	Ware
Caroline	Warren
Karen	Warren
Anita	Watkins
Michael	Watson
Richard	Watson
Max	Weasner
Kelly	Weaver
Donald	Webb
Linda	Webb

Erick	Weber
Merris	Weber
Stephanie	Weber
Kevin	Weibezahl
Russell	Weisz
Suzanne	Wells
Heath	West
Julie	West
Signe	Wetteland
Janet	Wheeler
Michelle	Wheeler
Heidi	Whelchel
Gail	Whitacre
Lisette	Whitaker
Beki	White
Tina	White
Frances	Whiteside
Barbara	Whyman
Carol	Wiley
Dorothy	Wilkinson
Beth	Willer
Gerry	Williams
Robin	Williams
Nancy	Williamson
Norm	Wilmes
Jim	Wilson
Maria	Wilson
Karsten	Windt
Joshua	Wines
Lisa	Winningham
Meagan	Winters
Greg	Winton
Anita	Wisch
Dan	Wizner
Patrice	Woeppel
Liza	Wolf
Rachel	Wolf
Amy	Wolfberg
Pat	Wolff
George	Wood
Elaine	Woodriff
Elizabeth	Woodward
Moriah	Woolworth
Don	Wright
Keith	Wright
Blake	Wu
Marjorie	Xavier

Kyle	Yaskin
Jimmie	Yonemoto
Brittney	Yore
Bing	York
Jeanne	Yu
Katie	Yu
Barry	Zakar
Eric	Zakin
Rena	Zaman-Zade
Connie	Zarate
Sandy	Zelasko
Helen	Zeller
Robyn	Zelmanovitz
Esther	Zepeda
Amanda	Zicari
Marianna	Zimmerman
Kristina	Zweig
Maxine	Zylberberg



## Matthews, Kinsey-Contractor@fgc

---

**From:** York, Travis <Travis.York@sen.ca.gov>  
**Sent:** Friday, July 7, 2023 12:33 PM  
**To:** FGC  
**Subject:** Legislative Sign-on Letter - Set Gillnets  
**Attachments:** FINAL Biodiversity Threats from Set Gillnets Sign-on Letter.pdf

You don't often get email from travis.york@sen.ca.gov. [Learn why this is important](#)

**WARNING:** This message is from an external source. Verify the sender and exercise caution when clicking links or opening attachments.

Good afternoon,

Attached is a Legislative sign-on letter signed by members of the Senate and the Assembly expressing concern regarding the impacts of set gillnets on biodiversity. Please let me know if you have any questions.

**Travis York**  
Executive Assistant  
Senator Ben Allen, [24<sup>th</sup> District](#)  
916-651-4024

# CALIFORNIA LEGISLATURE

STATE CAPITOL  
SACRAMENTO, CALIFORNIA  
95814

July 6, 2023

Charlton H. Bonham, Director  
California Department of Fish and Wildlife  
715 P Street  
Sacramento, CA 95814

Eric Sklar, President  
California Fish and Game Commission  
715 P Street, 16<sup>th</sup> Floor  
Sacramento, CA 95814

Dear Director Bonham and President Sklar,

As California lawmakers who are invested in the sustainability of California's ocean health and climate-ready fisheries, we write to express our concerns regarding the types and rates of bycatch in the California set gillnet fishery targeting California halibut and white seabass. We urge the California Fish and Game Commission and the California Department of Fish and Wildlife to uphold the state's commitment to protecting marine biodiversity by following the approach and criteria laid out in the federal Marine Life Management Act to promulgate comprehensive management measures to reduce bycatch in the California halibut and white seabass set gillnet fishery to acceptable levels. Doing so will support vibrant and sustainable fishing communities while protecting wildlife.

The condition of oceans is overwhelmingly important to Californians, both for quality of life and the economy. California's robust marine economy generated \$51.6 billion in Gross Domestic Product in 2019 – the second highest GDP of all 30 coastal states. California has a long history of regulating the set gillnet fishery to reduce bycatch and prevent negative impacts on the marine environment and protected species. Set gillnets were first banned off northern California as early as 1915. Due to bycatch concerns, California voters banned this gear type within southern California inshore waters via a 1990 state ballot proposition, and set gillnets were banned off central California by the California Fish and Game Commission in 2002. Nevertheless, this small fishery currently operates with little oversight in the biologically diverse ocean waters off southern California. Addressing this fishery's impacts on biodiversity is timely on the heels of action by a California delegation to protect biodiversity at the December 2022 United Nations negotiations.

Federal observer data from NOAA Fisheries indicates the California set gillnet fishery discards 64 percent of the fish and other animals caught in the nets — among the highest discard rates in the nation. More than half of these discards are already dead, which is not only wasteful but

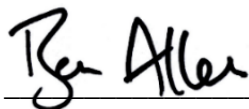
raises sustainability concerns for a number of vulnerable species. More than 125 species of ocean animals are caught, including ecologically important sharks, rays, sea lions, dolphins, whales, and seabirds. These high rates of bycatch reflect poorly on California's fishing communities and its reputation as a provider of sustainable seafood.

Due to the documented take of large whales (including humpback and gray whales), NOAA Fisheries lists California set gillnet fishery as a Category II fishery under the federal Marine Mammal Protection Act. California has taken strong action to prevent whale entanglements in other fisheries, such as drift gillnets and Dungeness crab.

We are committed to supporting and strengthening sustainable California fishing communities. Notably, set gillnets disproportionately affect marine species relative to hook-and-line gear – a more selective, lower-impact method to commercially and recreationally catch halibut and white seabass. Only 39 estimated active set gillnet permits exist, and 87 percent of California halibut commercial fishers already use hook-and-line gear. Additionally, set gillnets catch undersized halibut, which are discarded dead with impacts to commercial and recreational anglers who target halibut with cleaner gear types.

As stewards of healthy oceans, we are grateful to the Commission and the Department for prioritizing the management of set gillnets off the California coast. If legislative changes or funding is needed, we stand by, ready to help.

Sincerely,



BEN ALLEN  
Senator, 24<sup>th</sup> District



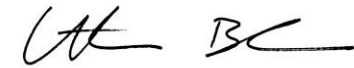
LAURA FRIEDMAN  
Assemblymember, 44<sup>th</sup> District



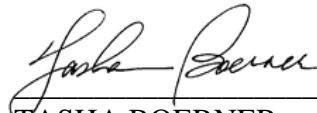
STEVE BENNETT  
Assemblymember, 38<sup>th</sup> District



MARC BERMAN  
Assemblymember, 23<sup>rd</sup> District



CATHERINE BLAKESPEAR  
Senator, 38<sup>th</sup> District



TASHA BOERNER  
Assemblymember, 77<sup>th</sup> District



DAMON CONNOLLY  
Assemblymember, 12<sup>th</sup> District

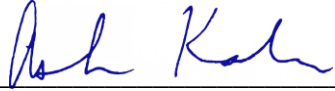


DIANE DIXON  
Assemblymember, 72<sup>nd</sup> District



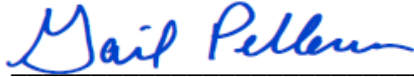
---

LENA GONZALEZ  
Senator, 33<sup>rd</sup> District



---

ASH KALRA  
Assemblymember, 25<sup>th</sup> District



---

GAIL PELLERIN  
Assemblymember, 28<sup>th</sup> District



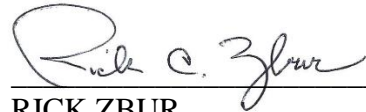
---

HENRY STERN  
Senator, 27<sup>th</sup> District



---

TOM UMBERG  
Senator, 34<sup>th</sup> District



---

RICK ZBUR  
Assemblymember, 51<sup>st</sup> District



---

COREY JACKSON  
Assemblymember, 60<sup>th</sup> District



---

JOSH LOWENTHAL  
Assemblymember, 69<sup>th</sup> District



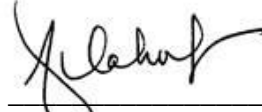
---

ANTHONY RENDON  
Assemblymember, 62<sup>nd</sup> District



---

PHIL TING  
Assemblymember, 19<sup>th</sup> District



---

DR. AKILAH WEBER  
Assemblymember, 79<sup>th</sup> District

## Matthews, Kinsey-Contractor@fgc

**From:** Jack Lighton <jack@sealegacy.org>  
**Sent:** Friday, July 7, 2023 3:50 PM  
**To:** FGC  
**Cc:** Cristina Mittermeier  
**Subject:** Evaluation of bycatch in the California halibut set gillnet fishery - letter for submission  
**Attachments:** California Fish and Game Commission\_SetGillnet\_SeaLegacy\_070723.pdf

You don't often get email from jack@sealegacy.org. [Learn why this is important](#)

**WARNING:** This message is from an external source. Verify the sender and exercise caution when clicking links or opening attachments.

Dear President Sklar and Members of the California Fish and Game Commission,

Please see the attached letter written by Cristina Mittermeier, co-founder of SeaLegacy, an international ocean conservation organization.

We ask that this letter be included in the July 20<sup>th</sup>, 2023 MRC materials under **Agenda Item 3: Evaluation of bycatch in the California halibut set gillnet fishery in support of the fishery management review.**

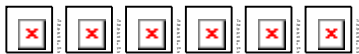
We are grateful for all that you do to preserve our natural resources.

Warm Regards,  
Jack

--

**Jack E. Lighton**  
Chief Executive Officer, SeaLegacy

[sealegacy.org](https://sealegacy.org) | [jack@sealegacy.org](mailto:jack@sealegacy.org)



Watch SeaLegacy's Brand Anthem





July 7, 2023

Mr. Eric Sklar, President  
California Fish and Game Commission  
P.O. Box, 944209  
Sacramento, CA 94244-2090  
Via email: [fgc@fgc.ca.gov](mailto:fgc@fgc.ca.gov)

Dear President Sklar and Members of the California Fish and Game Commission,

SeaLegacy is an international nonprofit organization using strategic communications at the intersection of art, science, and conservation to protect and rewild the ocean within our lifetimes. We have conducted over 45 expeditions, studied over 765 species, and documented over seven million images of ocean life that call our water plant home.

We commend the California Fish and Game Commission for its commitment to the conservation of our precious marine resources. Today, we humbly implore you to take swift action in the best interest of our marine ecosystems and ban the use of set gillnets.

Set gillnets have proven to be a detrimental fishing method that poses significant threats to the health and survival of numerous marine species. In addition to the target catch these nets are meant to catch, they also ensnare and kill countless non-target species — including critically endangered marine mammals, sharks, fish, and seabirds. The excessive waste caused by set gillnets is unacceptable, and urgent measures are needed to address this issue.

The use of set gillnets has long been associated with unsustainable fishing practices and has led to severe declines in several important marine populations. It is disheartening to witness the loss of such unique and irreplaceable marine life, and it is our collective responsibility to prevent further harm.

Moreover, set gillnets not only endanger marine species but also disrupt the delicate balance of marine ecosystems. The indiscriminate nature of these nets disrupts food chains, impacting the abundance and diversity of marine life. The loss of key species can trigger a cascade of ecological effects, leading to imbalances that reverberate throughout the ecosystem. By banning set gillnets, California can take a crucial step toward preserving the integrity and resilience of its marine habitats.

We acknowledge that responsible fisheries management is a complex task, and we commend the efforts made thus far to regulate fishing activities. However, it is imperative to recognize that the use of set gillnets is incompatible with sustainable fishing practices and ecosystem-based management.

SeaLegacy  
6671 W Indiantown Rd Suite 50-170  
Jupiter, Florida 33458  
[www.sealegacy.org](http://www.sealegacy.org)



Alternative fishing methods, such as hook-and-line and other selective fishing gears, can provide viable alternatives without causing the same level of harm to non-target species. Several regions around the U.S. and various international jurisdictions have already taken action to ban or severely restrict the use of set gillnets. By joining these progressive efforts, California can lead by example and become a global advocate for sustainable fisheries management.

SeaLegacy urges the California Fish and Game Commission to prioritize the protection of our marine ecosystems by banning the use of set gillnets off California entirely. By taking this critical step, California can contribute significantly to the preservation of marine biodiversity and ensure the sustainable future of its fisheries. We stand ready to support you in this important endeavor and look forward to witnessing California continue its leadership in ocean conservation.

Thank you for your attention to this urgent matter. We trust in your commitment to the well-being of our oceans for this and future generations and remain hopeful that you will act decisively to ban set gillnets.

Sincerely,

A handwritten signature in black ink, appearing to read 'Cristina Mittermeier'.

Cristina Mittermeier  
Co-Founder, SeaLegacy  
[www.sealegacy.org](http://www.sealegacy.org)



Resource Renewal Institute  
40 Years. Innovation for a Sustainable Future.



July 7, 2023,

Mr. Eric Sklar, President  
California Fish and Game Commission  
P.O. Box, 944209  
Sacramento, CA 94244-2090

**RE: Marine Resource Committee Agenda Item 3: Set Gillnet Bycatch Evaluation**

Dear President Sklar and Members of the Commission,

I would like to express my appreciation to Kirsten Ramey, Craig Schuman, and their staff at the California Department of Fish & Wildlife (CDFW) as well as Susan Ashcraft, and her staff, and both Commissioner Murray and yourself representing the Marine Resource Committee (MRC) for the amount of work that has been dedicated to addressing the concerns arising from California Set Gillnets. Between understanding data complexities, listening to stakeholder concerns, and undertaking California's first bycatch acceptability determination, I am grateful to both CDFW and the MRC for following through on the Marine Life Management Act (MLMA) master plan prioritization<sup>1</sup> of the management of Set Gillnets.

California is perceived as a world lighthouse for developing ambitious policies that protect our precious marine ecosystem while supporting robust, local, sustainable fisheries. As new challenges continue to manifest, driven by climate change and in conjunction biodiversity crisis, it is imperative we don't stray from the mandates laid out in the MLMA. Setting a strong precedent while undertaking the first acceptability determination for the fishery with some of the most significant ecosystem concerns is critical to enshrine the MLMA's ability to act as a tool in protecting California's marine biodiversity.

Although we appreciate the department's work, some aspects of the CDFW's bycatch analysis stray from cornerstones of the Marine Life Management Act and thus lead to weaker management than required to get bycatch to acceptable levels.

With the intention of having a constructive dialogue at the upcoming MRC meeting, we aim to highlight our concerns with the CDFW's framing of the analysis concerning the MLMA and put forward potential recommendations that aim to bring the types and amounts of bycatch in the Set Gillnet fishery to acceptable levels.

---

<sup>1</sup> <https://wildlife.ca.gov/Conservation/Marine/MLMA>

### **The analysis must be based on the Precautionary Principle.**

Shifting the burden of proof toward demonstrating that fisheries and other activities are sustainable, rather than assuming that exploitation should continue until damage has become clear, is a key component of what makes the MLMA work;<sup>2</sup> The Department's analysis is framed in the opposite light, and does not assume unknowns in the data or data limitations in this historically problematic fishery to be a stronger indicator of unacceptability. If the precautionary principle were utilized, the "significant data limitations and knowledge gaps to determine amounts and types of bycatch and potential risks to sustainability, fisheries, and ecosystems" would provide a framework for the analysis that this fishery does not have adequate data to prove its sustainability. The burden of proof not being placed on the has negative trickle-down effects throughout the report.

### **Not Utilizing Best Available Science in Determining Types & Amounts of Bycatch**

The Department extensively relies on landing and logbook data to comprehend the composition of the catch. Although this information holds value, treating self-reported data sets and fishery-dependent data as equally significant is an inherently flawed approach to gauging fishery bycatch. Reporting discards in logbooks is not mandatory, occurs relatively infrequently, and is susceptible to inaccuracies due to its reliance on self-reporting by fishermen.

The Department and Chirss Free's Halibut bycatch report mentions, "the observer data offers the best insights into bycatch in the California halibut fishery. Maintaining support for the observer program is thus important for characterizing bycatch, understanding its ecological and economic impacts, and designing strategies for minimizing bycatch in the fishery. " Federal Observer Data is the only indicator that gives an independent and holistic snapshot of what species are kept relative to discard, as well as the pre-release mortality for this gear type.

Despite the observer data being the best available science for determining discards and thus bycatch in this gear type, the Department calls into question the relevancy of the federal observer data because they cannot extrapolate just the Halibut Fleet when assessing bycatch<sup>3</sup>. The omission of this data results in the department's analysis not including estimates on efforts for total effort, catch, and discards.

Bycatch acceptability is determined by analyzing the types and amounts of bycatch as established in the MLMA. The MLMA also requires the department to use the best available science and involve stakeholders in a comprehensive and transparent process. By disregarding the best available science in determining total estimates of types and amounts of bycatch, Step 3 in the bycatch inquiry, which considers the impacts of the relative level of bycatch within the fishery on the biological health of the particular bycatch species<sup>4</sup>, would be hard to discern.

---

<sup>2</sup> "California Department of Fish and Wildlife. 2023. Evaluating Bycatch in the California Halibut Set Gill Net Fishery.")

<sup>3</sup> Free, Christopher, "Assessment of associated landed species and bycatch discards in the California halibut gill net and trawl fisheries", UC Santa Barbara

<sup>4</sup> <https://wildlife.ca.gov/Conservation/Marine/MLMA>

However, there is already a precedent of the Department having the ability to calculate type and magnitudes for Set Gillnets. Several critical attributes in the department's 2018 Master Plan Ecological Risk Assessment process related to the type and magnitude of bycatch in the directed fisheries and became driving factors in the Department's streamlined approach to prioritization.<sup>5</sup>

### **Not Managing all Caught Species for Sustainability**

Viewing this analysis from a solely Halibut perspective appears to shift throughout the report. Step 2 of the MLMA bycatch criteria requires the Department to determine which species are the target of the fishery, which are incidental catch species, and which are bycatch species<sup>6</sup>. These classifications guide how management needs will be approached for the species caught in a particular species:

"Incidental catch is defined as fish caught incidentally during the pursuit of the primary target species, but legal and desirable to be sold or kept for consumption. Some may define these species as secondary targets or retained bycatch. For purposes of FMP development, these species should be accounted for and managed as target species under the sustainability standards outlined in Chapter 5 or as bycatch under the bycatch standard described below."<sup>7</sup>

The MLMA is designed so that species that are "incidentally" caught do not fall through the cracks of management. These species must be managed either as a target or in accordance with the Chapter 5 Stock Sustainability Objectives in the MLMA.

Previously the Department cited the inability to isolate targeted Halibut targeted trips in the federal observer data as a rationale for not calculating total catch and discard estimates. In this instance, the Department also forgoes completing this step in the bycatch inquiry but instead cites that Set Gillnets are multispecies fishery, and the definition of bycatch or incidental catch may be considered fluid. While I agree with the Department that this is a multispecies fishery, I don't agree that is sufficient reasoning to disregard a "necessary"<sup>8</sup> requirement of MLMA bycatch acceptability determination. Also, if the Department believed this to be a multi-species fishery, they would have been able to extrapolate total estimates of catch and discard from the Federal Observer Data.

By moving the target between a multispecies fishery and a Halibut-centric approach, the Department's report did not address multiple integral components of the bycatch acceptability determination. Not explicitly stating what is defined as Target, Incidental, and Bycatch has large implications for managing this fishery's vast and diverse amount of discard. Set Gillnets boast some of the highest bycatch

Set Gillnets are responsible for catching a plethora of species, making many susceptible to not being adequately managed. Out of 97 finfish, shark, ray, and skate species caught in the fishery, 68 have no population assessment and have unknown population levels. Furthermore, 56 of these species are not managed in state or federal Fishery Management Plans, standard management tools used to manage for sustainability and prevent overfishing and species depletion<sup>9</sup>.

---

<sup>5</sup> California Department of Fish and Wildlife. 2023. Evaluating Bycatch in the California Halibut Set Gill Net Fishery."

<sup>6</sup> <https://wildlife.ca.gov/Conservation/Marine/MLMA>

<sup>7</sup> <https://wildlife.ca.gov/Conservation/Marine/MLMA>

<sup>8</sup> California Department of Fish and Wildlife. 2023. Evaluating Bycatch in the California Halibut Set Gill Net Fishery.")

<sup>9</sup> NMFS Observer Data

For this fishery to be consistent with the MLMA, Set Gillnets either need to be defined as a multi-species, multi-target fishery and prioritize the identification of incidentally caught species or be treated as a targetted fishery and broaden the scope as to what is considered bycatch.

### **Criteria for Effective Management to Occur**

If the Set Gillnet Fishery is to continue, the following gaps must first be filled for this fishery to have a chance at having acceptable levels of bycatch.

#### *Data and Enforceability Constraints: Set Gill Net Observer Program*

As directed by the MLMA, the sufficient lack of critical data coupled with this gear type historical concerns being banned in various iterations in California, the United States, and abroad raises multiple red flags. To escape scrutiny through the lens of the precautionary principle, more data that is not driven by self-reporting sources are prone to bias and error.

There currently are no enforceable regulations to monitor the discard of species in the Set Gillnet Fishery. The state must mandate some form of data collection, including a pilot state-run observer program, consistent electronic monitoring, and/or work with the National Marine Fishery Service West Coast Gillnet Observer Program to increase federal observer coverage. Considering the magnitude of species caught, the minimal monitoring over the last 15 years, and the innate sustainability concerns with Set Gillnets, 100% observer coverage should be required. It is impossible to achieve acceptable levels of bycatch when there are no independent scientific-based methods to monitor it.

These observer programs should also measure the soak time of each set length of each set, how many set net panels are cast, the mesh size for each set, and where effort is located. This information will provide the Department and stakeholders with adequate data to understand total effort calculations and accurately estimate total catch and discards.

#### *Vulnerable Species Protection: Enforceable Hardcaps*

In conjunction with 100% observer coverage, the Department should adopt hardcaps to enforce individual quotas upon catching a vulnerable or endangered species. This also will give the Department the tools to monitor and enforce existing regulations that pertain to the Set Gillnet Fishery. For example, it is illegal to catch halibut with less than 8.5-inch mesh. Yet given the current enforcement structure, it would be impossible to discern if Halibut was caught in the small mesh net, given various mesh set panels are cast alongside each other on a Set Gillnet trip. Hardcaps coupled with 100% observer coverage would be consistent with the federal west coast groundfish bottom fishery, which also requires a form of 100% observer coverage to enforce catch quotas in the fishery.

#### *Adopt Sustainability Standards or Bycatch Criteria for Target, Incidental, and Bycatch Species*

Identifying the top five landed species is insufficient in categorizing the different types of catch in the Set Gillnet fishery. The Department and the MRC must complete step 2 and begin a management review process for all observed caught species in the Set Gillnet fishery. There are no exceptions or exemptions in the MLMA that give Set Gillnets a pass in regulating its catch. As a multispecies fishery with such a high discard and mortality rate, it is vital to ensure that all species incidentally caught are held to a sustainability standard promulgated in Chapter 5 of the MLMA. Not doing so contradicts the MLMA's regulatory framework.

#### *Unilateral Apply management to all General Gillnet Permits*

Operating under the assumption that the Department believes Set Gillnets to be a multispecies fishery management measures should apply to all General Gillnet Permits since:

1. There is only one General Gillnet Permit, not a Halibut or White Sea Bass Gillnet permit.
2. California has over a hundred-year history of regulating Set Gillnets as a gear type.
3. The White Sea Bass FMP has not been updated since 2002. Given its high ranking on the 2018 ESR, unilaterally applying the same regulations would help modernize the White Sea Bass fishery.
4. This could lead to better data collection between Department and the federal observer program if methods of observing bycatch were similar.
5. As noted, the Federal Observer data is the best and only non-self-reporting method of understanding discards. Separating the sets did show some variability in catch; however, operating under the precautionary principle was insufficient in proving bycatch levels to be acceptable. Concerns regarding Halibut came from the same data source as White Sea Bass; thus, homogenously applying the same management would save both stakeholders and regulatory staff time to apply to better manage this fishery.

#### *Non-Transferability of Permits and Potential Phase Out*

To effectively bring Set Gillnets into compliance with the precautionary principle of the MLMA, novel management measures must be adopted. With 13 just vessels contributing to 90% of the catch<sup>10</sup>, ending the transfer of these permits will allow the Department to contain the myriad of bycatch concerns from this gear type. If management measures deem ineffective or the anglers are not interested in participating in the 21st-century managed fishery, then it may be time to discuss facilitating the phase-out of the permits altogether and begin a collective dialogue on how to support the anglers in that transition.

---

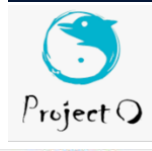
<sup>10</sup> California Department of Fish and Wildlife. 2023. Evaluating Bycatch in the California Halibut Set Gill Net Fishery.”)

These approaches represent a suite of potential management options that could be applied to the California halibut and white seabass set gillnet fishery. We ask that at the upcoming MRC meeting, we can have a science-based dialogue that utilizes the precautionary principle as promulgated in the MLMA.

Sincerely,

Scott Webb  
Advocacy & Policy Director  
Turtle Island Restoration Network

Chance Cutrano  
Director of Programs  
Resource Renewal Institute



Palos Verdes/South Bay Audubon Society



Animal Welfare Institute



July 7, 2023,

Mr. Eric Sklar, President  
California Fish and Game Commission  
P.O. Box, 944209  
Sacramento, CA 94244-2090

**RE: Marine Resource Committee Agenda Item 3: Set Gillnet Bycatch Evaluation**

Dear President Sklar and Members of the Commission,

The undersigned organizations are concerned about the high levels of bycatch in set gillnets. The unintended catch and discarding of dead or injured marine life is widely considered among the top ecological impacts of fisheries – contributing to population impacts and a reduction in marine biodiversity. To combat this, the California Department of Fish and Wildlife (CDFW) identified set gillnets as a top management priority due to their ecological risks due to bycatch, habitat impacts, and target species vulnerability, with the gear type ranking #1, #3, and #4 in CDFW's ecological risk assessment<sup>1</sup>.

California's set gillnets have among the highest discard rates—by the number of animals—of any fishery in the country. According to federal fishery observers, 64 percent of all animals caught are discarded, and over 50 percent are discarded as dead. Over the last 15 years, conservative estimates indicate more than 230,000 animals in total have been discarded in the set gillnet fishery; however, using commercial fish landings data to estimate total catch, the number of discarded animals could be as high as 2 million. More than 125 species are caught, including ecologically important sharks and rays, sea lions, dolphins, and seabirds<sup>2, 3, 4</sup>. This fishery has been documented to catch endangered leatherback sea turtles<sup>5</sup> and has been involved in large whale entanglements off California<sup>6, 7</sup>. Furthermore, 70 percent of the discarded fish and shark species do not have population assessments. In halibut-targeting set gillnet trips, California halibut accounts for just 10.6 percent of all animals caught<sup>8</sup>.

Because of the bycatch concerns, this gear type was banned within state waters by a 1990 California ballot proposition and banned off Central California by the California Fish & Game Commission in 2002. However, set gillnets still operate relatively unchecked in federal waters off Southern California but are still under the jurisdiction of the California Fish & Game Commission.

Set gillnets have a disproportionate impact on marine species relative to hook-and-line gear that targets halibut, and 87 percent of California halibut commercial fishers already use hook and line gear<sup>9</sup>. Discarding dead, undersized halibut in set gillnets impacts commercial and recreational anglers who target halibut with cleaner gear types.

We rely upon fishery managers and policymakers to ensure that all seafood is responsibly harvested in ways that support recreation, other fisheries, and the unique marine biodiversity along California's coastline. The Marine Life Management Act (MLMA) includes bycatch acceptability criteria that are fleshed out in a detailed bycatch inquiry in the MLMA Master Plan for Fisheries, giving resource managers the tools to identify bycatch concerns and implement measures to minimize bycatch. In the

context of these criteria and based on publicly accessible federal observer data and other bycatch information, we request the Commission to formally determine that the types and amounts of bycatch in set gillnets are unacceptable. The term “unacceptable” is not intended as a value judgment on the fishery or participants; instead, it represents a legal threshold, as written in the Marine Life Management Act (MLMA) (Fish and Game Code Section 7085), that is intended to initiate management action.

We Urge the California Fish and Game Commission and the California Department of Fish and Wildlife to uphold the state’s commitment to protecting marine biodiversity and promulgate comprehensive management measures to reduce bycatch in the California halibut and white seabass set gillnet fishery to acceptable levels. Doing so will support vibrant and sustainable fishing communities while protecting wildlife.

Sincerely,

Uko Gorter  
President  
American Cetacean Society (National)

Cary Strand  
Community Outreach Coordinator  
American Cetacean Society San Diego Chapter

Andrew Johnson  
California Representative  
Defenders of Wildlife

Andrea A. Treece  
Senior Attorney, Oceans Program  
Earthjustice

Ashley Eagle-Gibbs  
Legal and Policy Director  
Environmental Action Committee of West Marin

Emily Parker  
Coastal and Marine Scientist  
Heal the Bay

Michael Quill  
Marine Programs Director  
Los Angeles Waterkeeper

Francine Kershaw  
Senior Scientist  
Natural Resources Defense Council

Dawn Bishop  
CEO

Joy Primrose  
President  
American Cetacean Society Oregon Chapter

Catherine Kilduff  
Senior Attorney  
Center for Biological Diversity

Natalie Parra  
Digital Media and Communications  
Dolphin Project

Dan Silver  
Executive Director  
Endangered Habitats League

Pamela Heatherington  
Director  
Environmental Center of San Diego

Jason Schratwieser  
President  
International Game Fish Association

Kimberly Ray  
Founder & CEO  
Marine Conservation Network

Greg Helms  
Manager Fishery Conservation  
Ocean Conservancy

Kurt Lieber  
President

## Ocean Conservation Waves of Freedom

Geoff Shester  
California Campaign Director  
Oceana

Trysten Loeffe  
Conservation Committee Chair  
Palomar Audubon Society

David Weeshoff  
Conservation Chair  
Pasadena Audubon

Evelina Marchetti  
Chief Operating Officer  
Project O

James Peugh  
Conservation Chair  
San Diego Audubon Society

Scott E Thomas  
Conservation Vice Chair  
Sea and Sage Audubon Society

Michael Bear  
Community Science Director  
Shark Stewards

Laura Walsh  
California Policy Manager  
Surfrider Foundation

Erin Politz  
Vice President  
The SeaChange Agency

Harry P. Lynch  
Chief Executive Officer  
WildAid

Karla Garibay Garcia  
Senior Conservation Manager  
Azul

Dr. Alissa Deming  
VP Conservation Medicine and Science  
Pacific Marine Mammal Center

Sophie Merickel  
Club Leader  
Lick-Wilmerding High School Environmental Club

## Ocean Defenders Alliance

Courtney Vail  
Campaign Director  
Oceanic Preservation Society

Ann Dalkey  
President  
Palos Verdes/South Bay Audubon Chapter

Brian Elliott  
Conservation Director  
Pomona Valley Audubon Society

Chance Cutrano  
Director of Programs  
Resource Renewal Institute

Erica Donnelly-Greenan  
Executive Director  
Save Our Shores

Stefanie Brendl  
Executive Director  
Shark Allies

William Tippetts  
Board of Directors  
Southwest Wetlands Interpretive Association

Gilly Lyons  
Officer, Conserving Marine Life in the U.S.  
The Pew Charitable Trusts

Scott Webb  
Advocacy & Policy Director  
Turtle Island Restoration Network

Lisa Gilfillan  
Ocean Conservation Manager  
WILDCOAST

Lynn Adams  
President  
Pacific Beach Coalition

Finn Does  
Co-Chair  
Bay Area Youth Climate Summit

Alex Wagonfeld  
Club Leader  
Nueva School Environmental Club

Siddhi Jain  
Club Leader  
Harker School Green Team

Tobey Theiding  
Club Leader  
Maybeck High School Green Team

Alexandra Hobbs  
Club Leader  
Marin Academy Climate Action Club

Katin Kendrena  
President  
USD Sustainability Club

Brooks Fahy  
Executive Director  
Predator Defense

Thomas Wheeler  
Executive Director  
Environmental Protection Information Center

Kimberly Baker  
Executive Director  
Klamath Forest Alliance

Linda Dionne  
Cofounder  
Voices of Wildlife in NH

William Rossiter  
Vice President  
NY4WHALES

James Holt  
Executive Director  
Buffalo Field Campaign

Mark J Palmer  
Associate Director  
International Marine Mammal Project of Earth  
Island Institute

Natalie Ahwesh  
Executive Director  
Humane Action Pittsburgh

Andy Rogan  
Science Manager  
Ocean Alliance

Hardy Kern  
Director of Government Relations  
American Bird Conservancy

Jessica Dickens  
President  
Cetacean Society International

Georgia Hancock  
Director/Senior Attorney, Marine Life Program  
Animal Welfare Institute

Kayla Feairheller  
Founder & President  
Bleu World

Jenny Berg  
California State Director  
The Humane Society of the United States

Deborah Feairheller  
Director  
the HEART laboratory

- [1] CDFW. 2018. MLMA Master Plan Fishery Prioritization. <https://wildlife.ca.gov/Conservation/Marine/MLMA/Master-Plan/Prioritizing-Management-Efforts/results-of-fisheries-prioritization#gsc.tab=0>. Samhuri et al. 2019. "An ecosystem-based risk assessment for California fisheries co-developed by scientists, managers, and stakeholders." *Biological Conservation* 231, 103–121. <https://www.sciencedirect.com/science/article/pii/S0006320718302696>
- [2] NMFS. 2022. California Set Gillnet Observer Program, Observed Catch 2007-01-01 to 2017-12-31. NOAA. <https://media.fisheries.noaa.gov/2022-01/setnet-catch-summaries-2007-2010-2013-2017.pdf>
- [3] NMFS. 2019. U.S. National Bycatch Report First Edition Update 2 and 3. U.S. Department of Commerce, 90 p. Available: <https://www.fisheries.noaa.gov/resource/document/national-bycatch-report>

- [4] Benaka, L.R., Bullock, D., Hoover, A.L., Olsen, N.A. (editors). 2019. U.S. National Bycatch Report First Edition Update 3. U.S. Dept. of Commerce, NOAA. NOAA Technical Memorandum NMFS-F/SPO-190, 95 p.  
[https://media.fisheries.noaa.gov/dam-migration/nbr\\_update\\_3.pdf](https://media.fisheries.noaa.gov/dam-migration/nbr_update_3.pdf)
- [5] Julian, F., Beeson, M. (1998). "Estimates of marine mammal, turtle, and seabird mortality for two California gillnet fisheries: 1990–1995". Fishery Bulletin, U.S. Department of Commerce, National Ocean and Atmospheric Association, 96 (2), 273. Available: <https://spo.nmfs.noaa.gov/sites/default/files/pdf-content/fish-bull/julian.pdf>
- [6] NMFS. 2021. Large whale entanglements off the U.S. West Coast, from 1982–2017. Saez, L., D. Lawson, and M. DeAngelis. NOAA Tech. Memo. NMFS-OPR-63A, 50 p.  
[https://fisheries.legislature.ca.gov/sites/fisheries.legislature.ca.gov/files/Large%20whale%20entanglements%20off%20the%20U.S.%20West%20Coast%201982-2017\\_Final%20031921.pdf](https://fisheries.legislature.ca.gov/sites/fisheries.legislature.ca.gov/files/Large%20whale%20entanglements%20off%20the%20U.S.%20West%20Coast%201982-2017_Final%20031921.pdf)
- [7] NMFS. 2020. Master data of large whale entanglement records off the U.S. West Coast. (L. Saez, Personal communication.) (Whale entanglement data used excludes gillnet entanglements positively identified as large-mesh drift gillnets. This dataset includes records collected through 2019 and represents an update of the original Master data of large whale entanglement records off the U.S. West Coast up to 2017.)
- [8] CDFW. 2022. Percent California halibut caught by number of animals in halibut-targeting set gillnet trips. (K. Ramey, Personal communication. November 2022.)
- [9] Free, C.M. 2022. "Assessment of associated landed species and bycatch discards in the California halibut gill net and trawl fisheries." Bren School of Environmental Science and Management, University of California, Santa Barbara, Marine Science Institute, University of California, Santa Barbara, Santa Barbara, CA. (Committee Staff Summary for November 17, 2022, MRC Author: Susan Ashcraft; Item 5. "Assessing and Addressing Bycatch in California Fisheries," p. 5.)  
<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=206229&inline>

**COMMITTEE STAFF SUMMARY FOR MARCH 14 AND 16, 2023 MRC**  
*For background purposes only*

### 3. AQUACULTURE LEASING IN CALIFORNIA - PUBLIC INTEREST DETERMINATION

#### Today's Item

Information ☐

Action ☒

Receive and discuss proposed public interest criteria for new lease applications and public input, and develop potential Marine Resources Committee (MRC) recommendation.

#### Summary of Previous/Future Actions

- |   |                                 |
|---|---------------------------------|
| • MRC recommended developing public interest criteria for new aquaculture leases                        | Mar 16, 2021                    |
| • Commission approved MRC recommendation to develop public interest criteria for new lease applications | Apr 14, 2021                    |
| • Received Department updates on developing criteria  | Jul 21, 2021 and March 24, 2022 |
| • Received and discussed initial draft criteria   | Jul 14, 2022                    |
| • Received and discussed revised Department draft criteria and guidance on next draft                   | Nov 17, 2022                    |
| • <b>Today's update on draft criteria and recommendation</b>  | <b>March 14 and 16, 2023</b>    |

#### Background

The Commission 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 the Commission and the lessee. Prior to approving any lease, the Commission must determine "...that *the lease is in the public interest* in a public hearing conducted in a fair and transparent manner, with notice and comment, in accordance with commission procedures." (California Fish and Game Code Section 15400 et seq.; emphasis added)

In April 2021, the Commission approved an MRC recommendation to develop criteria for the Commission to use in determining that an aquaculture lease applied for would be in the public interest. The Commission referred the topic to MRC and the Department committed to leading development of draft criteria for MRC consideration. See Exhibit 1 for additional background.

In June 2022, the Department released a document outlining initial draft public interest criteria, presented the initial draft to MRC, held a public webinar and subsequent workshop to discuss the criteria, and held several conversations with agency partners, industry members, and environmental non-governmental organizations (NGOs).

At the November 2022 MRC meeting, the Department presented a second, revised version of draft criteria for making a determination that an aquaculture lease is in the public interest. Numerous NGOs, agencies of jurisdiction, aquaculture industry representatives, and community members provided thoughtful input and recommendations for (1) refining a final criteria document and (2) the Commission's process in applying those criteria. There was

**COMMITTEE STAFF SUMMARY FOR MARCH 14 AND 16, 2023 MRC**  
*For background purposes only*

general agreement that the staff document provided a concrete foundation for a path forward. MRC requested that the Commission's tribal advisor and liaison also review the draft criteria for potential tribal considerations and input.

Following discussion and additional MRC guidance on criteria, MRC directed Commission staff to work with the Department to:

1. revise the draft public interest criteria;
2. further engage with government agencies, interested stakeholders, and environmental non-governmental organizations; and
3. bring a final proposal to today's MRC meeting for potential recommendation to the Commission.

### ***Update***

As requested, Commission and Department staff began integrating public and MRC input into a third draft of the public interest criteria, and conducted outreach to clarify specific comments and suggestions prior to formalizing a final proposal. The Commission's tribal advisor and liaison reviewed the draft criteria for potential tribal considerations and did not identify significant concerns. Commission and Department staff also scheduled meetings in January and February 2023 with industry members, government agencies, and environmental NGO representatives, to confer and clarify the input they had shared in writing and at MRC meetings.

Through the conversations, written comments, and criteria development, it became clear that *there is not concurrence or shared understanding on when and how to use the public interest criteria within the overall leasing process.*

Significant procedural concerns were raised over the timing for a "public interest determination" in the leasing process, particularly associated with the drafted environmental criteria. The current proposal assumes that making a determination of whether a lease is in the public interest occurs at the beginning of the lease consideration process; however, some question how the Commission could make such a determination based on environmental criteria without first going through an environmental review process similar to that under the California Environmental Quality Act (CEQA).

The procedural concerns that were raised led Commission and Department staff to pause work on completing and recommending a final criteria proposal until they could explore the procedural concerns and clarify a responsive path forward.

### ***Staff Analysis and Findings***

Staff has explored the procedural concerns emphasized in discussion and comments, and reviewed assumptions, relevant examples, and guidance in the California Fish and Game Code. Staff also explored options in coordination with the Department and other experts to reconcile the process concerns and viewpoints while still relying on the public interest criteria

**COMMITTEE STAFF SUMMARY FOR MARCH 14 AND 16, 2023 MRC**  
*For background purposes only*

developed over the past year and aligning them with the expressed intent of MRC. From the explorations, staff has four findings.

1. There is flexibility in when the public interest determination is made.
  - Fish and Game Code is not specific about the timing of the decision for whether a lease is in the public interest, *only that it must precede lease approval*; the code also does not specify process steps or timing relative to CEQA mandates.
2. Procedural concerns over timing may be due, in part, to how the drafted criteria are framed and characterized as “public interest determination” criteria.
  - The framing and characterization may set an expectation that the evaluation results would be decisive and incontestable (the legal term is “dispositive”) which, some argue, would be difficult without replicating CEQA, evaluating a proposal under CEQA, or undertaking a rulemaking that mandates consideration of specific environmental criteria and the thresholds for those criteria prior to CEQA.
3. Criteria can be recharacterized as “public interest evaluation” criteria to potentially address concerns.
  - The criteria were drafted with the intent to be Commission guidelines for staff and Department evaluations to help inform the Commission’s determination, rather than as defined criteria standards to which the Commission must adhere in making a determination.
  - Recharacterization could include organizing the criteria into an inquiry-based evaluation framework to guide staff and Department evaluations and convey the types of criteria evaluations and recommended actions that would aid the Commission in making a determination.
4. A framework can provide a pathway for an initial determination pre-CEQA and final determination post-CEQA.
  - An initial evaluation of an application based on an evaluation framework would help reveal if any design elements are insurmountable (environmental, socio-cultural or economic—public trust— flaws that cannot be resolved through mitigation or minor modifications).
    - May lead to a determination *not to proceed with CEQA review and further lease evaluation*.
    - Provides guidance for an applicant to consider in potentially revising and resubmitting a lease design.
  - An initial evaluation based on a framework would also identify which inquiries under any criteria need more in-depth evaluation (including CEQA) before conclusively making a finding.
    - May lead to an initial determination that it *is in the public interest to proceed with review* and, thus, advancing the application to CEQA review to help answer inquiries.

**COMMITTEE STAFF SUMMARY FOR MARCH 14 AND 16, 2023 MRC**  
*For background purposes only*

- Provides information to inform a final determination of whether *it is in the public interest to proceed with considering lease approval*.
- A completed CEQA review would be necessary before a final Commission determination of whether a lease is in the public interest.
- The CEQA analysis, Department review using the evaluation criteria, Commission staff review and evaluation, formal and informal consultation with other agencies of jurisdiction and tribes, and public comment would all be factored into the Commission decision about whether to issue a lease.

The staff analysis and findings are largely consistent with the proposed public interest determination criteria document the Department developed, with some important adjustments intended to enhance clarity, refine process, improve shared understanding, and reduce concerns regarding the process and products. The adjustments could shape a public interest evaluation criteria framework for lease application evaluation, which would inform Commission determinations regarding public interest.

Today, Commission and Department staff will provide an overview of developments since the last MRC meeting and the staff analysis to support MRC discussion and potential direction to staff. As this is the first opportunity for MRC and stakeholders to absorb and discuss the information, MRC may choose to discuss the process options and consider providing staff time to organize the criteria into an evaluation framework format prior to advancing a final recommendation to the Commission.

### **Significant Public Comments**

The San Diego Unified Port District—an agency that acts as landlord, operator, regulator, and environmental steward of state tidelands and submerged lands—summarized the conversation it held with Department and Commission staff and other agencies of jurisdiction on January 11, 2023, asked for clarity on when and how the criteria would be applied and when the public interest determination would occur, and provided specific comments about ways to improve the draft criteria (Exhibit 3). The district also shared several documents – two scientific studies and a presentation – mentioned during the November 17 MRC meeting (Exhibit 2).

### **Recommendation**

**Commission staff:** Based on discussion today, continue a recommendation on the criteria and process elements to the July 2023 MRC meeting and direct staff to: (1) complete a final recommendation for the public interest criteria; and (2) work with the Department on process options and updating the draft criteria into an inquiry-based public interest evaluation framework for MRC consideration.

### **Exhibits**

1. [Staff summary from item 4, MRC meeting, Jul 14, 2022](#) (*for background purposes only*)

**COMMITTEE STAFF SUMMARY FOR MARCH 14 AND 16, 2023 MRC**

*For background purposes only*

2. [Email and transmitted letter from Paula Sylvia, Program Director, San Diego Unified Port District and an attached master's thesis, aquaculture presentation, and oyster study](#), received February 9, 2023

**Committee Direction/Recommendation**

The Marine Resources Committee recommends that Commission and Department staff revise the proposed lease application process, including public interest evaluation criteria and Commission public interest determination process, and bring a final proposal to the July 2023 MRC meeting for a potential committee recommendation.

# **California Fish and Game Commission and California Department of Fish and Wildlife**

## **Proposed Criteria and Framework for Evaluating if a New State Water Bottom Lease is in the Public Interest**

*Third draft, for consideration by the  
Marine Resources Committee on July 20, 2023  
(Revised July 16, 2023)*

This document is the third draft of staff-proposed evaluation criteria to support a California Fish and Game Commission (Commission) public interest determination, as required by California Fish and Game Code (FGC) Section 15400, prior to issuing a state water bottom lease for aquaculture purposes. The proposed criteria were revised by Commission and California Department of Fish and Wildlife (Department) staff following several workshops and conversations with agency partners, industry members, environmental non-governmental organizations and the Marine Resources Committee (MRC).

At the March 2023 MRC meeting, the MRC requested that Commission staff work with the Department to revise the second draft public interest determination criteria, presented at the November 2022 MRC meeting, into this third and proposed final draft. MRC directed staff to restructure the draft criteria as a framework for evaluating if a lease is in the public interest as recommended by staff, develop options for the Commission public interest determination process, and bring a final proposal to the July 2023 MRC meeting for potential MRC recommendation. This document provides the third draft of criteria and a high-level overview of their use within the leasing process. A process diagram is provided in a separate document.

### **Overview of Public Interest Evaluation Criteria**

An analysis to support a determination by the Commission of whether a state water bottom lease is in the public interest is structured around a series of criteria, divided into two categories: “Requirements”, which limit or constrain lease locations or activities by statute, regulation, or other lease entitlements, and “Considerations”, which include a suite of potential impacts or concerns, and potential benefits for the Commission to weigh in making a determination of public interest.

#### ***Requirements Criterion***

Evaluation of requirements is based on a single criterion:

- Legality under existing laws, regulations or entitlements related to aquaculture.

Evaluation of the requirements criterion is structured around a series of related inquiries that are binary in nature and, therefore, can be objectively assessed by staff.

#### ***Considerations Criteria:***

The considerations criteria consist of a broader list of environmental, social, economic and cultural factors that may be reasonably anticipated for consideration during the planning, evaluation, and decision-making process. The factors are divided into six criteria:

1. Compatibility with state aquaculture policy standards.

2. Social, cultural, and/or economic impingement on access for public uses or other interests, or tribal uses.
3. Degree of threat to environmental protection, ecosystem sustainability goals, and public trust values
4. Best management practices measures.
5. Potential environmental benefits.
6. Potential social, cultural, or economic benefits.

Evaluating the considerations criteria is structured around a series of related inquiries to explore the potential impacts or benefits of each unique lease application. The answers to inquiries associated with these criteria are not proposed to be used in a prescriptive way, but rather are intended to provide a structured basis for staff review and recommendations, and the Commission's eventual discretionary determination.

Evaluating the considerations criteria requires in-depth analyses, including those conducted pursuant to CEQA review; thus, the evaluation cannot be completed prior to CEQA. Consequently, evaluating these criteria is proposed to occur after CEQA environmental and cultural analysis and supplemental social and economic analyses. However, the criteria are expected to serve as a guide in pre-application lease design and siting, and during the application process to inform public discussion and CEQA review.

### **Initial Review: Requirements Criteria**

Following Commission receipt of a new lease application, an initial review and confirmation of lease requirements will be completed by staff to determine if lease requirements are met under a single criterion with seven corresponding inquiries.

### ***Legality under Existing Laws and Regulations Related to Aquaculture***

This criterion verifies that any location or proposed culture species or method would not be illegal under any relevant state or federal law, regulation, or legal entitlement or existing lease agreement.

#### ***Inquiries:***

1. Lease is located in an area that is certified by the California State Lands Commission as unencumbered and available for aquaculture use<sup>1</sup>.
2. Lease area avoids areas used by the public for digging clams, as designated by CDFW<sup>2</sup>.
3. Lease is not located within designated areas or jurisdictions that prohibit aquaculture.

---

<sup>1</sup> T14, CCR, Section 237(b)(3).

<sup>2</sup> FGC Section 15401.

4. Lease is not located in an area where it will adversely impact previously identified Native American cultural resources, as identified by the Native American Heritage Commission.
5. Lease does not propose finfish aquaculture in state waters<sup>3</sup>.
6. Lease area is compatible with activities occurring within administrative kelp bed designations<sup>4</sup>.
7. *For products cultivated for human consumption only:* Lease is not sited in areas with *unresolvable* risks to public health as defined by the California Department of Public Health in compliance with the National Shellfish Sanitation Program<sup>5</sup>.

Recommended actions:

- If all requirements are met, the Commission directs staff to advance the application to MRC and Tribal Committee (TC) for review and commence CEQA and an in-depth analysis, which will contribute information to support evaluation of considerations criteria.
- If any requirements are not met, consideration of the application is concluded. An applicant may reapply if deficiencies in the requirements are addressed. Staff will report the outcome of the requirements evaluation at the next regularly scheduled Commission meeting.

## Final Review and Evaluation: Considerations Criteria

A final evaluation of lease public interest is supported by analyses conducted pursuant to CEQA and supplemental evaluation by Department staff based on six criteria and corresponding inquiries.

### 1. **Compatibility with State Aquaculture Policy**

This criterion considers any activities or methods that conflict with state aquaculture policy.

*Inquiries:*

- a. Are proposed lease activities, culture methods, and species compatible with the State aquaculture action plan (once completed and adopted)?

---

<sup>3</sup> FGC Section 15400(b).

<sup>4</sup> T14, CCR, Section [165.5](#).

<sup>5</sup> This is independent from any required certificates, licenses, permits, and registrations issued by CDPH that must be pursued by an aquaculturist subsequent to lease approval.

## **2. Social, Cultural, and/or Economic Impingement on Access for Public Uses or Other Interests, or Tribal Uses**

This criterion considers locations that would interfere with public access to state waters or commercial or recreational uses.

*Inquiries:*

- a. Would the lease unreasonably impede public access to state waters or waterfronts for purposes of commercial and/or recreational fishing and harvesting, commerce, or coastal recreation, including documented high-use vessel routes, shipping lanes, or navigation channels<sup>6</sup>?
- b. Would the lease unreasonably impede tribal access to state waters for the purpose of exercising customary hunting, gathering, and fishing rights (e.g., as afforded by exemptions to marine protected area restrictions)?

## **3. Degree of Threat to Environmental Protection, Ecosystem Sustainability Goals, and Public Trust Values**

This criterion considers the impact of the lease (including the location, culture species, or methods) on the environment and/or the ecosystem and explores whether the lease would impede the ability of the ecosystem to function properly.

*Inquiries:*

- a. Does the lease propose use of culture methods, chemicals, or materials known to cause significant environmental degradation?
- b. Do lease activities include culture of any species at any location where it has been determined by the Department [based on best available science], it would be detrimental to adjacent native wildlife<sup>7</sup>?
- c. What is the risk that the lease would unreasonably interfere with, or significantly impact, the ability of the site and surrounding areas to support ecologically significant flora and fauna and the ecosystem services they provide, including blue carbon sequestration and wetland migration as sea level rises?
- d. Is the lease sited to avoid areas within recognized sensitive habitats (including biogenic habitat such as eelgrass)? If not avoided, is lease sited to minimize or mitigate impacts to such habitats?
- e. Is the lease sited to avoid special-status species, including species with a threatened or endangered designation, such as species covered under the federal or California endangered species acts, Marine Mammal Protection Act, or Migratory Bird Treaty Act? If not avoided, is the lease sited to minimize or mitigate impacts to such special-status species?

---

<sup>6</sup> FGC Section [15411](#).

<sup>7</sup> FGC sections [15101\(b\)](#) and [15102](#).

- f. Does the lease propose culture of any non-native species not currently cultured in California waters? If so:
  - i. Are any of the non-native species documented to be invasive?
  - ii. Does the proposal demonstrate the operation will not be detrimental to native fish and wildlife consistent with the Commission's Introduction of Non-Native Species Policy?

#### **4. *Best Management Practices Measures***

This criterion considers methods and measures that would reduce the leases environmental impact on local species and the surrounding habitat.

*Inquiries:*

Does the proposed lease include measures to:

- a. Avoid and/or minimize the risk of marine life entanglements?
- b. Prevent introduction, transmission, and/or spread of invasive species, pathogens, disease, and pests?
- c. Prevent, minimize, clean up, and monitor marine debris?
- d. Maintain regular inspections of infrastructure and culture activities, keep infrastructure in good repair, address any damaged or lost cultivation materials within specified time frames, and report on gear and infrastructure conditions?
- e. Meet minimum planting and harvesting requirements per acre<sup>8</sup>?
- f. Account for any potential environmental or logistical challenges associated with the lease location (e.g., depth and trampling or vessel scouring of eelgrass, proximity to seabird and shorebird rookeries and avoidance of rookery habitat loss or bird disturbance, proximity to marine mammal haul-outs, proximity to river run-off or seasonal siltation events, vessel transit routes, etc.)?

#### **5. *Potential Environmental Benefits***

This criterion includes any potential benefits or adaptation strategies to the local environment.

*Inquiries:*

- 1. Would lease activities contribute environmental benefits, such as habitat creation, nutrient uptake or filtration, species recovery, or other ecosystem services?
- 2. Would lease activities advance mitigation and/or adaptation strategies in response to climate change, including carbon sequestration?

---

<sup>8</sup> T14, CCR, Section [237](#).

## **6. *Potential Social, Cultural, or Economic Benefits***

This criterion includes any potential benefits that would positively affect local, regional and/or statewide communities.

### *Inquiries:*

1. What employment and other economic opportunity would lease activities provide to the state and surrounding community?
2. Would lease activities provide fresh, locally-sourced product, benefiting California food security, and/or supplement wild-harvested supplies?
3. Would lease activities help increase native fish stocks or enhance commercial and recreational fishing?
4. Would approval of the proposed lease facilitate equitable access to leasing, minimize monopolies, or align with partner values?

### Recommended actions:

- Request the Department evaluate the inquiries in consultation with other state, federal and tribal agencies, where relevant; highlight areas of uncertainty or unmitigated impacts; and develop a public interest recommendation.
- Deliver recommendations to MRC and TC for potential committee recommendations for Commission consideration.
- Commission consider evaluations and recommendations, along with public input, in making its public interest determination.
- If the Commission determines that the lease is in the public interest, then the application may be considered for approval.
- If the Commission does not determine that the lease is in the public interest, consideration of the application is concluded.

**California Fish and Game Commission**  
**Crosswalk from Second Draft Criteria for Public Interest Determination to Proposed Criteria and Evaluation Framework for a Public Interest Determination for New Aquaculture Lease Applications**

*Revised July 16, 2023*

This document presents a crosswalk to map the relationship between content from the second draft of criteria for a public interest determination (Draft 2) as presented to the Marine Resources Committee (MRC) in November 2022, and content location and characterization in the third draft of the proposed criteria and inquiry-based evaluation framework for a public interest determination (Draft 3).

**Summary of Draft 2 to Draft 3**

The second draft criteria document included two categories of criteria: “Requirements or Constraints”, which limit or constrain lease locations or activities by statute, regulations, or lease availability, and “Considerations,” which include a suite of potential impacts or concerns, and potential benefits for the Commission to weigh in making a determination of public interest. The revised draft 3 public interest criteria are similarly divided into two sections: (1) Requirements, consistent with the category described in draft 2, and (2) Considerations, which provides a broader list of factors that may be reasonably anticipated for consideration during the planning, evaluation, and decision-making process.

The crosswalk is organized into two tables, one for each of the categories of criteria:

- Table 1 focuses on the original requirements/constraints criteria identified in draft 2 with the requirements criteria in draft 3. While most of the original requirements/constraints from draft 2 are still present in draft 3, there were slight modifications, including one requirement moving to considerations, and two considerations moving to requirements. There is now one criterion informed by seven related requirements.
- Table 2 focuses on the original considerations criteria identified in draft 2, with the considerations criteria rephrased as inquiries to answer through more in-depth evaluation. Staff clustered related inquiries together (e.g., environmental, social, economic, etc.) and identified overarching categories that now serve as the considerations criteria. Evaluating the inquiries will help answer whether the overarching criterion is met. Including the modifications to the considerations mentioned for Table 1, there are three new inquiries not identified as criteria in draft 2.

**How to Use the Crosswalk**

The first two columns of the tables document the criteria from draft 2, while the third, fourth and fifth columns of the tables document the criteria and related inquiries in draft 3. New requirements or consideration inquiries in draft 3 that were not in

draft 2 are reflected with an “N/A” in the “Original Criteria from Draft 2” column. An “N/A” in the fourth column denotes that the draft 2 criteria was moved to a different section of the draft 3 criteria.

Text changes are reflected in underscore or ~~strikeout~~. There is a column indicating the information source for the inquiries. R = Requirements, C = Considerations, CCC = California Coastal Commission, CDFW = California Department of Fish and Wildlife, CDPH = California Department of Public Health, NAHC = Native American Heritage Commission, NMFS = National Marine Fisheries Service, SLC = California State Lands Commission, USCG = United States Coast Guard.

**Table 1.** Requirements for an initial evaluation of a new state water bottom aquaculture lease application to help determine if the proposed lease will be advanced for more in-depth analysis, such as environmental evaluation pursuant to California Environmental Quality Act (CEQA).

Original Category (from Draft 2)	Original Criteria (from Draft 2)	Proposed Requirements Criterion	Proposed Inquiries within Each Criterion	Information Source
Requirements/ Constraints	R1. Lease is located in an area that is certified by the California State Lands Commission as unencumbered and available for aquaculture use <sup>1</sup> .	<b><i>R1. Legality under existing laws and regulations related to aquaculture.</i></b>  This criterion verifies that any location or proposed culture species or method would not be illegal under any relevant state or federal law, regulation, or legal entitlement or lease agreement. All inquiries must result in a “yes” answer to proceed.	R1.1 Lease is located in an area that is certified by the California State Lands Commission as unencumbered and available for aquaculture use <sup>Error!</sup> Bookmark not defined.	SLC
	R2. Lease area does not include areas used by the public for digging clams <sup>2</sup> .		R1.2. Lease area avoids areas used by the public for digging clams, <u>as designated by CDFW</u> <sup>2</sup> .	CDFW

<sup>1</sup> Title 14, California Code of Regulations (CCR), subsection 237(b)(3).

<sup>2</sup> California Fish and Game Code (FGC), Section 15401.

Original Category (from Draft 2)	Original Criteria (from Draft 2)	Proposed Requirements Criterion	Proposed Inquiries within Each Criterion	Information Source
	R3. Lease is not located within marine protected areas, marine managed areas, and special closures under state, federal, or other jurisdictions that prohibit aquaculture.		<del>R1.3. Lease is not located within marine protected areas, marine managed areas, and special closures under state, federal, or other designated areas or jurisdictions that prohibit aquaculture.</del>	CDFW
<b>Requirements/Constraints</b>	R4. Lease area is not located within, over, or adjacent to any area likely to adversely impact previously identified Native American cultural resources, as identified by the Native American Heritage Commission.		<del>R1.4. Lease area is not located within, over, or adjacent to any in an area likely to where it will adversely impact previously identified Native American cultural resources, as identified by the Native American Heritage Commission.</del>	CDFW in consultation with NAHC
	R5. Lease activities do not include culture of any species at any location where it has been determined, [based on best available science], it would be detrimental to adjacent native wildlife <sup>3</sup> .		N/A (moved to considerations) <sup>4</sup>	
	N/A		<del>R1.5. Lease does not propose finfish aquaculture in state waters<sup>5</sup>.</del>	CDFW
<b>Considerations: Potential impacts of concerns</b>	C1. Lease area is compatible with administrative kelp bed designations <sup>Error! Bookmark not defined.</sup>		<del>R1.6. Lease area is compatible with activities occurring within administrative kelp bed designations<sup>6</sup>.</del>	CDFW
	C2. Lease is sited in areas that would minimize risks to public health as determined through consultation with California Department of Public Health		<del>R1.7. Lease is sited in areas that would minimize risks to public health as determined through consultation with California Department of Public Health</del>	CDPH

<sup>3</sup> FGC Section [15102](#).

<sup>4</sup> FGC Section 15102 is a provision for potential Department action (generally applies after lease issuance). In addition, the Department currently does not have a list of pre-determined locations that would be detrimental to adjacent native wildlife.

<sup>5</sup> FGC subsection [15400\(b\)](#).

<sup>6</sup> T14, CCR, Section [165.5](#).

Original Category (from Draft 2)	Original Criteria (from Draft 2)	Proposed Requirements Criterion	Proposed Inquiries within Each Criterion	Information Source
	(including within or adjacent to recognized mooring areas).		<del>(including within or adjacent to recognized mooring areas).</del> <i>For products cultivated for human consumption only.</i> Lease is not sited in areas with <i>unresolvable</i> risks to public health as defined by the California Department of Public Health in compliance with the National Shellfish Sanitation Program <sup>7</sup>	

**Table 2.** Proposed consideration criteria to facilitate a final determination of whether a new state water bottom aquaculture lease is in the public interest. These considerations consist of six criteria informed by one to five related inquiries per criterion. The inquiries will occur simultaneously to California Environmental Quality Act (CEQA) and socioeconomic analyses. It also indicates the information source for these inquiries.

Original Category (from Draft 2)	Original Criteria (from Draft 2)	Proposed Considerations Criteria	Proposed Inquiries within each Criteria	Information Source
<b>Considerations: Potential impacts or concerns</b>	C1. Lease area is compatible with administrative kelp bed designations.	N/A	N/A (Moved to Requirements) <sup>8</sup>	N/A

<sup>7</sup> This is independent from any required certificates, licenses, permits, and registrations issued by CDPH that must be pursued by an aquaculturist subsequent to lease approval.

<sup>8</sup> Moved to requirements as there are non-discretionary references to legal entitlements or lease agreements, including kelp bed leases.

Original Category (from Draft 2)	Original Criteria (from Draft 2)	Proposed Considerations Criteria	Proposed Inquiries within each Criteria	Information Source
	C2. Lease is sited in areas that would minimize risks to public health as determined through consultation with California Department of Public Health (including within or adjacent to recognized mooring areas).	N/A	N/A (Moved to Requirements) <sup>9</sup>	N/A
	N/A	<b><i>C1. Compatibility with state aquaculture policy.</i></b> This criterion considers any activities or methods that conflict with state aquaculture policy standards.	C1.1. <u>Are proposed lease activities, culture methods, and species compatible with the State aquaculture action plan (once completed and adopted)?</u>	CDFW, partner agencies
	C4. Lease would not unreasonably impede public access to state waters for purpose of commercial and/or recreational fishing, navigation, commerce, or coastal recreation; this should include documented high-use vessel routes, shipping lanes, and navigation channels for recreational and commercial uses <sup>Error! Bookmark not defined.</sup>	<b><i>C2. Social, cultural, and/or economic impingement on access for public uses or other interests, or tribal uses</i></b> This criterion considers locations that would interfere with public access to state waters or commercial or recreational uses.	C2.1. Would the lease unreasonably impede public access to state waters <u>or waterfronts</u> for purposes of commercial and/or recreational fishing <u>and</u> harvesting, commerce, or coastal recreation; <del>this should</del> including documented high-use vessel routes, shipping lanes, or navigation channels <del>for recreational and commercial uses</del> <sup>10</sup> ?	CDFW, SLC, CCC, USCG, industry consult, stakeholder input
	N/A		C2.2 <u>Would the lease unreasonably impede tribal access to State waters for the purpose of exercising customary hunting, gathering, and fishing rights (e.g., as afforded by exemptions to marine protected area restrictions)?</u>	Local tribes

<sup>9</sup> Moved to requirements as CDPH has the ability to define locations that would have unresolvable health risks. Note that this is independent from any required certificates, licenses, permits, and registrations issued by CDPH that must be pursued by an aquaculturist subsequent to lease approval.

<sup>10</sup> FGC Section [15411](#).

Original Category (from Draft 2)	Original Criteria (from Draft 2)	Proposed Considerations Criteria	Proposed Inquiries within each Criteria	Information Source
	C3. Lease does not propose culture methods, chemicals, or materials known to cause environmental degradation.	<b><i>C3. Degree of threat to environmental protection, ecosystem sustainability goals, and public trust values</i></b>  This criterion considers the impact of the lease (including the location, culture species, or methods) on the environment and/or the ecosystem and explores whether the lease would impede the ability of the ecosystem to function properly.	C3.1. Does the lease propose use of culture methods, chemicals, or materials known to cause <u>significant</u> environmental degradation?	CEQA Analysis
<b>Requirements/ Constraints</b>	R5. Lease activities do not include culture of any species at any location where it has been determined, [based on best available science], it would be detrimental to adjacent native wildlife <sup>3</sup> .		C3.2. Do lease activities include culture of any species at any location where it has been determined <u>by the Department</u> [based on best available science], it would be detrimental to adjacent native wildlife <sup>3</sup> ?	CDFW, CEQA Analysis
<b>Considerations: Potential impacts or concerns</b>	C5. Lease would not unreasonably interfere with, or significantly impact, the ability of the site and surrounding areas to support ecologically significant flora and fauna and the ecosystem services they provide, including blue carbon sequestration and wetland migration as sea level rises.		C3.3. What is the risk that the lease would unreasonably interfere with, or significantly impact, the ability of the site and surrounding areas to support ecologically significant flora and fauna and the ecosystem services they provide, including blue carbon sequestration and wetland migration as sea level rises?	CEQA Analysis
	C6. Lease is sited to avoid areas within recognized sensitive habitats and avoid impacts to special-status species, including species with a threatened or endangered designation.		C3.4. Is the lease sited to avoid areas within recognized sensitive habitats (including biogenic habitat such as eelgrass)? <u>If not avoided, is lease sited to minimize or mitigate impacts to such habitats?</u>	CEQA Analysis

Original Category (from Draft 2)	Original Criteria (from Draft 2)	Proposed Considerations Criteria	Proposed Inquiries within each Criteria	Information Source
			C3.5. Is the lease sited to avoid special-status species, including species with a threatened or endangered designation, such as <u>species covered under the federal or California endangered species acts, Marine Mammal Protection Act, or Migratory Bird Treaty Act?</u> If not avoided, is the lease sited to minimize or mitigate impacts to such special-status species?	NMFS
	N/A		<p>C3.6. <u>Does the lease propose culture of any non-native species not currently cultured in California waters? If so:</u></p> <ul style="list-style-type: none"> <li>• <u>Are any of the non-native species documented to be invasive?</u></li> <li>• <u>Does the proposal demonstrate the operation will not be detrimental to native fish and wildlife consistent with the Commission's Introduction of Non-Native Species Policy?</u></li> </ul>	CEQA Analysis

Original Category (from Draft 2)	Original Criteria (from Draft 2)	Proposed Considerations Criteria	Proposed Inquiries within each Criteria	Information Source
	<p>C7. The proposed lease will include measures to:</p> <ul style="list-style-type: none"> <li>▪ prevent introduction, transmission, and/or spread of invasive species, pathogens, disease, and pests;</li> <li>▪ prevent, minimize, clean up, and monitor marine debris;</li> <li>▪ maintain regular inspections of infrastructure and culture activities, keep infrastructure in good repair, address any damaged or lost cultivation materials within specified timeframes, and report on gear and infrastructure conditions;</li> <li>▪ meet the minimum production and planting requirements per acre<sup>11</sup>.</li> </ul>	<p><b><i>C4. Best management practices measures</i></b></p> <p>This criterion considers methods and measures that would reduce the leases environmental impact on local species and the surrounding habitat.</p>	<p>C4.1. Does the proposed lease include measures to:</p> <ul style="list-style-type: none"> <li>a. <u>Avoid and/or minimize the risk of marine life entanglements?</u></li> <li>b. Prevent introduction, transmission, and/or spread of invasive species, pathogens, disease, and pests?</li> <li>c. Prevent, minimize, clean up, and monitor marine debris?</li> <li>d. Maintain regular inspections of infrastructure and culture activities, keep infrastructure in good repair, address any damaged or lost cultivation materials within specified time frames, and report on gear and infrastructure conditions?</li> <li>e. Meet the minimum planting and harvesting requirements per acre<sup>11</sup>?</li> <li>f. <u>Account for any potential environmental or logistical challenges associated with the lease location (e.g., depth and trampling or vessel scouring of eelgrass, proximity to seabird and shorebird rookeries and avoidance of rookery habitat loss or bird disturbance, proximity to marine mammal haul-outs, proximity to river run-off or seasonal siltation events, vessel transit routes, etc.)?</u></li> </ul>	<p>CDFW, CEQA Analysis</p>

Original Category (from Draft 2)	Original Criteria (from Draft 2)	Proposed Considerations Criteria	Proposed Inquiries within each Criteria	Information Source
<b>Considerations: Potential benefits</b>	B3. Lease activities would contribute environmental benefits, such as habitat creation, nutrient uptake or filtration, species recovery, or other ecosystem services.	<b>C5. Potential environmental benefits</b>  This criterion includes any potential benefits or adaptation strategies to the local environment.	C5.1. Would lease activities contribute environmental benefits, such as habitat creation, nutrient uptake or filtration, species recovery, or other ecosystem services?	CEQA Analysis
	B4. Lease activities would advance mitigation and/or adaptation strategies in response to climate change, including carbon sequestration.		C5.2. Would lease activities advance mitigation and/or adaptation strategies in response to climate change, including carbon sequestration?	CEQA Analysis
	B1. Lease activities would benefit the state and surrounding community by providing employment and economic opportunity.	<b>C6. Potential social, cultural, or economic benefits</b>  This criterion includes any potential benefits that would positively affect local, regional, and/or statewide communities.	C6.1. <u>What employment and other economic activity</u> would lease activities <del>benefit</del> <u>provide</u> to the state and surrounding community <del>by providing employment and economic opportunity</del> ?	CDFW
	B2. Lease activities would provide fresh, locally sourced product, benefiting local food security, and/or supplementing wild-harvested supplies.		C6.2. Would lease activities provide fresh, locally sourced product, benefiting <del>local</del> <u>California</u> food security, and/or supplement wild-harvested supplies?	CDFW
	B5. Lease activities would help increase native fish stocks or enhance commercial and recreational fishing.		C6.3. Would lease activities help increase native fish stocks or enhance commercial and recreational fishing?	CEQA Analysis
	B6. Consideration of prior leases are taken into account to encourage sustainable and equitable access to leases and to discourage monopolies.		C6.4. <u>Would approval of the proposed lease facilitate</u> equitable access to leasing, minimize monopolies, <u>or align with partner values</u> ?	CDFW

---

<sup>11</sup> T14, CCR, Section [237](#).

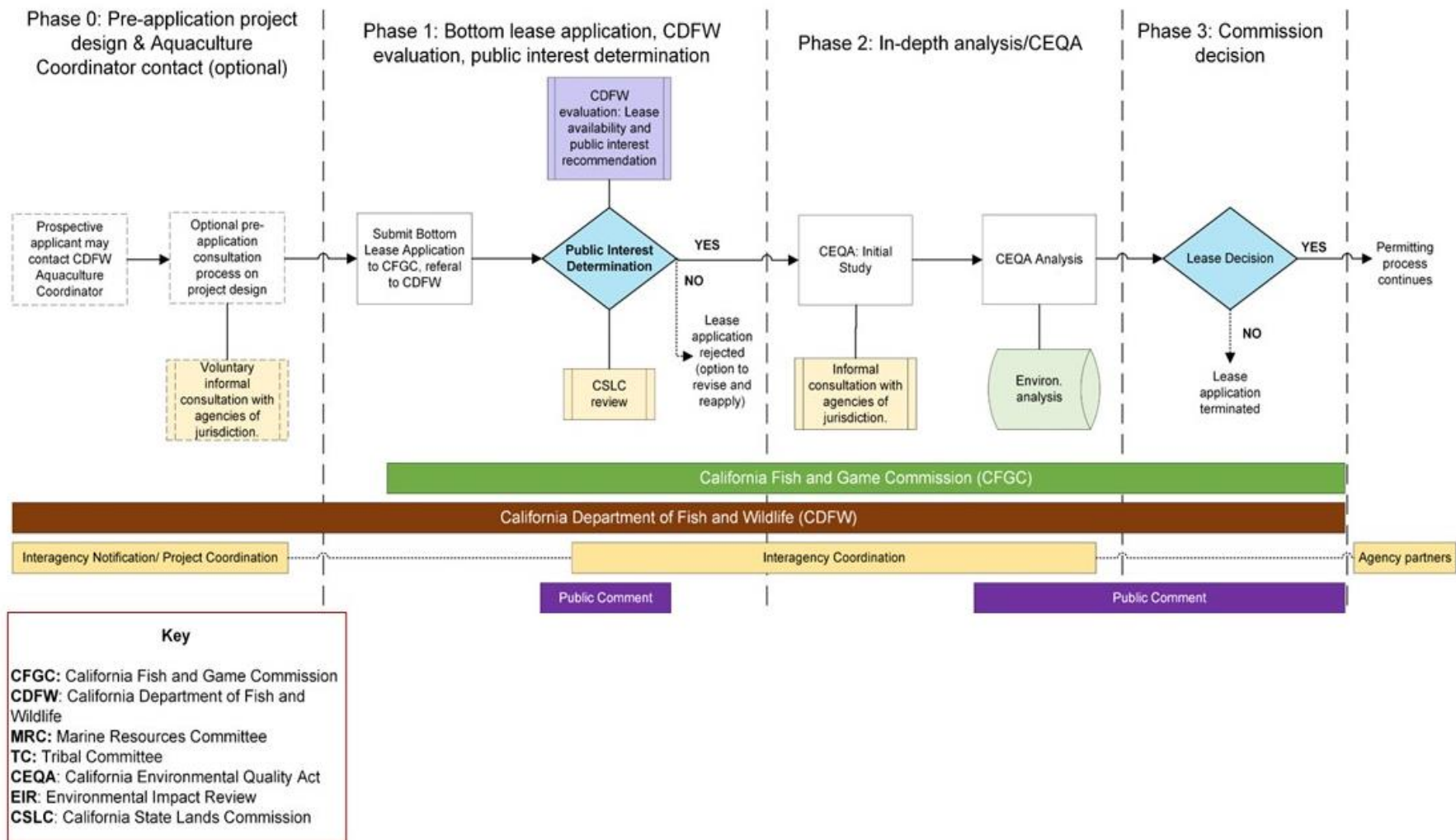
## California Fish and Game Commission

### Figures Displaying Steps in the Recent Aquaculture Leasing Process Versus Steps in the Proposed Aquaculture Leasing Process for New State Water Bottom Lease Application, Including Public Interest Determination

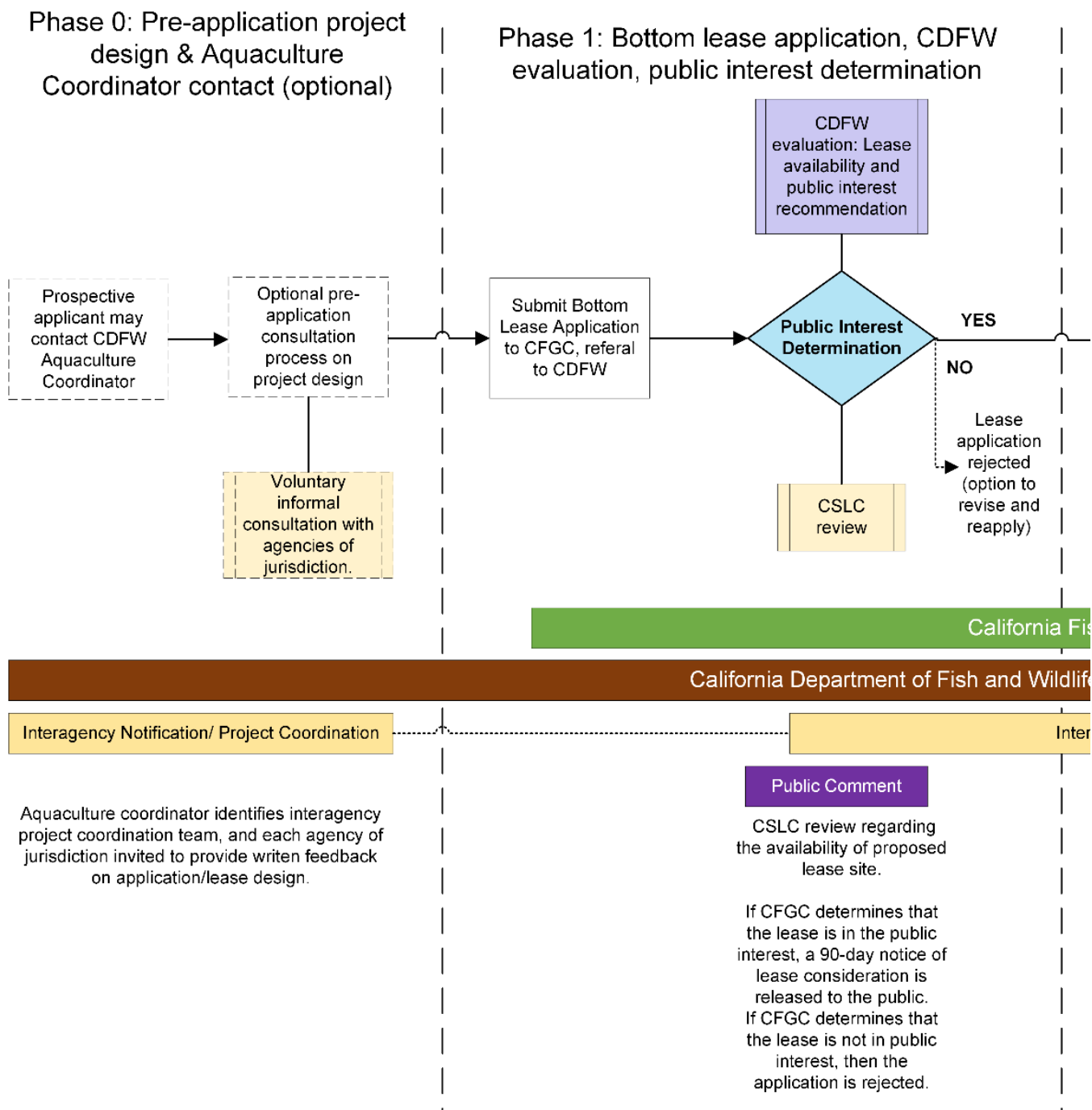
*July 10, 2023*

<a href="#"><u>Figure 1</u></a>	<i>Recent Process, Phases 0 through 3</i>
<a href="#"><u>Figure 2</u></a>	<i>Recent Process, Phases 0 and 1, Detailed</i>
<a href="#"><u>Figure 3</u></a>	<i>Recent Process, Phases 2 and 3, Detailed</i>
<a href="#"><u>Figure 4</u></a>	<i>Proposed Process, Phases 0 through 3</i>
<a href="#"><u>Figure 5</u></a>	<i>Proposed Process, Phases 0 and 1, Detailed</i>
<a href="#"><u>Figure 6</u></a>	<i>Proposed Process, Phases 2 and 3, Detailed</i>

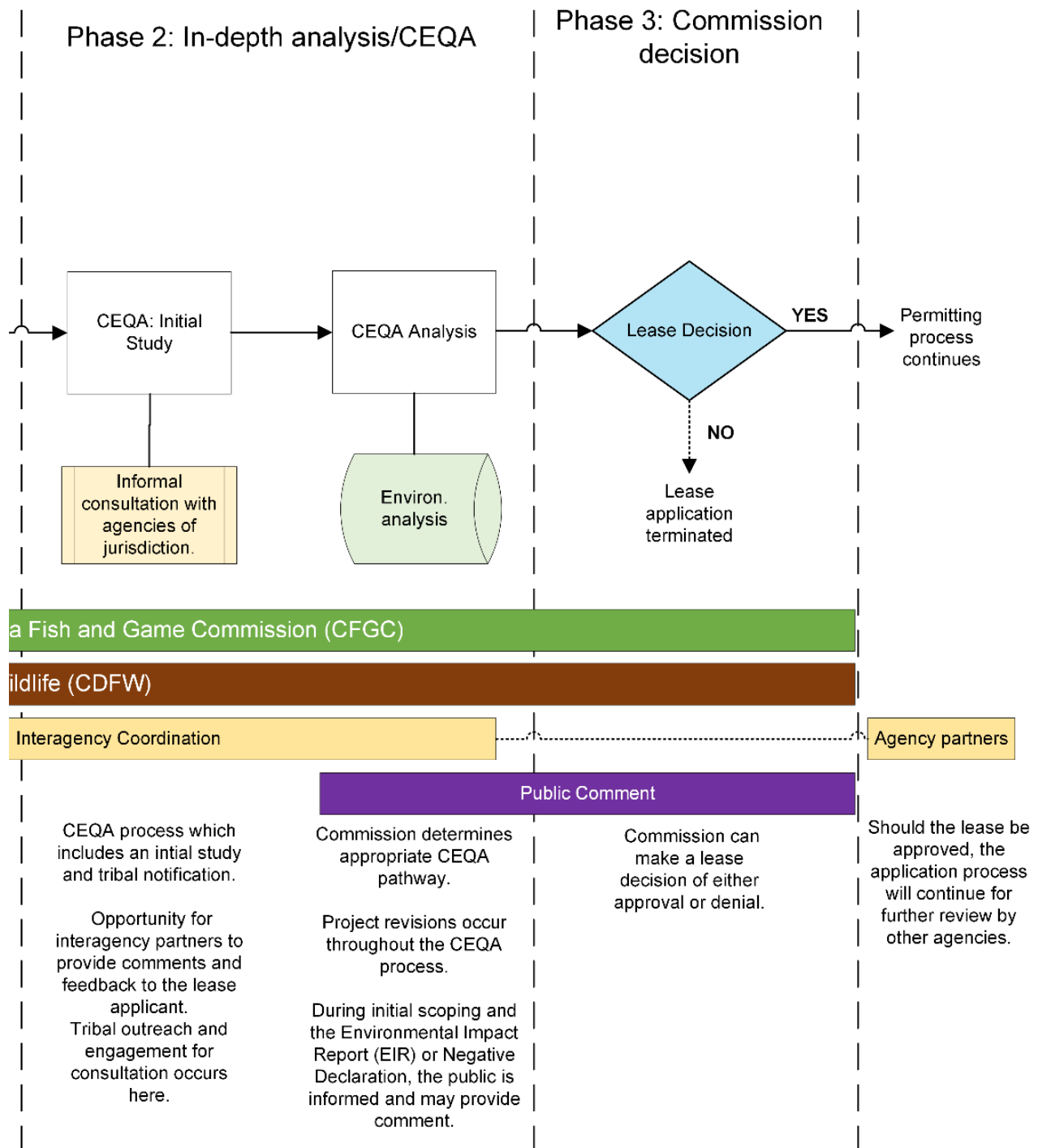
**Figure 1. Recent Process, Phases 0 through 3.** Overview of the recent process followed by the Commission for reviewing new state water bottom aquaculture leases applications, including public interest determination. Includes an optional pre-application coordination phase facilitated by CDFW (Phase 0) followed by a three-phase Commission process (phases 1-3) (see figures 2 and 3 for close-up images of each phase with written descriptions below steps in the corresponding phase).



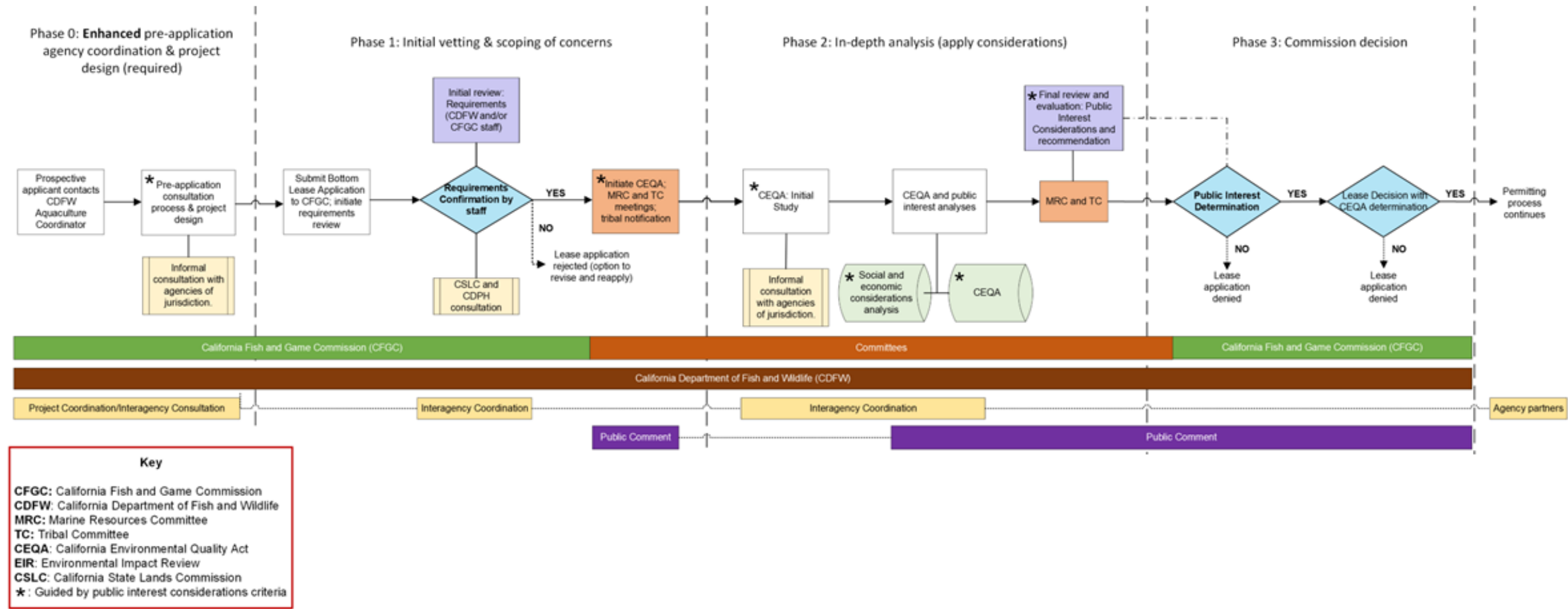
**Figure 2. Recent Process, Phases 0 and 1 Detailed.** Enlarged image of phases 0 and 1 with written descriptions below steps in the corresponding phase.



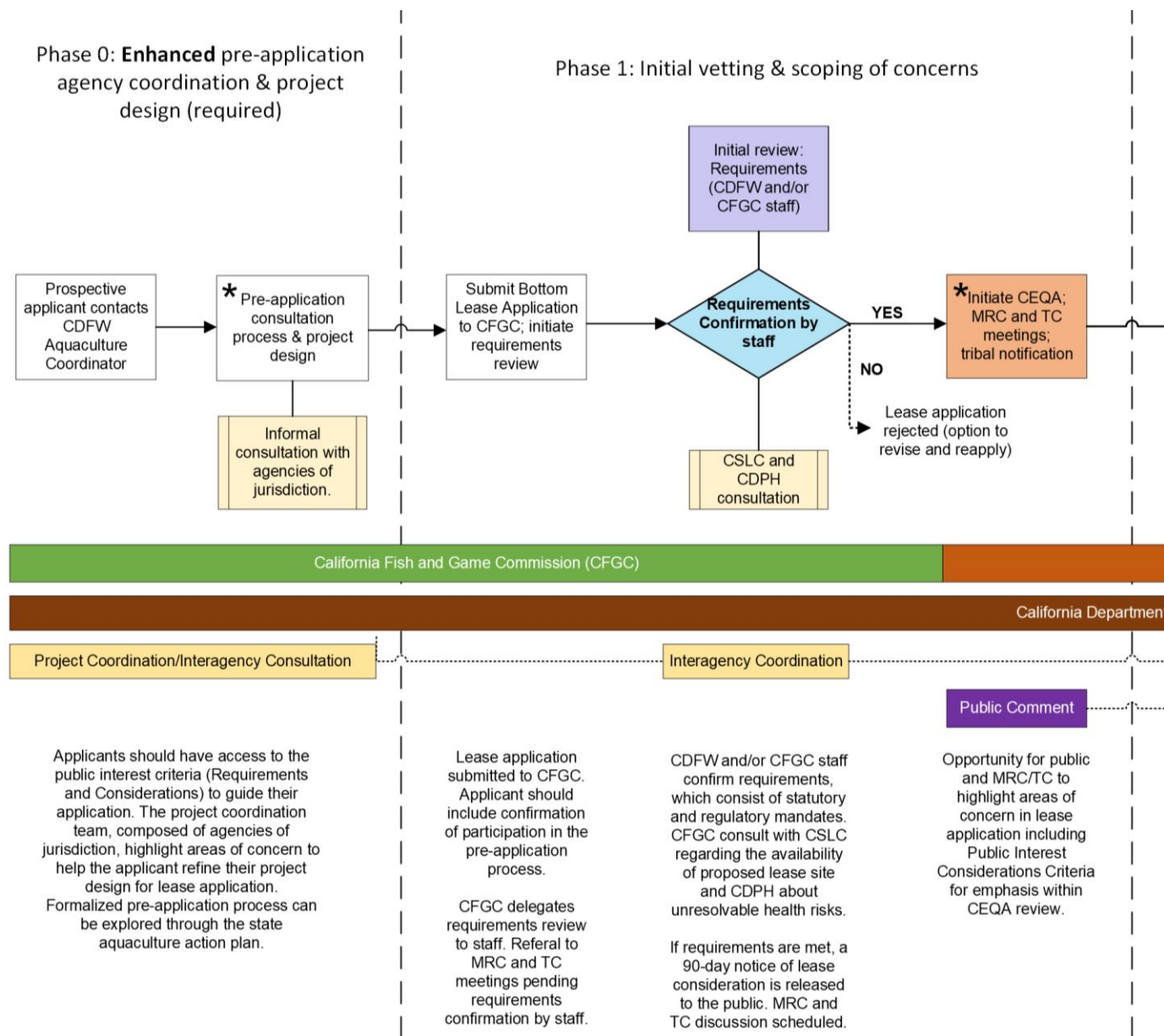
**Figure 3. Recent Process, Phases 2 and 3 Detailed.** Enlarged image of 2 and 3, with written descriptions below steps in the corresponding phase.



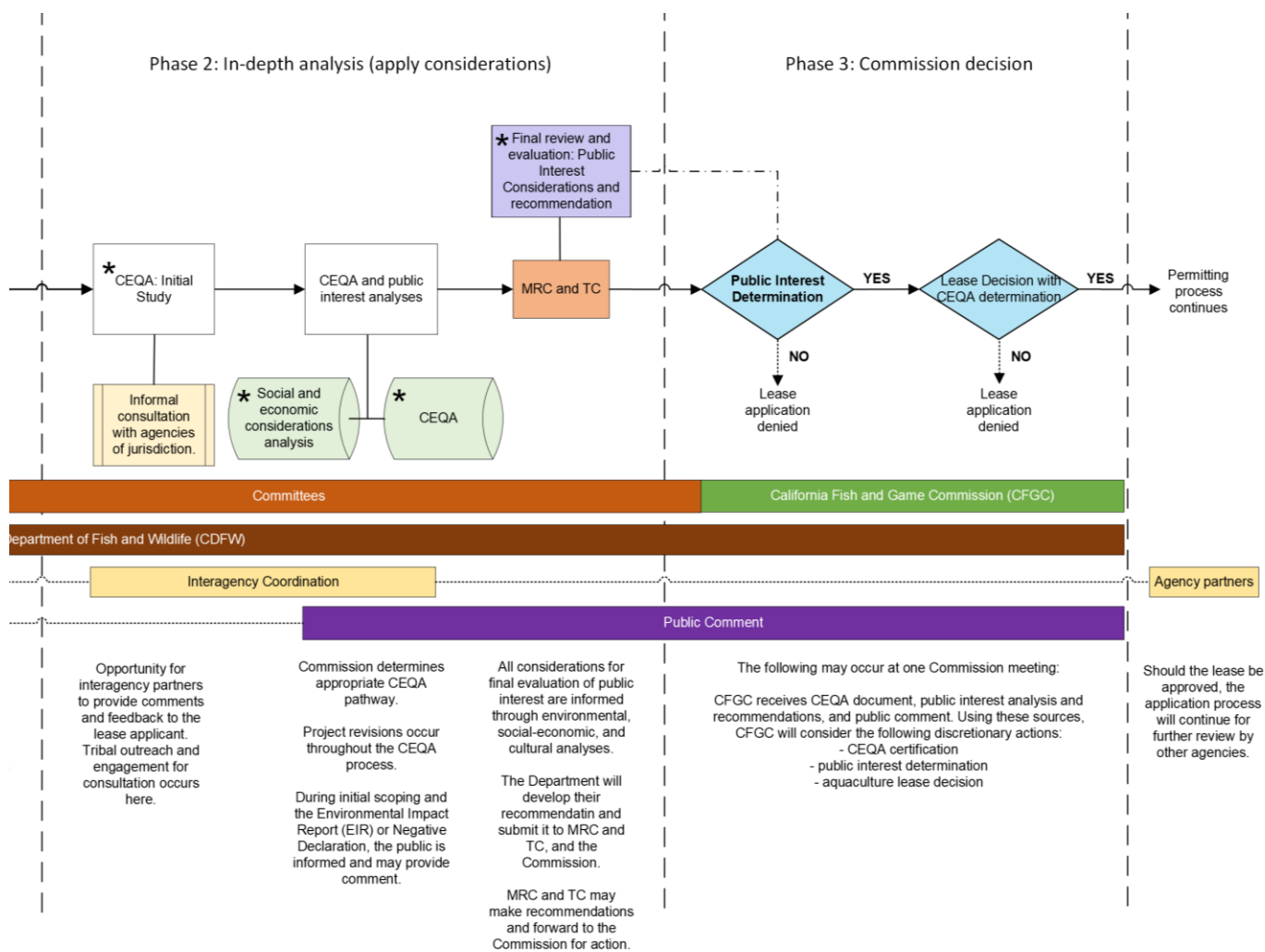
**Figure 4. Proposed Process, Phases 0 through 3.** Overview of staff-proposed process for Commission consideration of new state water bottom aquaculture lease applications, including public interest determination. Includes an enhanced and formalized pre-application phase (Phase 0) facilitated by CDFW and including interagency consultation, followed by a three-phase Commission process (phases 1-3) (see figures 5 and 6 for close-up images of each phase with written descriptions below steps in the corresponding phase).



**Figure 5. Proposed Process, Phases 0 and 1, Detailed.** Enlarged image of 0 and 1 with written descriptions below steps in the corresponding phase.



**Figure 6. Proposed Process, Phases 2 and 3, Detailed.** Enlarged image of phases 2 and 3 with written descriptions below steps in the corresponding phase.



**From:** Griego, Liliana <liliana.griego@audubon.org>  
**Sent:** Friday, July 7, 2023 12:11 PM  
**To:** FGC <FGC@fgc.ca.gov>  
**Cc:** Ashcraft, Susan@FGC <[REDACTED]>; Scott Thomas <redtail1@cox.net>; Dave Weeshoff <weeshoff@sbcglobal.net>; ameech846@gmail.com; Jim Peugh <peugh@cox.net>  
**Subject:** Comment Letter RE: Agenda Item 4: Aquaculture leasing in California – public interest determination

Hello,

On behalf of Audubon CA and 4 Audubon Chapters, we respectfully submit our comments to the Marine Resources Committee regarding Agenda Item 4: *Aquaculture leasing in California – public interest determination*.

Feel free to reach out if you have any questions.

Take care,  
Liliana

**Liliana Griego**  
Sr. Program Manager, Coasts  
(c) 626.755.4714  
Pronouns: she, her, hers

**Audubon California**  
1901 Harrison Street, Suite 1450  
Oakland, CA 94612  
[ca.audubon.org](https://ca.audubon.org)



July 7, 2023

Fish and Game Commission Marine Resources Committee  
California Fish and Game Commission  
P.O. Box 944209  
Sacramento, CA 94244-2090  
Via Electronic Mail: [fgc@fgc.ca.gov](mailto:fgc@fgc.ca.gov)

Re: Agenda Item 4: Aquaculture leasing in California – public interest determination

Dear President Sklar and Commissioner Murray,

Audubon California, a state office of the National Audubon Society, with our 118,000 members and supporters, and the 4 signed Audubon chapters in California, respectfully submit these comments regarding the California Fish and Game Commission ("Commission") efforts to adopt criteria for public interest determination for new state water bottom leases (aka "aquaculture public interest criteria", or simply "criteria"). Thank you for this opportunity to submit comments on Agenda Item 4: *Aquaculture leasing in California – public interest determination*.

We understand the significant, adverse effects inappropriate aquaculture development can have on the environment, including the sensitive species Audubon and our partners work to protect. As a result, we urge that projects be carefully analyzed to determine if they are actually well-sited, ecologically beneficial, or at least benign, and have clear benefits to the economy and communities of California. Therefore, our main point is as follows:

- Given that California Fish and Game Code (FGC) Section 15400 requires the Commission to determine that a lease is in the public interest prior to issuing an aquaculture state water bottom lease, **we would like to see the criteria finalized and adopted without delay.**

Additionally:

- These **criteria should serve as a transparent, pre-screening tool** to ensure that any new projects are appropriately sited to protect environmentally sensitive resources.
- We recommend that **avoidance of eelgrass is added as a constraint** or requirement.
- We recommend that the criteria **reference the forthcoming Ocean Protection Council Aquaculture Action Plan.**
- While new constraints can be added to the third draft, we **support the existing constraints** outlined in Draft 2 and recommend retaining them in future drafts.

Audubon's mission is to restore and conserve natural ecosystems, focusing on birds, other wildlife, and their habitats for the benefit of humanity and the earth's biological diversity. We



accomplish this through conservation, advocacy, community involvement, and by tapping into an active network that include more than 118,000 members and 48 affiliated chapters in communities throughout California.

The work we do depends on healthy, well-protected ocean ecosystems. For this reason, we care deeply about the work the Commission is doing to manage emerging aquaculture activities in our state.

Thank you for the opportunity to comment and please do not hesitate to reach out if you have any questions.

Respectfully,

Scott Thomas  
Conservation Committee Vice Chair  
Sea and Sage Audubon Society

David Weeshoff  
Vice-President - Conservation  
Pasadena Audubon Society

Rachel Ameche  
President  
Ventura Audubon Society

James Peugh  
Conservation Chair  
San Diego Audubon Society

Liliana Griego  
Sr. Coastal Program Manager  
Audubon California

**From:** Griego, Liliana <liliana.griego@audubon.org>  
**Sent:** Friday, July 7, 2023 12:20 PM  
**To:** FGC <FGC@fgc.ca.gov>  
**Cc:** Ashcraft, Susan@FGC <[REDACTED]>; Matthews, Kinsey-Contractor@fgc <[REDACTED]>; Briley, Sara@Wildlife <[REDACTED]>; Lovell, Randy@Wildlife <[REDACTED]>; Miller-Henson, Melissa@FGC <[REDACTED]>; Ramey, Kirsten@Wildlife <[REDACTED]>; Shuman, Craig@Wildlife <[REDACTED]>; [REDACTED] ashley@eacmarin.org; Shester, Geoff <GShester@oceana.org>; Rebecca Schwartz-Lesberg <rebecca@coastalpolycysolutions.com>; Barak Kamelgard <barak@lawaterkeeper.org>; webb@seaturtles.org  
**Subject:** Comment Letter RE: Agenda Item 4: Aquaculture leasing in California – public interest determination

Hello,

Please see the attached comment letter signed by various environmental NGOs to the Marine Resources Committee regarding Agenda Item 4: *Aquaculture leasing in California – public interest determination*. Feel free to reach out if you have any questions.

Take care,  
Liliana

**Liliana Griego**  
Sr. Program Manager, Coasts  
(c) 626.755.4714  
Pronouns: she, her, hers

**Audubon California**  
1901 Harrison Street, Suite 1450  
Oakland, CA 94612  
[ca.audubon.org](https://ca.audubon.org)



July 7, 2023

Fish and Game Commission Marine Resources Committee  
California Fish and Game Commission  
P.O. Box 944209  
Sacramento, CA 94244-2090  
*Via Email: [fgc@fgc.ca.gov](mailto:fgc@fgc.ca.gov)*

Re: Agenda Item 4: Aquaculture leasing in California – public interest determination

Dear President Sklar and Commissioner Murray,

We, the undersigned organizations, have extensive experience in marine and aquaculture policy in the state of California. We have been supportive of the development of public interest aquaculture criteria before accepting any new leases including submitting extensive public comments including redline language, participating in all of the public meetings, and meeting with both Department of Fish and Wildlife (“Department”) and Fish and Game Commission (“Commission”) staff on this topic. Thank you for this opportunity to submit comments on Agenda Item 4: *Aquaculture leasing in California – public interest determination*.

We respectfully submit these preliminary comments regarding the Commission and specifically Marine Resources Committee (“MRC”) efforts to adopt criteria for public interest determination for new state water bottom leases (aka “aquaculture public interest criteria”, or simply “criteria”). We also look forward to reviewing the staff report and Draft 3 of the criteria, as well as participating in the July 20th MRC meeting.

Our organizations understand the significant, adverse effects inappropriate aquaculture development can have on the environment, including the sensitive species that many of our organizations work to protect. Therefore, our main point is as follows:

- Given that California Fish and Game Code Section 15400 requires the Commission to determine that a lease is in the public interest prior to issuing an

aquaculture state water bottom lease, **we would like to see the criteria finalized and adopted without delay**. The criteria should be finalized before any new leases are accepted.

Additionally:

- These **criteria should serve as a tool to increase transparency in the new leasing process, coupled with a review of new lease information at MRC meetings. The lease review process should also include tribal consultation including through the Tribal Committee.**
- While we understand that all of the information and analysis may not be available before the California Environmental Quality Act (CEQA) review takes place, **the Department and Commission should use these criteria in a public forum, like the MRC, as they review new applications in a preliminary way early on in the application process** to ensure that any new projects are appropriately sited to protect environmentally sensitive resources.
- We would prefer that **avoidance of eelgrass<sup>1</sup> is added as a constraint** or requirement based on existing state policies to protect eelgrass including the California Eelgrass Mitigation Policy and the Ocean Protection Council's Strategic Plan goals. At a minimum, this should be included as a Consideration.
- **Eelgrass is a high priority to our organizations**, and it can be harmed by aquaculture operations through shading and propeller cuts.<sup>2</sup> Artificial physical structures in eelgrass can also prevent certain species from utilizing such habitat. It is also very challenging to restore this sensitive habitat type.
- As a whole, eelgrass meadows are one of the most productive and diverse marine ecosystems in the world.<sup>3</sup> They are recognized globally as nursery areas for many taxa and are considered one of the most important juvenile habitats for numerous fish species, including several commercially important species.<sup>4</sup> Eelgrass beds are an especially crucial nursery habitat for juvenile salmon,

---

<sup>1</sup> Tallis, H.M., Ruesink, J.L., Dumbauld, B., Hacker, S., and Wisehart, L.M. (2009). Oysters and Aquaculture Practices Affect Eelgrass Density and Productivity in a Pacific Northwest Estuary. *Journal of Shellfish Research* 28(2), 251–261. <https://doi.org/10.2983/035.028.0207>; see also Everett, R., Ruiz, G., and Carlton, J.T. (1995). Effect of oyster mariculture on submerged aquatic vegetation: an experimental test in a Pacific Northwest estuary. *Mar. Ecol. Prog. Ser.* 125:205–217. <https://doi.org/10.2983/035.028.0207>.

<sup>2</sup> We do acknowledge that in a very limited set of circumstances, such as in shallow water where eelgrass is subject to being burned, the shade from growing bags may be beneficial. However, under the precautionary principle and considering the significant loss of eelgrass habitat, eelgrass habitat should be avoided for the siting of new aquaculture operations.

<sup>3</sup> Murphy, G. E. P. et al. (2021). From coast to coast to coast: ecology and management of seagrass ecosystems across Canada. *FACETS*. 6: 139–179. <https://doi.org/10.1139/facets-2020-0020>.

<sup>4</sup> Heck Jr, K. L., Hays, G., and Orth, R. J. (2003). Critical evaluation of the nursery role hypothesis for seagrass meadows. *Marine Ecology Progress Series*, 253, 123–136. <https://www.int-res.com/articles/meps2003/253/m253p123.pdf>.

where they must mature and grow before migrating to the ocean as adults.<sup>5</sup> Eelgrass meadows provide essential ecosystem structure, functions, and services.<sup>6</sup> For example, eelgrass beds slow the movement of water currents and waves, protecting shorelines from erosion and promoting the settlement of suspended sediments.<sup>7</sup> For this reason, they might serve as a nature-based climate adaptation solution. Eelgrass also plays a significant role in carbon sequestration. Along with other seagrasses, eelgrass beds can capture carbon from the atmosphere up to 35 times faster than tropical rainforests.<sup>8</sup> While seagrasses, such as eelgrass, only make up about 0.2% of the total seafloor, they account for almost 10% of the global ocean carbon storage annually.<sup>9</sup>

- We recommend that the criteria include a consideration that aquaculture projects should be consistent with **the forthcoming Ocean Protection Council Aquaculture Action Plan**.
- While new constraints could be added to the third draft, we **support the existing constraints** outlined in Draft 2 and recommend retaining them in future drafts. We do not want the criteria to be weakened in any way from prior drafts. Specifically, it is **important to include language that addresses negative impacts “to adjacent native wildlife” in the Constraints**. This should reference existing laws including the California and federal Endangered Species Act and the California’s Species of Special Concern list.
- **The avoidance of habitat loss and disturbance for shorebirds should be a priority addressed in the criteria.**<sup>10</sup>
- **These criteria in no way replace the full CEQA process** that must be completed for new leases. The process should be clarified to state the Commission will not find an aquaculture project is in the public interest until the criteria and considerations are evaluated using the CEQA analysis.
- We also support the exclusion of finfish aquaculture and recreational clamming areas as Constraints.

---

<sup>5</sup> Kennedy, L. A., Juanes, F., & El-Sabaawi, R. (2018). Eelgrass as Valuable Nearshore Foraging Habitat for Juvenile Pacific Salmon in the Early Marine Period. *Marine and Coastal Fisheries: Dynamics, Management, and Ecosystem Science*, 10(2), 190–203. doi:10.1002/mcf2.10018

<sup>6</sup> Stephens, T. (2021) Seagrass restoration study shows rapid recovery of ecosystem functions. <https://news.ucsc.edu/2021/10/eelgrass-restoration.html>.

<sup>7</sup> Ondiviela, B. et al. (2014) The role of seagrasses in coastal protection in a changing climate. *Coast Eng.* 87: 158–168 <https://www.sciencedirect.com/science/article/abs/pii/S0378383913001889?via%3Dihub>.

<sup>8</sup> Mcleod, E., et al. (2011). A blueprint for blue carbon: toward an improved understanding of the role of vegetated coastal habitats in sequestering CO<sub>2</sub>. *Frontiers in Ecology and the Environment*, 9(10), 552–560. <https://esajournals.onlinelibrary.wiley.com/doi/full/10.1890/110004>.

<sup>9</sup> Fourqurean, J., Duarte, C., Kennedy, H. et al. Seagrass ecosystems as a globally significant carbon stock. *Nature Geosci* 5, 505–509 (2012). <https://doi.org/10.1038/ngeo1477>.

<sup>10</sup> The California Coastal Commission has prioritized the protection of shorebirds and issued special conditions for proposed aquaculture leases to “protect shorebirds from an unacceptable level of potential habitat loss and disturbance and maintain and enhance marine resources.” See Adopted Findings, Coast Seafoods Company, California Coastal Commission, 2017.

- We support the new language, “avoid and/or minimize the risk of marine life entanglements” added to Draft 3 as a Consideration, as has been discussed at prior meetings.

Many of our organizations share goals to restore and conserve natural ecosystems, focusing on birds, marine mammals, sea turtles, fish, other wildlife, and their habitats for the benefit of humanity and the earth's biological diversity. In alignment with those goals, we want to ensure that the criteria are protective of natural resources and wildlife when considering the siting of new aquaculture development.

The work our organizations do depends on healthy, well-protected marine ecosystems. For this reason, we care deeply about the work the Commission is doing to manage emerging aquaculture activities in our state.

Thank you for the opportunity to comment and please do not hesitate to reach out to any of our organizations if you have any questions. We also want to thank the Department and Commission and their staff for all of their hard work on these criteria to date.

Respectfully,

Ashley Eagle-Gibbs, Legal and Policy Director  
Environmental Action Committee of West Marin

Liliana Griego, Sr. Coastal Program Manager  
Audubon California

Geoff Shester, Ph.D. California Campaign Director & Senior Scientist  
Oceana

Scott Webb, Advocacy Director  
Turtle Island Restoration Network

Rebecca Schwartz Lesberg, President  
Coastal Policy Solutions

Barak Kamelgard, Senior Attorney  
LA Waterkeeper

cc: Susan Ashcraft, Senior Environmental Scientist and Marine Advisor, California Fish and Game Commission  
Sara Briley, Environmental Scientist, California Department of Fish and Wildlife  
Randy Lovell, State Aquaculture Coordinator, California Department of Fish and Wildlife  
Kinsey Matthews, California Sea Grant State Fellow, California Fish and Game Commission  
Melissa A. Miller-Henson, Executive Director, California Fish and Game Commission  
Kirsten Ramey, Senior Environmental Scientist Supervisor, California Department of Fish and Wildlife  
Craig Shuman, Marine Region Manager, California Department of Fish and Wildlife

**From:** mascarenhas <[REDACTED]>  
**Sent:** Friday, June 23, 2023 4:27 PM  
**To:** FGC  
**Subject:** Comment for Marine Resources Committee meeting July 20, 2023

You don't often get email from [REDACTED] [Learn why this is important](#)

**WARNING:** This message is from an external source. Verify the sender and exercise caution when clicking links or opening attachments.

**RE: Agenda item 4. Aquaculture leasing in California – public interest determination**

I would like to express my concern about aquaculture leasing in California.

Besides awful environmental consequences:

- increasing the incidence of diseases and parasites that spread to wild fish populations
- using up to 9x as much fishmeal to feed one lb of farmed fish as what a wild fish eats, so ruining the middle of the marine food chain
- nearshore pollution and increased nutrients that feed ocean dead zones
- genetically stunted fish that escape into wild populations and reduce predator avoidance, reproductive capacity, food finding, and overall survival and resilience to climate change

there are also dire direct human consequences. Similar to industrial-agro treatment of fruits and vegetables with xenoestrogens to stimulate quicker growth, farmed fish are treated with estradiol for the same reason. This results in unnatural buildups of estrogen in humans who eat farmed fish (both men and women), wreaking havoc on hormonal balances and promoting all kinds of illnesses.

Putting our resources towards good stewardship and conservation of the ocean ecosystem is a way better choice, to support wild fish populations and fisheries, than aquaculture which is unsustainable and harmful.

Please do not consider aquaculture leasing in California.

Thank you,

Julie Mascarenhas

Santa Cruz, CA

**STAFF SUMMARY FOR APRIL 19-20, 2023**  
*For background purposes only*

## 25. MARINE PROTECTED AREAS (MPA) DECADAL MANAGEMENT REVIEW

### Today's Item

Information ☐

Action ☒

Receive a Department summary of *MPA Day: Management Review Forum* hosted March 15, 2023, and discuss next steps in considering results from the first decadal management review and adaptive management recommendations for California's MPAs network and management program.

### Summary of Previous/Future Actions

- |   |  |
|---|--|
| • Adopted MPA master plan; ten-year management review cycle established   | August 2016  |
| • MRC vetted decadal management review approach   | March and July 2021; March and November 2022; MRC              |
| • Tribal Committee vetted decadal management review approach and tribal engagement  | August and December 2021; March, August, and December 2022; TC |
| • Received decadal management review report and Department presentation   | February 8-9, 2023   |
| • <i>MPA Day: Management Review Forum</i> hosted by Department in collaboration with the California Ocean Protection Council and Commission | March 15, 2023   |
| • MRC discussed management review, forum, and adaptive management recommendations   | March 14 & 16, 2023; MRC                                       |
| • <b>Today discuss management review and adaptive management recommendations</b>  | <b>April 19-20, 2023</b>                                       |

### Background

On February 9, 2023, the Commission formally received California's Marine Protected Area Network Decadal Management Review (review), following its public release and transmission by the Department on January 9, 2023. The Department's overview of this first, comprehensive, ten-year report set the stage for future discussion about the evaluation, findings, and guidance for possible adaptive management of the state's MPA Management Program and MPA network, beginning with a public forum and MRC discussion in March. Note that while today's update is scheduled as a separate agenda item due to the broad interest in the topic, discussion is proposed to continue at the MRC level, as guided by the Commission.

### Management Review Forum

The public management review forum served to highlight ten years of collaborative work that informed the review and adaptive management recommendations and associated potential management actions elevated by the Department for prioritization (Exhibit 1). The forum was structured around panel discussions during the day, and partner tables and posters session in the evening. Members and leaders of tribes, partner organizations, and stakeholders were

**STAFF SUMMARY FOR APRIL 19-20, 2023**  
*For background purposes only*

formally invited to participate on panels facilitated by the Department and centered on each of the four pillars of the MPA management program. Panelists shared their diverse perspectives, provided feedback on the review and recommendations, and answered questions from attendees. The management review forum was also an opportunity for dialogue about key findings and recommendations, and how they fit within the broader context of California's MPA Management Program. See the [forum program](#) for more information about the panels and a panelist biography guide, and the Department's [forum webpage](#) for program details and a link to a recording of the day.

The March 15 forum focused on panel discussions with MPA partners, tribes, and the public rather than formal public comment. However, it was purposely scheduled the day prior to the second day of MRC's March 14 and 16 meeting to provide a distinct opportunity for public comments, reflections, and recommendations to be received by MRC and, ultimately, the Commission.

***MRC Meeting – March 16***

The March 16 meeting agenda was structured around two focal areas: Reflections on the review and forum (part A) and reflections on the review's adaptive management recommendations and actions to prioritize for the next decade of the adaptive management cycle (part B) (see Exhibit 2 for additional background).

Over 150 tribal representatives, stakeholders, commercial and recreational fishermen, partner organizations, and members of the public attended the MRC meeting to provide feedback on the adaptive management recommendations in the review, including priorities for the next adaptive management cycle. Participants offered additional recommendations for improving the MPA Management Program and the MPA network itself.

*Tribal voices:* Significant time was devoted to listening to tribal elected officials and tribal member voices, which became an important focus during the forum and MRC meeting. Tribal members reflected on how small a ten-year time span is relative to the perspective of thousands of years of ecological stewardship and knowledge that indigenous people carry. Many expressed their desire to have indigenous knowledge, increased consultation, co-management, and further involvement within the next adaptive management cycle and the MPA Management Program. Some tribal members also voiced concerns about interactions with law enforcement when conducting traditional gatherings or ceremonial activities on the coast, and the lack of notice about activities occurring in their ancestral waters. Additionally, many non-federally recognized tribes discussed their desire to be given the same tribal exemptions to MPA regulations as federally recognized tribes, such as the ability to fish within MPAs along their lands. They encouraged more engagement between all tribes and the State, including the Department, and discussed a multitude of ways in which further collaboration could be accomplished, such as region-specific allied agency trainings.

A number of other themes were heard throughout the day including:

- *Conservation benefits of MPAs are visible, but more understanding and evaluation is needed*
- *More inclusivity and diversity in MPA engagement, access, and management is needed.*

**STAFF SUMMARY FOR APRIL 19-20, 2023**  
*For background purposes only*

- *Fisheries and fishing communities need to be valued and considered in MPA adaptation*
- *Meaningful and engaging relationships/partnerships are key to success within all aspects of MPA management*
- *A desire to explore the role of restoration in California's MPAs*
- *Using more citizen science data and tools for enforcement*
- *Expanding research in MPAs beyond monitoring*

Commission and Department staff are currently summarizing and coalescing the recommendations, along with those received at today's meeting, in anticipation of continued discussion; a summary will be provided to MRC in July.

Following public input, the MRC co-chairs provided reflections on the forum and comments that were provided during the MRC meeting. They acknowledged the finding that California's MPAs function effectively as a network, and the success of the management program founded on collaborative partnerships. At the same time, they recognized various challenges and gaps that may help shape the adaptive management focus: Amplifying underrepresented voices and indigenous perspectives (both federally- and non-federally-recognized), addressing monitoring gaps, unequal engagement from communities, **developing an adaptive management evaluation framework**, missing climate resilience metrics, social justice oversights, and considering the role of restoration while meeting Marine Life Protection Act goals.

MRC recognized commenters sometimes had competing views on which recommendations (and specific management actions within those recommendations) they wanted prioritized in the next adaptive management cycle. Some comments were very broad in nature while others were localized to specific MPAs. Considering the multitude of different views and opinions that were expressed, MRC invited tribes, agency partners, non-governmental organizations (NGOs), commercial and recreational fishermen, academics, collaborators, and other stakeholders to provide written feedback, preferably by April, on the areas to prioritize within the table of Department-elevated recommendations from the report, before focusing on specific MPA proposals or management actions; many of the comment letters received for this meeting are in response to that request.

MRC explored how the Department might offer a tiered/ranked approach for near-term and long-term focus, which considers public input, for prioritizing within the adaptive management recommendations. MRC requested that the Department propose a priority ranking at the next MRC meeting in July. MRC advanced a recommendation to the Commission for next steps in pursuing review and prioritization of adaptive management recommendations for California's MPA network and management program.

### **Significant Public Comments**

1. Twenty-seven individuals support either keeping or expanding the current network of no-take MPAs, and state that take or harvest within MPAs is inconsistent with conservation (an example is provided as Exhibit 3).

## STAFF SUMMARY FOR APRIL 19-20, 2023

*For background purposes only*

2. A non-profit hunting and fishing organization provides a list of recommendations for adaptive management of the MPA network through the lens of consumptive user groups (Exhibit 4). They provide specific recommendations from Table 6.1 and Appendix A of the report, along with several additional recommendations. They discuss perspectives on issues such as tribal engagement and management, community science, outreach and education with stakeholders, water quality issues, human dimensions data, restoration and stewardship, fisheries spillover, and equitable access for diverse communities that partake in sustainable coastal harvest.
3. Seven commenters, including environmental NGO's, acknowledge the incredible success of the review and the MPA Network, such as increased fish size and biomass, ecosystem resilience, community science engagement, and outreach efforts (Exhibits 5 – 10). They also express support for specific recommendations and management actions within Table 6.1 of the review, related to:
  - *Tribal Coordination*: Tribal management, indigenous knowledge, and engagement (Exhibits 6, 10)
  - *Justice, Equity, Diversity, and Inclusion (JEDI)*: Removal of the fishing community from this section, JEDI trainings, diversification of Department staff, equitable access to MPAs, inclusion of non-consumptive users, and funding of diverse researchers (Exhibits 6, 7, 9, 10)
  - *Enforcement and Compliance*: Advanced technologies, and enforcement and demographic analyses (Exhibits 5, 7-10)
  - *Research and Monitoring*: Human dimensions analyses, community science to supplement monitoring, increased research in understudied habitats, analyses of MPA Network (e.g., different MPA designation types, spillover, connectivity, etc.), and water quality indices (Exhibits 6, 7-10)
  - *Outreach and Education*: Targeted outreach and education, and regular engagement with stakeholders (Exhibits 7-10)
  - *Climate Resilience and Adaptation*: Climate metrics and indices, restoration, and adaptive management for climate resilience (Exhibits 7-10)
4. Six commenters request or address specific changes to MPAs in the network. Three focus on boundary or designation changes (Exhibits 11 - 13), one suggests new MPAs (Exhibit 10), and two have conflicting views on the take of pelagic or highly migratory species within MPAs (Exhibits 7 and 14).
5. Five NGO's that participate in the Power in Nature Coalition's ocean subcommittee encourage the Commission and the Department to consider their criteria for 30x30 Marine Conservation Sites during the adaptive management process, which they include with their comment (Exhibit 15).
6. A Laguna Beach resident expresses support for MPAs, citing local results such as increased fish populations and eco-tourism. The commenter urges the Commission to only consider recommendations that strengthen the MPA network, and to foster allied agency partnerships to protect and enhance California's MPA network (Exhibit 16).

**STAFF SUMMARY FOR APRIL 19-20, 2023**  
*For background purposes only*

## Recommendation

**Commission staff:** Approve the MRC recommendation to refer continued review and prioritization of adaptive management options to MRC.

**Committee:** Request the Department review the recommendations and corresponding management actions in Table 6.1 of the decadal management review report (Exhibit 1), along with public recommendations submitted and presented in March and through today, to propose near- and long-term priorities and associated tradeoffs, for discussion and potential MRC recommendation in July.

## Exhibits

1. Table 6.1 “Adaptive management recommendations and actions to prioritize for the next decade of the adaptive management cycle” (extracted from *California’s Marine Protected Area Network Decadal Management Review*)
2. Staff summary from March 14 and 16, 2023 MRC meeting (*for background purposes*)
3. Email from Bruce England, received March 30, 2023
4. Email from Devin O’Dea, CA Chapter Coordinator, Backcountry Hunters & Anglers, received April 6, 2023
5. Email from Samantha Cope, Senior Scientist, Protected Seas, received April 6, 2023
6. Email from Ryan Meyer, Executive Director, UC Davis Center for Community and Citizen Science, received April 5, 2023
7. Email from Sean Bothwell, Executive Director, California Coastkeeper Alliance, received April 6, 2023
8. Email from Rikki Eriksen, Director of Marine Programs, California Marine Sanctuary Foundation, received April 6, 2023
9. Email from Rikki Eriksen, Director of Marine Programs, California Marine Sanctuary Foundation, NGO support letter, received April 6, 2023
10. Email from Anupa Asokan, Senior Oceans Advocate, Natural Resources Defense Council, received April 6, 2023
11. Email from Nickolaus Sackett, Director of Legislative Affairs, Social Compassion in Legislation, received April 3, 2023
12. Email from Mike Beanan, Founder, Laguna Bluebelt Coalition, received April 5, 2023
13. Email from Ashley Eagle-Gibbs, Legal and Policy Director, Environmental Action Committee of West Marin, received April 6, 2023
14. Email from Blake Hermann, received April 6, 2023
15. Email from Chris Clark, Roger Arliner Young Marine Conservation Fellow, Natural Resources Defense Council, received April 5, 2023
16. Email from Eric Praske, Laguna Beach resident, received April 5, 2023

## Motion

Moved by \_\_\_\_\_ and seconded by \_\_\_\_\_ that the Commission approves the recommendation from the March 14 and 16, 2023 Marine Resources Committee meeting.

## California Department of Fish and Wildlife: Draft prioritized recommendations from California's Marine Protected Area Decadal Management Review

Prioritization tables in order of expected timeframe: 1) Near-term Priorities, 2) Mid-term Priorities, and 3) Long-term Priorities.

### 1) Near-term Priorities (Ongoing – 2 Years)

Cornerstone	Category	Recommendation
Governance	Tribal Coordination	01. Improve state agencies' tribal engagement and relationship building efforts
Governance	Regulatory and Review Framework	04. Apply what is learned from the first Decadal Management Review to support proposed changes to the MPA Network and Management Program
Governance	Justice, Equity, Diversity, and Inclusion	07. Expand targeted outreach and education materials and events to under-represented user groups.
Governance	MPA Statewide Leadership Team and Partner Coordination	09. Continue to coordinate and collaborate with OPC and other agencies on California's ocean and coastal priorities to enhance coastal biodiversity, climate resiliency, human access and use, and a sustainable blue economy.
Governance	MPA Statewide Leadership Team and Partner Coordination	10. Improve partnership coordination across the four pillars of the MPA Management Program.
Management Program	Research and Monitoring	11. Update the MPA Monitoring Action Plan framework to improve and sustain a cost-effective long-term monitoring program, including guidelines to ensure monitoring consistency and sustainable funding.
Management Program	Outreach and Education	16. Conduct more targeted outreach to specific audiences to connect stakeholders with coastal resources and to encourage stewardship and compliance with regulations.

Management Program	Policy and Permitting	17. Improve the application and approval process for scientific collecting permits.
Management Program	Policy and Permitting	18. Utilize OPC's Restoration and Mitigation Policy to develop a framework to evaluate and approve appropriate restoration and mitigation actions within MPAs and MMAs.
Management Program	Enforcement and Compliance	20. Increase enforcement capacity.
Management Program	Enforcement and Compliance	21. Enhance MPA citation record keeping and data management.
Network Performance	Fisheries Integration and Other Influencing Factors	27. Improve understanding of MPA Network effects on fisheries and fish stock sustainability and further integrate MPA monitoring data into fisheries management.

## 2) Mid-term Priorities (2 – 5 years)

Cornerstone	Category	Recommendation
Governance	Tribal Coordination	02. Create a clear pathway to tribal MPA management
Governance	Tribal Coordination	03. Build tribal capacity to participate in MPA management activities
Governance	Justice, Equity, Diversity, and Inclusion	06. Include and fund more diverse researchers and stakeholders in research and monitoring projects that directly contribute to the MPA Monitoring Program.
Governance	Justice, Equity, Diversity, and Inclusion	08. Evaluate the accessibility of MPAs to various community groups.

Management Program	Research and Monitoring	12. Invest in improving understanding of the human dimensions of MPAs and develop a human dimensions working group and research agenda.
Management Program	Research and Monitoring	13. Explore the use of innovative technologies such as remote sensing, drones, and eDNA, to enhance and streamline traditional monitoring projects.
Management Program	Research and Monitoring	14. Develop a comprehensive community science strategy for MPAs and better utilize community science to supplement core monitoring programs.
Management Program	Outreach and Education	15. Evaluate outreach needs, assess effectiveness of resources, identify, and pursue the most impactful and cost-efficient outreach tools for increasing MPA awareness and compliance.
Management Program	Enforcement and Compliance	22. Increase information gathering regarding MPA violation prosecutions and judicial outcomes.
Network Performance	MPA Network Design	23. Expand and target monitoring and research efforts to examine the design attributes of the MPA Network more effectively.
Network Performance	Climate Resilience and Adaptation	25. Develop and implement climate change research and monitoring priorities and metrics for California's MPA Network.
Network Performance	Climate Resilience and Adaptation	26. Consider climate change impacts from the outset of planning for monitoring MPA human dimensions.
Network Performance	Fisheries Integration and Other Influencing Factors	28. Further integrate influencing factors into ecological and human study designs and interpretations of MPA performance.

### 3) Long-term Priorities (5 – 10 years)

Cornerstone	Category	Recommendation
Governance	Regulatory and Review Framework	05. Establish targets for meeting the goals of the MLPA and how the Management Program and Network will evolve as targets are met
Management Program	Enforcement and Compliance	19. Create and implement a cohesive and actionable MPA Enforcement Plan.
Network Performance	MPA Network Design	24. Work with CFGC and partners to better incorporate marine cultural heritage into the design of the MPA Network.

# Prioritization of the Decadal Management Review Recommendations

Becky Ota, Program Manager  
California Department of Fish and Wildlife

Presented to the Commission Marine Resources Committee  
Petaluma Elks Lodge, Petaluma  
July 20, 2023



# Commission Request (April 2023)

- Review the recommendations and corresponding management actions in Table 6.1 of the Decadal Management Review (DMR) along with recommendations submitted by the public
- Propose near-and long-term priorities and associated tradeoffs for discussion and potential MRC recommendation



# Adaptive Management Recommendations

## MPA Governance

- Tribal coordination
- Regulatory and review framework
- Justice, equity, diversity, inclusion
- MPA Statewide Leadership Team and partnership coordination

## MPA Management Program

- Research and monitoring
- Outreach and education
- Policy and permitting
- Enforcement and compliance

## MPA Network Performance

- MPA Network design
- Climate resilience and adaptation
- Fisheries integration and other influencing factors

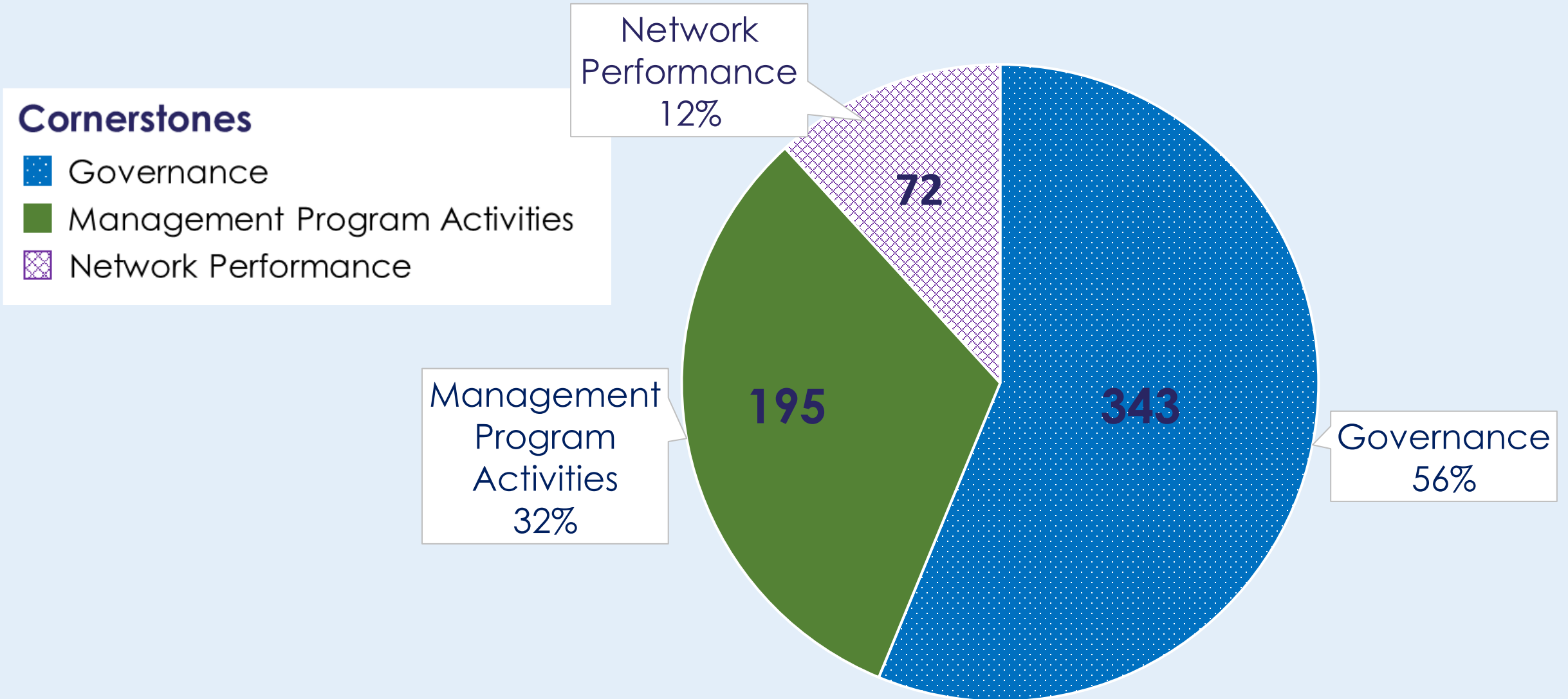
28 Recommendations  
82 Action Items

# Approach to Prioritization Criteria

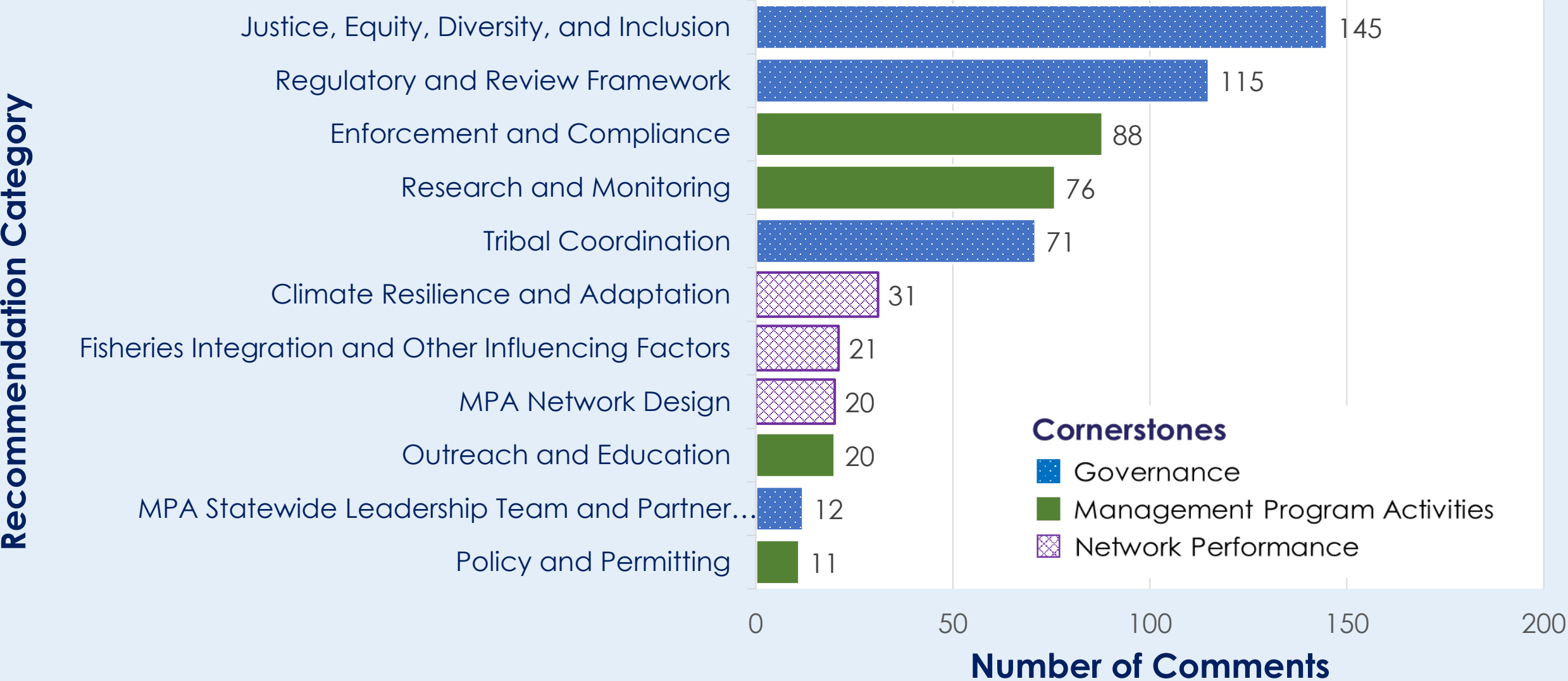
- Identified Need
- Expected Time frame
- Input Received
- Level of Information/Resources Available



# Comments Received by Cornerstone



# Comments Received by Recommendation Category



# Prioritization Outcomes

- 12 Near-term, 13 Mid-term, and 3 Long-term Priorities
- Prioritization highlights ongoing and future priorities needed to advance adaptive management recommendations of the DMR
- Highlights data gaps to advance specific recommendations that are “Identified Needs”



# Near-Term (Ongoing - 2 Years)

Cornerstone	Category	Recommendation
Governance	Tribal Coordination	01. Improve state agencies' tribal engagement and relationship building efforts
Governance	Regulatory and Review Framework	04. Apply what is learned from the first Decadal Management Review to support proposed changes to the MPA Network and Management Program
Governance	Justice, Equity, Diversity, and Inclusion	07. Expand targeted outreach and education materials and events to under-represented user groups.
Governance	MPA Statewide Leadership Team and Partner Coordination	09. Continue to coordinate and collaborate with OPC and other agencies on California's ocean and coastal priorities to enhance coastal biodiversity, climate resiliency, human access and use, and a sustainable blue economy.
Governance	MPA Statewide Leadership Team and Partner Coordination	10. Improve partnership coordination across the four pillars of the MPA Management Program.

# Near-Term (Ongoing - 2 Years) – Continued

Cornerstone	Category	Recommendation
Management Program	Research and Monitoring	11. Update the MPA Monitoring Action Plan framework to improve and sustain a cost-effective long-term monitoring program, including guidelines to ensure monitoring consistency and sustainable funding.
Management Program	Outreach and Education	16. Conduct more targeted outreach to specific audiences to connect stakeholders with coastal resources and to encourage stewardship and compliance with regulations.
Management Program	Policy and Permitting	17. Improve the application and approval process for scientific collecting permits.
Management Program	Policy and Permitting	18. Utilize OPC's Restoration and Mitigation Policy to develop a framework to evaluate and approve appropriate restoration and mitigation actions within MPAs and MMAs.
Management Program	Enforcement and Compliance	20. Increase enforcement capacity.
Management Program	Enforcement and Compliance	21. Enhance MPA citation record keeping and data management.
Network Performance	Fisheries Integration and Other Influencing Factors	27. Improve understanding of MPA Network effects on fisheries and fish stock sustainability and further integrate MPA monitoring data into fisheries management.

# Mid-Term (2 - 5 Years)

Cornerstone	Category	Recommendation
Governance	Tribal Coordination	02. Create a clear pathway to tribal MPA management
Governance	Tribal Coordination	03. Build tribal capacity to participate in MPA management activities
Governance	Justice, Equity, Diversity, and Inclusion	06. Include and fund more diverse researchers and stakeholders in research and monitoring projects that directly contribute to the MPA Monitoring Program.
Governance	Justice, Equity, Diversity, and Inclusion	08. Evaluate the accessibility of MPAs to various community groups.
Management Program	Research and Monitoring	12. Invest in improving understanding of the human dimensions of MPAs and develop a human dimensions working group and research agenda.
Management Program	Research and Monitoring	13. Explore the use of innovative technologies such as remote sensing, drones, and eDNA, to enhance and streamline traditional monitoring projects.
Management Program	Research and Monitoring	14. Develop a comprehensive community science strategy for MPAs and better utilize community science to supplement core monitoring programs.

# Mid-Term (2 - 5 Years) – Continued

Cornerstone	Category	Recommendation
Management Program	Outreach and Education	15. Evaluate outreach needs, assess effectiveness of resources, identify, and pursue the most impactful and cost-efficient outreach tools for increasing MPA awareness and compliance.
Management Program	Enforcement and Compliance	22. Increase information gathering regarding MPA violation prosecutions and judicial outcomes.
Network Performance	MPA Network Design	23. Expand and target monitoring and research efforts to examine the design attributes of the MPA Network more effectively.
Network Performance	Climate Resilience and Adaptation	25. Develop and implement climate change research and monitoring priorities and metrics for California's MPA Network.
Network Performance	Climate Resilience and Adaptation	26. Consider climate change impacts from the outset of planning for monitoring MPA human dimensions.
Network Performance	Fisheries Integration and Other Influencing Factors	28. Further integrate influencing factors into ecological and human study designs and interpretations of MPA performance.

# Long-Term (5 - 10 Years)

Cornerstone	Category	Recommendation
Governance	Regulatory and Review Framework	05. Establish targets for meeting the goals of the MLPA and how the Management Program and Network will evolve as targets are met
Management Program	Enforcement and Compliance	19. Create and implement a cohesive and actionable MPA Enforcement Plan.
Network Performance	MPA Network Design	24. Work with CFGC and partners to better incorporate marine cultural heritage into the design of the MPA Network.



# Considerations and Next Steps

- MRC feedback on proposed near-term and long-term priorities
- Develop approach to implement short-term priorities
  - **Example:** *Recommendation 4 – Proposed changes to the Network*
    - *Develop petition considerations, review process, and timeline*



# Thank You! Questions??

**Becky Ota, Program Manager**

[mpamanagementreview@wildlife.ca.gov](mailto:mpamanagementreview@wildlife.ca.gov)

[wildlife.ca.gov/Conservation/Marine/MPA](http://wildlife.ca.gov/Conservation/Marine/MPA)

## **CDFW MPA Management Project**

Steve Wertz, Sara Worden, Amanda Van Diggelen, Kara Gonzales,  
Michael Prall, Carlos Mireles, Lara Slatoff, and Tammy Heitzenrater



**California Fish and Game Commission  
Marine Resources Committee**

**Comment Letters Received for the July 20, 2023 Meeting Related to  
Agenda Item 5, Marine Protected Areas Decadal Management Review**

<b>Comment #</b>	<b>Commenter Name, Title and Affiliation (if any), Date Received</b>
1	Email from Kent Khtikian, transmitting five individual letters and a form letter with 150 signatures, received July 6, 2023
2	Email from Alex Hayek, received June 14, 2023
3	Email from Kayleigh Rubin, received July 5, 2023
4	Email from Aubrie Fowler, South Coast Specialist, MPA Collaborative Network, received July 7, 2023
5	Email from Keith Rootsaert, Giant Kelp Restoration, received June 14 and July 6, 2023
6	Email from Aziah Hudson, Marine Analyst, Environmental Defense Center, received June 29, 2023
7	Email from Ashley Eagle-Gibbs, Legal and Policy Director, Environmental Action Committee of West Marin, received July 5, 2023
8	Email from Lillie Milligan, Ocean Conservation Coordinator, WILDCOAST, received July 6, 2023
9	Email from Lisa Gilfillan, MPA Compliance Working Group, received July 7, 2023
10	Email from Anupa Asokan, Senior Oceans Advocate, Natural Resources Defense Council, with joint letter from six non-governmental organizations, received July 7, 2023
11	Email from Rikki Eriksen, Director of Marine Programs, California Marine Sanctuary Foundation (CMFS), transmitting a joint letter from CMFS, Environmental Action Committee of Marin, and Central Coast Wetlands Group, received July 7, 2023
12	Email from Penny Owens, Education and Outreach Director, Santa Barbara Channel Keeper, received July 7, 2023
13	Email from Greg Helms, Fish Conservation Program Manager, Ocean Conservancy, received July 7, 2023
14	Email from Ray Hiemstra, Associate Director of Policy and Projects, Orange County Coastkeeper, received July 7, 2023
15	Email from Emily Parker, Coastal and Marine Scientist, Heal the Bay, with a letter signed by 12 non-governmental organizations, received July 7, 2023

Comment #	Commenter Name, Title and Affiliation (if any), Date Received
16	Email from Katelyn Sprofera, Program Manager and Evaluation Specialist, California Marine Sanctuary Foundation, received July 7, 2023
17	Email from Michael Quill, Marine Programs Director, Los Angeles Waterkeeper, received July 7, 2023
18	Email from Stephan Pacetti, received June 18, 2023
19	Email from Eric Praske, received June 29, 2023
20	Email from Mark Smith, Smith Policy Group, transmitting joint letter from six sport fishing, received July 7, 2023
21	Email from Michael Blum, Director, Sea of Clouds, received July 7, 2023
22	Email from Tom Tran, received June 21, 2023
23	Email from Tom Krauel, received June 14, 2023
24	Email from Jack Likins, received June 17, 2023
25	Email from Dale and Marilyn Ghere, received June 23, 2023
26	Email from Jim Peugh, received June 14, 2023
27	Email from Mike Beanan, Laguna Bluebelt, received July 5, 2023
28	Email from Judy Yorke, Director, Three Arch Bay Community Services District, received July 6, 2023
29	Email from Richard Ogg, received July 7, 2023
30	Email from Brad Mongeau, received June 15, 2023
31	Email from James Garner, received June 14, 2023
32	Email from Keith Rootsart, Giant Kelp Restoration, received July 7, 2023
33	Email from Anupa Asokan, Senior Oceans Advocate, Natural Resources Defense Council, public sign-on letter with 63 signatures, received July 7, 2023
34	Email from Mark Fina, Executive Director, California Wetfish Producers Association, received July 5, 2023

Comment #	Commenter Name, Title and Affiliation (if any), Date Received
35	Email from Steve Scheiblaue, Alliance of Communities for Sustainable Fisheries and the San Diego Fishermen's Working Group, received July 7, 2023

**From:** Kent Khtikian <khtikianlaw@gmail.com>

**Sent:** Thursday, July 6, 2023 5:39 PM

**To:** FGC <FGC@fgc.ca.gov>

**Cc:** Morgan Patton <morgan@eacmarin.org>; ashley@eacmarin.org; Joe Mueller

Bridget Bartholome [REDACTED] Laura Lee Miller

ily Rosenman [REDACTED]

**Subject:** EAC Petition For Modification Of Duxbury Reef Marine Protected Area - Transmission #2

President Sklar & Honorable Commissioners:

FOR REASON OF THE LENGTH OF THE ATTACHMENTS, THIS EMAIL IS BEING TRANSMITTED TO YOU IN TWO PARTS. Document #1 is transmitted with the first part; documents #2-6 are transmitted with the second part.

Attached please find the six below listed documents which are submitted in support of the petition submitted by the Environmental Action Committee of West Marin ("EAC") to modify the designation of the Duxbury Marine Protected Area to a State Marine Reserve and to expand the boundaries of the current marine protected area at Duxbury Reef. It is requested that these six documents be made a part of the record for the Commission's consideration of EAC's petition, and made available to the Commissioners for their July 20th meeting and any subsequent meeting at which EAC's petition might be on the Commission's agenda. The attached documents are as follows:

1. Group letter signed by 150 persons (30 pgs);
2. Letter from Joe Mueller dated July 3, 2023 (3 pgs);
3. Letter from Lily Rosenman dated July 6, 2023 (2 pages);
4. Letter from Kent Khtikian dated July 3, 2023 (4 pgs);
5. Letter from Bridget Bartholome dated July 5, 2023 (3pgs);
6. Letter from Laura Lee Miller dated July 6, 2023 (3 pages)

Please advise me if you would also like the originals of the attached documents.

Please acknowledge your receipt of this Part 1. Thank you.

Respectfully submitted,  
- Kent Khtikian

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

Kent Khtikian



July 3, 2023

via email ([fgc@fgc.ca.gov](mailto:fgc@fgc.ca.gov)) & U.S. Mail

California Fish and Game Commission  
P.O. Box 944209  
Sacramento, CA 94244-2090

**Re: Petition for modification of Duxbury Reef Marine Protected Area**

Dear President Sklar and Honorable Commissioners,

I am writing to you in support of the petition submitted to you by the Environmental Action Committee of West Marin ("EAC") regarding the Duxbury Reef Marine Protected Area.

For the reasons stated below, I believe that in order to preserve unimpaired the ecosystem of Duxbury Reef for the enjoyment, education and inspiration of current and future generations and to minimize the negative impacts of visitors to Duxbury Reef's intertidal habitat and species all three of the following additions to and modifications of the Duxbury Reef State Marine Conservation Area ("SMCA") should be approved by the Commission.

**1. Change the designation of the Duxbury Reef State Marine Conservation Area to a "State Marine Reserve".<sup>1</sup>**

Designating the entirety of the Duxbury MPA as a State Marine Reserve is imperative, whether or not the boundaries of the current MPA re expanded as urged below.

I have observed a very large increase in the visitation to the Duxbury MPA over the course of the last 12 years. (The increase over the prior 35 years was not nearly as large in absolute numbers; indeed, the increase during that prior 35 year period was hardly noticeable.) I have also observed that there is now, as compared to 12 years ago, a corresponding large increase in both commercial and recreational collection. This includes collection of fauna and flora, for consumption as well as for non-consumption purposes. When speaking with visitors, who have

---

<sup>1</sup> I understand that a designation as a "State Marine Reserve" will prohibit all taking, damage, injury or possession of any living, geological or cultural marine resource, except under a scientific collecting permit or authorized research, restoration or monitoring, whereas in a SMCA some species are unprotected. I am a retired attorney and I have read and am familiar with all sections of the Marine Life Protection Act (Fish & Game § 2850 et seq.) and the regulations promulgated thereunder (14 C.C.R. §632).

been engaged in non-consumptive, casual or recreational collecting, I have consistently heard confusion about what is or is not allowed within the current SMCA. Visitors see legal taking occurring within the current SMCA and assume that taking of anything is allowed. In addition, when permitted taking is observed, the ability of docents to protect the SMCA from not only recreational collecting, but also to minimize the usually unintended negative impacts of trampling, moving rocks for viewing, and temporarily removing animals from tide pools (this causes injury as the animal may have been in a location where it's food was present, or where it was tending eggs, or where it had a required or preferred exposure to or protection from tidal currents and wave shock<sup>2</sup>). Visitors compare, rationalize and measure their own trampling, invertebrate handling or collecting, and rock-overturning activity against the permitted taking. Simply put, continuing to permit some taking from Duxbury undermines the realization of the Commission's proscription that "it is unlawful to injure, damage, take, or possess any living ... marine resource" (14 C.C.R. § 632(a)(1)) that is not otherwise excepted from taking in the Duxbury SMCA.

**2. Extend the southern boundary of the Duxbury Marine Protected Area to the most southerly tip of Duxbury Reef exposed at mean lower low water (the "Southern Reef Extension")**

a. Direct Impacts on the Southern Reef Extension. The Southern Reef Extension is outside of and unprotected by the current SMCA. This unprotected area constitute about 5/6's of that portion of Duxbury Reef extending off the southern tip of the Bolinas peninsula. It is accessible at low tide from 3 points: the Agate Beach County parking lot; the Bolinas beach boat ramps at the ends of Brighton Road and Wharf Roads; and, a "local" trail down the bluff on the southern point of the Bolinas mesa. While the Southern Reef Extension does not have as many visitors as other parts of Duxbury Reef, it is an area on which I have observed an increasing number of incidents of collecting. The Southern Reef Extension has many species not found on, or rarer on, those portions of Duxbury that are more heavily visited. Its relatively pristine state is at risk of being degraded. Many of the species I have seen on the Southern Reef Extension have always been, or are now, absent or comparatively relatively rare on those parts of the SMCA most heavily visited by humans (for example, *Lissothuria nutriens* (Dwarf Sea Cucumber), *Nuttallina californica* (Nuttall's Chiton), *Mopalia ciliata* (Hairy Chiton), *Oligocottus snyderi* (Fluffy Sculpin) a number of species of nudibranch such as *Diaulua sandiegensis* (Ring-spotted Dorid) and *Dendrodoris albopunctata* (Salted Dorid). Other species I have seen on the Southern Reef Extension are now relatively rare, but had once been more numerous, on the more frequently visited part of the reef - within the current SMCA - due to collecting/poaching of that species itself (e.g. *Lottia gigantea* (Owl Limpet)) or loss from the trampling, handling or collecting of what a species (e.g. *Octopus dofleini* and *Octopus rubescens*) feeds on. Finally I have observed since the early 1980's, at roughly the midpoint of the Southern Reef Extension, a continuous colony of *Phoca vitulina* (Harbor Seals) that is easily flushed into the water by approaching humans.

---

<sup>2</sup> I would be happy to testify as to specific impacts of these kinds on specific species.

b. Impacts on the Existing SMCA. In addition to the direct impacts on the unprotected Southern Reef Extension itself, the collection in the Southern Reef Extension has at least two negative impacts on the intertidal habitat of the current SMCA. First, visitors unfamiliar with the existence of the SMCA or, if knowing it exists, unfamiliar with its boundaries see legal taking occurring on the unprotected Southern Reef Extension, where there is no limitation to only the taking of finfish, and assume that broader taking (e.g. taking bivalves for bait, collecting invertebrates, harvesting algae) is allowed in the area within the current SMCA. Second, it negatively impacts the complex and rich ecosystem of the entire reef by removing from the less visited areas (the Northern & Southern Reef Extensions) those species that could otherwise repopulate the more heavily visited areas (the current SMCA).

**3. Extend the northern boundary of the Duxbury MPA to the Double Point/Stormy Stack Special Closure, that is the northern point of the area known as Double Point (the "Northern Reef Extension")**

The Northern Reef Extension is outside of and unprotected by the current SMCA. This unprotected area commences at the North boundary of the current SMCA (roughly the outfall of Arroyo Hondo Creek) and would extend to the northern point of Double Point. It is accessible from 6 points: the Agate Beach County parking lot (at low tide); two trails down from the Commonweal area; a trail down from a small parking area on Mesa Road North of Point Blue's Palomarin Field Station; a trail that commences about 200 yards North of the Palomarin trailhead (branching off the Coast Trail); and, at low tide from the beach from Alamere Falls. The number of visitors at the Palomarin trailhead has increased many-fold. Ten years ago it was rare to have more than 15 cars in the trailhead parking lot on a Saturday or Sunday during the Summer; now parking fills that lot at any time of the year, and often extends down Mesa road - on occasion nearly to Point Blue's field station. The Northern Reef Extension has many species not found on, or now rarer on, those portions of Duxbury that are more heavily visited. Its relatively pristine state is at risk of being degraded. Perhaps the most memorable (to me) two species I have seen in the Northern Reef Extension, but not in the SMCA, are *Anarrhichthys ocellatus* (Wolf Eel), and *Scorpaenichthys marmoratus* (Giant Marbled Sculpin or Giant Sculpin) protecting its eggs, a species I have seen in the intertidal area only twice in over 30 years in tidepools which was protecting eggs and potentially could be easily captured. Obviously, like the collecting activity in the Southern Reef Extension, that same activity in the unprotected Northern Reef Extension, negatively impacts the complex and rich ecosystem of the entire reef.

**My experience/background relevant to this matter.**

I was a part-time resident of Bolinas from 1976 to 1985. From 1986 to the present I have continuously been a full-time resident of Bolinas. During that period I have observed Duxbury Reef, keeping field and laboratory notes of my observations over that time. I am a rocky shores naturalist, trained as part of the rocky shores partnership between California Academy of Sciences and the Gulf of the Farallones National Marine Sanctuary, and in marine biology course work at the College of Marin (as examples). Two days a month for over 3 years I was a volunteer docent at the California Academy of Sciences, specializing in marine invertebrates.

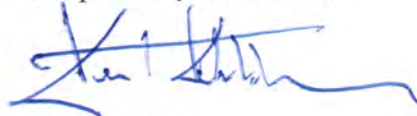
Each year for the past 10 years I have performed surveys of intertidal invertebrates in the more untouched areas of the Marin Coast (4 sites including one on Duxbury Reef) and Alcatraz Island as part of the Multi-Agency Rocky Intertidal Network (MARINe ). For 8 years I surveyed and tagged pinnipeds in Pt. Reyes National Seashore. I participated in MPA Watch from 2013 to 2021. I have spent over 100 hours a year docenting at Duxbury Reef, including taking school groups on the reef from primary school to college classes, over the past 12 years. In 2022 I created the docent program on Duxbury Reef in partnership with EAC, I taught the docent volunteers the biology and the identification of species found on Duxbury, and trained them in docenting protocols. I was previously named volunteer of the year by the National Park Service, by the Greater Farallones National Marine Sanctuary, and by EAC. I am also a member of the Bolinas Rod & Boat Club.

### **Summary**

Duxbury Reef's side-shelf shale reef supports a complex and rich ecosystem. Its tidal pools are easy to access and are frequently used as outdoor classrooms for students from primary school to the university level and for recreation. On some days there are 100s of visitors to Duxbury Reef, including many visitors from other States and countries, for tide pool exploration and wildlife watching.

In order to preserve without further impairment, and to correct harm that has been previously done to, the ecosystem of Duxbury Reef for the enjoyment, education and inspiration of current and future generations all three of the above-described additions to and modifications of the Duxbury Reef State Marine Conservation Area proposed should be approved by the Commission.

Respectfully submitted,



Kent Khtikian

cc. Morgan Patton, EAC

Date: July 3, 2023

To: California Fish and Game Commission  
P.O. Box 944209  
Sacramento, CA 94244-2090

via email ([fgc@fgc.ca.gov](mailto:fgc@fgc.ca.gov)) & U.S. Mail

From: Joe Mueller  
College of Marin  
Dept. of Life and Earth Sciences  
835 College Ave  
Kentfield, CA 94904

Re: **Petition for modification of Duxbury Reef Marine Protected Area**

Dear President Sklar and Honorable Commissioners,

I am writing to you in support of the petition submitted to you by the Environmental Action Committee of West Marin ("EAC") dated April 6, 2023 regarding the Duxbury Reef Marine Protected Area.

For the reasons stated below, I believe that in order to preserve the ecological integrity of the Communities of Duxbury Reef for the recreational use, education and scientific modeling opportunities of current and future generations and to minimize the damaging impacts of visitors to Duxbury Reef's rocky intertidal communities all three of the following additions to and revisions of the Duxbury Reef State Marine Conservation Area ("SMCA") should be approved by the Commission.

**My experience/background relevant to this matter.**

As a Professor of Marine Biology at College of Marin for 33 years I have been studying Duxbury Reef and leading marine biology field trips to the reef for all of these years. I have been part of conducting invertebrate population assays on the reef since 1985. Recently I have led a research project to follow through on invertebrate studies that have been monitoring biodiversity trends since the early 1970s.

**1. Change the designation of the Duxbury Reef State Marine Conservation Area to a "State Marine Reserve".<sup>1</sup>**

Designating the entirety of the Duxbury MPA as a State Marine Reserve is of vital importance,

---

<sup>1</sup> I understand that a designation as a "State Marine Reserve" will prohibit all taking, damage, injury or possession of any living, geological or cultural marine resource, except under a scientific collecting permit or authorized research, restoration or monitoring, whereas in a SMCA some species are unprotected.

July 3, 2023

whether or not the boundaries of the current MPA are expanded as urged below. Over my 33 years of teaching college level courses on Duxbury Reef I have observed a significantly large increase in the visitation to the Duxbury MPA over the course of the last 12 years or so. Additionally, I have observed that there is a corresponding significant increase in both commercial and recreational collecting/fishing as compared to 12 or so years ago. This includes collecting of both invertebrates, vertebrates and algae for food as well as for general collecting purposes. Most importantly I've notice a precipitous drop and reef invertebrate diversity and biomass. It is in my professional opinion that continuing to permit some taking from Duxbury undermines the realization of the Commission's proscription that "it is unlawful to injure, damage, take, or possess any living ... marine resource"(14 C.C.R. § 632(a)(1)) that is not otherwise excepted from taking in the Duxbury SMCA.

**2. Extend the southern boundary of the Duxbury Marine Protected Area to the most southerly tip of Duxbury Reef exposed at mean lower low water (the "Southern Reef Extension")**

a. Direct Impacts on the Southern Reef Extension. The Southern Reef Extension is outside of and unprotected by the current SMCA. This unprotected area constitutes about 5/6's of that portion of Duxbury Reef extending off the southern tip of the Bolinas peninsula. It is accessible at low tide from 3 points: the Agate Beach County parking lot; the Bolinas beach boat ramps at the ends of Brighton Road and Wharf Roads; and, a "local" trail down the bluff on the southern point of the Bolinas mesa. While the Southern Reef Extension does not have as many visitors as other parts of Duxbury Reef, it is an area on which I have observed an increasing number of incidents of collecting over the last few years. The Southern Reef Extension has a significantly higher biodiversity than those regions of Duxbury that are more heavily visited due to easier access. This is due to the diverse microhabitats found in this area as well as other abiotic variables. The reef's relatively pristine state is at risk of being degraded. If needed I would be happy to provide your office with a list of invertebrate and vertebrate species historically found within the Southern Reef Extension that are now, absent or comparatively rare on those parts of the SMCA most heavily visited. Other species I have seen on the Southern Reef Extension are now relatively rare, but had been more numerous in the past, on the more frequently visited part of the reef - within the current SMCA - due to collecting/poaching of that species, e.g. *Lottia gigantea* or most likely loss from the trampling, handling or collecting of what some species (e.g. *Octopus dofleini* and *Octopus rubescens*) feed on. I have also observed colonies of Harbor Seals that are easily frightened into the water by approaching humans in this area.

b. Impacts on the Existing SMCA. In addition to the direct impacts on the unprotected Southern Reef Extension, the collection in the Southern Reef Extension has at least two negative impacts on the intertidal habitat of the current SMCA. First, visitors unfamiliar with the existence of the SMCA or, if knowing it exists, unfamiliar with its boundaries see legal taking occurring on the unprotected Southern Reef Extension, where there is no limitation to only the taking of finfish, and assume that broader taking (e.g. taking bivalves for bait, collecting invertebrates, harvesting algae) is allowed in the area within the current SMCA. Second, it negatively impacts the

July 3, 2023

complex and rich ecosystem of the entire reef by removing from the less visited areas (the Northern & Southern Reef Extensions) those species that could otherwise repopulate the more heavily visited areas (the current SMCA).

**3. Extend the northern boundary of the Duxbury MPA to the Double Point/Stormy Stack Special Closure, that is the northern point of the area known as Double Point (the “Northern Reef Extension”)**

The Northern Reef Extension is outside of and unprotected by the current SMCA. This unprotected area commences at the North boundary of the current SMCA (roughly the outfall of Arroyo Hondo Creek) and would extend to the northern point of Double Point. It is accessible from 6 points: the Agate Beach County parking lot (at low tide); two trails down from the Commonweal area; a trail down from a small parking area on Mesa Road North of Point Blue’s Palomarin Field Station. I’m told by expert National Park staff that there has been a significant increase in visitation and is due to social media. The Northern Reef Extension has a richer biodiversity than areas of Duxbury that are more heavily visited. Its relatively pristine state is at risk of being degraded. As you’re aware, the collecting activity in the Southern Reef Extension is the same activity in the unprotected Northern Reef Extension and negatively impacts the complex and rich ecological communities of the entire reef system

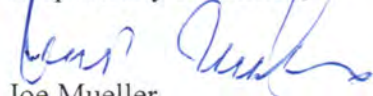
**Summary**

Duxbury Reef’s side-shelf shale reef supports complex and rich ecological communities. Its tidal pools are easy to access and are frequently used as outdoor classrooms for students from primary school to the university level as well as for recreation. On many days I have counted more than 150 visitors using Duxbury Reef, that have come to explore the rocky intertidal community.

In order to preserve without further damage, and to allow the reef to heal so it can provide enjoyment, education and inspiration for current and future generations I strongly recommend that all three of the above-described additions to and revisions of the Duxbury Reef State Marine Conservation Area proposed should be approved by the Commission.

Please feel free to contact me for any clarification or questions. [jmueller@marin.edu](mailto:jmueller@marin.edu)

Respectfully submitted,



Joe Mueller  
Professor of Marine Biology  
College of Marin  
Kentfield, CA 94904  
[jmueller@marin.edu](mailto:jmueller@marin.edu)

cc. Morgan Patton, EAC

Lily Rosenman

email:

July 6, 2023

via email ([fgc@fgc.ca.gov](mailto:fgc@fgc.ca.gov)) & U.S. Mail

California Fish and Game Commission  
P.O. Box 944209  
Sacramento, CA 94244-2090

**Re: Petition for modification of Duxbury Reef Marine Protected Area**

Dear President Sklar and Honorable Commissioners,

I am writing to you in support of the petition submitted to you by the Environmental Action Committee of West Marin ("EAC") regarding the Duxbury Reef Marine Protected Area.

For the reasons stated below, I believe that in order to preserve unimpaired the ecosystem of Duxbury Reef for the enjoyment, education and inspiration of current and future generations and to minimize the negative impacts of visitors to Duxbury Reef's intertidal habitat and species all three of the following additions to and modifications of the Duxbury Reef State Marine Conservation Area ("SMCA") should be approved by the Commission.

1. Change the designation of the Duxbury Reef State Marine Conservation Area to a "State Marine Reserve".<sup>1</sup>
2. Extend the southern boundary of the Duxbury Marine Protected Area to the most southerly tip of Duxbury Reef exposed at mean lower low water.
3. Extend the northern boundary of the Duxbury MPA to the Double Point/Stormy Stack Special Closure, that is the northern point of the area known as Double Point.

**Rationale for my support of the above actions.**

My comments below are premised upon my following experience. I have continuously been a full-time resident of Bolinas since 2021. Since moving to Bolinas I have spent many hours on Duxbury Reef. I am currently taking classes at the College of Marin to obtain a Natural History Certificate and have completed 4 of the 7 courses for that certification. I completed the docent training class for the Duxbury Reef docent program in January 2022. I have been an active docent on Duxbury Reef since January 2022, and I have spent many hours on the reef as a docent. I have been visiting and exploring Duxbury reef since the 1980s, and the experiences

---

<sup>11</sup> I understand that a designation as a "State Marine Reserve" will prohibit all taking, damage, injury or possession of any living, geological or cultural marine resource, except under a scientific collecting permit or authorized research, restoration or monitoring, whereas in a SMCA some species are unprotected.

tidepooling there throughout my childhood have directly influenced my current path to learning more about Ecology and Marine Biology.

As a docent I have talked to visitors who were engaged in casual, recreational collecting. From numerous interactions with visitors, it is apparent that visitors often feel that their own activity of turning over rocks, walking through tide pools, or recreational collecting is less harmful than whatever fishing that they either see occurring on the reef or they read as being permitted on the signage in the Agate Beach parking lot.

When fishermen are in the SMCA, I am too uncomfortable as a volunteer docent, to try to stop - or even dissuade - fishermen from using mussels as bait or from removing other invertebrates either for consumption or for bait.

If Duxbury was designated as a State Marine Reserve, there would be no question that the taking or possessing is not permitted. Nor would there be permitted taking occurring, against which visitors could compare, rationalize and justify their own trampling, invertebrate handling, and rock-overturning activity.

I have also observed that there are large parts of Duxbury Reef, both to the North and South of the boundaries of the current area designated as the Duxbury Reef State Marine Conservation Area which are increasingly visited. Those areas are outside of the Duxbury marine protected area. Consequently, there is no attempt to dissuade or even report harmful conduct in the parts of the reef which are now relatively pristine. The risk of the degradation of those areas would be reduced by expanding the boundaries of Duxbury marine protected area to include them and by designating the entirety as a State Marine Reserve. Moreover, unless someone was posted out beyond the current boundaries of the SMCA (and there are not enough volunteers to do that), it is impossible to tell if people who are walking back from more remote parts of the reef to the County's Agate Beach parking area who are carrying buckets, collected the contents of those buckets inside the current boundaries of the Duxbury SMCA or in those larger unprotected areas of Duxbury Reef outside of its current protected boundaries.

Sincerely,

A handwritten signature in cursive script, reading "Lily Rosenman". The signature is written in dark ink and is positioned above the printed name.

Lily Rosenman

cc. Morgan Patton, EAC

Bridget Bartholome

email:  
telephone:

July 5, 2023

via email ([fgc@fgc.ca.gov](mailto:fgc@fgc.ca.gov)) & U.S. Mail

California Fish and Game Commission  
P.O. Box 944209  
Sacramento, CA 94244-2090

**Re: Petition for modification of Duxbury Reef Marine Protected Area**

Dear President Sklar and Honorable Commissioners,

I am writing to you in support of the petition submitted to you by the Environmental Action Committee of West Marin ("EAC") dated April 6, 2023 regarding the Duxbury Reef Marine Protected Area.

For the reasons stated below, I believe that in order to preserve unimpaired the ecosystem of Duxbury Reef for the enjoyment, education and inspiration of current and future generations and to minimize the negative impacts of visitors to Duxbury Reef's intertidal habitat and species all three of the following additions to and modifications of the Duxbury Reef State Marine Conservation Area ("SMCA") should be approved by the Commission.

1. Change the designation of the Duxbury Reef State Marine Conservation Area to a "State Marine Reserve".<sup>1</sup>
2. Extend the southern boundary of the Duxbury Marine Protected Area to the most southerly tip of Duxbury Reef exposed at mean lower low water.
3. Extend the northern boundary of the Duxbury MPA to the Double Point/Stormy Stack Special Closure, that is the northern point of the area known as Double Point.

**Rationale for my support of the above actions.**

---

<sup>1</sup> I understand that a designation as a "State Marine Reserve" will prohibit all taking, damage, injury or possession of any living, geological or cultural marine resource, except under a scientific collecting permit or authorized research, restoration or monitoring, whereas in a SMCA some species are unprotected.

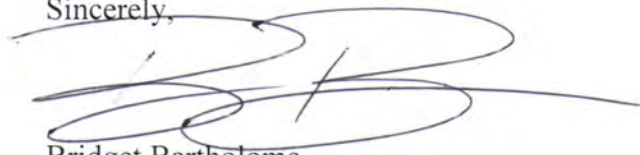
My comments below are premised upon my following experience. I have continuously been a full-time resident of Bolinas since 2006. Since moving to Bolinas I have spent many hours on Duxbury Reef. I am currently taking classes at the College of Marin to obtain a Natural History Certificate and have completed 6 of the 7 classes for that certification. I took the docent training class for the Duxbury Reef docent program in January 2022 and I have been continually participating in that program on Duxbury Reef since that date. I was also resident choreographer for Bolinas Bay Performing Arts 2014-2020, and taking young people to the reef to learn and explore was an integral part of our production of "The Little Mermaid". I have also been a member of the Bolinas Rod and Boat Club since 2020. For the past year I have also been assisting in performing invertebrate surveys in several areas within the current Duxbury SMCA.

I have observed a very large increase in the visitation to the Duxbury SMCA over the course of the last 7 years. As a docent I have talked to visitors who were engaged in casual, recreational collecting. On those occasions when others on the reef were fishing, the visitors would ask me why fishing with lines and hooks, or with poke poles, was permitted, but taking other animals (bivalves, snails, urchins) from the reef, or turning over rocks, or splashing through tide pools (and, for example, potentially destroying egg deposits or crushing juvenile crabs taking refuge in tide pools when the tide retreats) was prohibited. Docents are volunteers, and are present on the reef for only a small percentage of the time. It is apparent to me that despite the signs in the Agate Beach parking lot, many people believe that their activity is less impactful than the taking by others that is permitted. In addition, when people are walking back from one of the more distant parts of Duxbury's protected area to the County's Agate Beach parking lot carrying fishing rods and buckets, it is very uncomfortable for docents to try to peer in the buckets to determine if they are carrying off anything other than finfish or abalone; indeed, it is uncomfortable to the point that the observation is rarely attempted. Consequently, if Duxbury was designated as a State Marine Reserve, there would be no question that the taking or possessing is not permitted. Nor would there be permitted taking occurring, against which visitors could compare, rationalize and justify their own trampling, invertebrate handling, and rock-overturning activity.

I have also observed that there are large parts of Duxbury Reef, both to the North and South of the boundaries of the current area designated as the Duxbury Reef State Marine Conservation Area which are increasingly visited. Those areas are outside of the Duxbury marine protected area. Consequently, there is no attempt to dissuade or even report harmful conduct in the parts of the reef which are now relatively pristine. The risk of the degradation of those areas would be reduced by expanding the boundaries of Duxbury marine protected area to include them and by designating the entirety as a State Marine Reserve. Moreover, unless someone was posted out beyond the current boundaries of the SMCA (and there are not enough volunteers to do that), it is impossible to tell if people who are walking back from more remote parts of the reef to the County's Agate Beach parking area who are carrying buckets, collected the contents of those buckets inside the current boundaries of the Duxbury SMCA or in those larger unprotected areas of Duxbury Reef outside of its current protected boundaries.

California Fish and Game Commission  
July 5, 2023

Sincerely,

A handwritten signature in blue ink, consisting of stylized, overlapping loops and a long horizontal stroke extending to the right.

Bridget Bartholome

cc. Morgan Patton, EAC

Laura Lee Miller

July 6, 2023

via email ([fgc@fgc.ca.gov](mailto:fgc@fgc.ca.gov)) & U.S. Mail

California Fish and Game Commission  
P.O. Box 944209  
Sacramento, CA 94244-2090

**Re: Petition for modification of Duxbury Reef Marine Protected Area**

Dear President Sklar and Honorable Commissioners,

I am writing to you in support of the petition submitted to you by the Environmental Action Committee of West Marin ("EAC") regarding the Duxbury Reef Marine Protected Area.

For the reasons stated below, I believe that in order to preserve unimpaired the ecosystem of Duxbury Reef for the enjoyment, education and inspiration of current and future generations and to minimize the negative impacts of visitors to Duxbury Reef's intertidal habitat and species all three of the following additions to and modifications of the Duxbury Reef State Marine Conservation Area ("SMCA") should be approved by the Commission.

1. Change the designation of the Duxbury Reef State Marine Conservation Area to a "State Marine Reserve".<sup>1</sup>
2. Extend the southern boundary of the Duxbury Marine Protected Area to the most southerly tip of Duxbury Reef exposed at mean lower low water.
3. Extend the northern boundary of the Duxbury MPA to the Double Point/Stormy Stack Special Closure, that is the northern point of the area known as Double Point.

**Rationale for my support of the above actions.**

My comments below are premised upon my following experience. I have continuously been a full-time resident of Bolinas since 2001, and am a lifelong resident of Marin County. Since moving to Bolinas I have spent many hours on Duxbury Reef. In both Bolinas waters and Tomales Bay, as a Red Cross certified swimming instructor I have taught open water safety

---

<sup>1</sup> I understand that a designation as a "State Marine Reserve" will prohibit all taking, damage, injury or possession of any living, geological or cultural marine resource, except under a scientific collecting permit or authorized research, restoration or monitoring, whereas in a SMCA some species are unprotected.

California Fish and Game Commission  
July 6, 2023

skills, for both West Marin Community Services and Bolinas Stinson School. I received a naturalist certificate from the College of Marin after completing 12 courses, including marine biology. I have volunteered at the Point Blue Conservation Marine Lab, specializing in krill ID from Cordell Bank surveys. I took the docent training class for the Duxbury Reef docent program in January 2022 and I have been continually participating in that program on Duxbury Reef since that date. I have spent many hours on the reef as a docent since January 2022. For the past 3 years I have also been performing invertebrate surveys in several areas within the current Duxbury SMCA. I am also an active member of the Bolinas Rod and Boat Club.

I have observed a very large increase in the visitation to the Duxbury SMCA over the course of the last 20 years but especially the past 4 years. As a docent I have talked to visitors who were engaged in casual, recreational collecting. From numerous interactions with visitors, it is apparent that visitors often feel that their own activity of turning over rocks, walking through tide pools, or recreational collecting is less harmful than whatever fishing that they either see occurring on the reef or they read as being permitted on the signage in the Agate Beach parking lot. They are almost always confused by this mix of regulations, with some species allowed to be collected and or consumed, and others not.

I have also noticed the disappearance of long-lived invertebrate species from those parts of the Duxbury SMCA frequented by fishermen, from which there is a good fishing access to the surf, for example owl limpets, which are edible. It is very awkward, in fact uncomfortable as a volunteer, to try to peer in a fisherman's bucket(s) to determine if they are carrying off anything other than finfish, or to try to dissuade them from using mussels as bait or from removing other invertebrates either for consumption or for bait.

In sum, if Duxbury was designated as a State Marine Reserve, there would be no question that the taking or possessing is not permitted. Nor would there be permitted take occurring, against which visitors could compare, rationalize and justify their own trampling, invertebrate handling, and rock-overturning activity.

I have also observed that there are large parts of Duxbury Reef, both to the North and South of the boundaries of the current area designated as the Duxbury Reef State Marine Conservation Area which are increasingly visited. Those areas are outside of the Duxbury marine protected area. Consequently, there is no attempt to dissuade or even report harmful conduct in the parts of the reef which are now relatively pristine. The risk of the degradation of those areas would be reduced by expanding the boundaries of Duxbury marine protected area to include them and by designating the entirety as a State Marine Reserve. Moreover, unless someone was posted out beyond the current boundaries of the SMCA (and there are not enough volunteers to do that), it is impossible to tell if people who are walking back from more remote parts of the reef to the County's Agate Beach parking area who are carrying buckets, collected the contents of those buckets inside the current boundaries of the Duxbury SMCA or in those larger unprotected areas of Duxbury Reef outside of its current protected boundaries.

California Fish and Game Commission  
July 6, 2023

Thank you for considering these critical designation and boundary recommendations for Duxbury Reef, to the benefit of all our west coast fisheries and wildlife.

A handwritten signature in cursive script, reading "Laura Lee Miller". The signature is written in dark ink and is centered on the page.

Laura Lee Miller

cc. Morgan Patton, EAC

California Fish and Game Commission  
P.O. Box 944209  
Sacramento, CA 94244-2090

Re: Fish and Game Marine Resources Committee Agenda Item 5: MPA DMR  
Petition for modification of Duxbury Reef Marine Protected Area

Dear President Sklar and Honorable Commissioners,

This is submitted to you in support of the petition submitted to you by the Environmental Action Committee of West Marin ("EAC") dated April 6, 2023.

Duxbury Reef's shale reef supports a complex and rich ecosystem of over 100 species of marine invertebrates, vertebrates and flora. Its tidal pools are easy to access and are frequently used as outdoor classrooms for students from primary school to the university level. On some days there are 100s of visitors at Duxbury Reef, including many visitors from other States and countries, for tide pool exploration and wildlife watching.

We believe that in order to preserve unimpaired the ecosystem of Duxbury Reef for the enjoyment, education and inspiration of current and future generations and to minimize the negative impacts of collecting to Duxbury Reef's intertidal habitat and species all three of the following additions to and modifications of the Duxbury Reef State Marine Conservation Area should be approved by the Commission.

1. Change the designation of the Duxbury Reef State Marine Conservation Area to a "State Marine Reserve". I understand that a designation as a "State Marine Reserve" will prohibit all taking, damage, injury or possession of any living, geological or cultural marine resource, except under a scientific collecting permit or authorized research, restoration or monitoring.
2. Extend the southern boundary of the Duxbury Marine Protected Area to the most southerly tip of Duxbury Reef exposed at mean lower low water
3. Extend the northern boundary of the Duxbury MPA to the Double Point/Stormy Stack Special Closure, that is the northern point of the area known as Double Point.

Name

Residence Address

MICHAEL LIGHT

BROOKE MARECHAU

Kimmy Haines

Dale Polissar

John Hutchinson

**From:** Alexander Hayek <[REDACTED]>  
**Sent:** Wednesday, June 14, 2023 4:58 PM  
**To:** FGC  
**Subject:** Feedback regarding Prioritized action list

You don't often get email from [REDACTED] [Learn why this is important](#)

**WARNING:** This message is from an external source. Verify the sender and exercise caution when clicking links or opening attachments.

My Feedback, regarding " California Department of Fish and Wildlife Draft prioritized recommendations from California's Marine Protected Area Decadal Management Review "

<https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=213111&inline>

Feedback:

1. What are the action plans for each of the prioritized items that will be taken to achieve the recommendations?
2. What are success metrics for each of these items to determine if the recommendation was achieved successfully?
3. When will these success metrics be measured?
4. What steps will be taken after success is declared to verify the result achieved was the desired outcome? What steps will be taken to understand any negative impacts that unintentionally resulted from actions taken?

Regards,

Alex Hayek

**From:** Kayleigh Rubin <digital-checklisting@publicinterestnetwork.org>  
**Sent:** Wednesday, July 5, 2023 3:23 PM  
**To:** FGC  
**Subject:** Prioritize strengthening and expanding California's marine protected area network

WARNING: This message is from an external source. Verify the sender and exercise caution when clicking links or opening attachments.

California Fish and Game Commission

RE: Prioritize strengthening and expanding California's marine protected area network

null

Please prioritize strengthening and expanding California's marine protected area network.

The ocean is one of our best defenses against climate change, absorbing nearly half of the carbon that humans produce.

In addition to helping fight climate change, our ocean provides crucial habitat for so many different species like orcas, southern sea otters, and blue whales and more than 180 species of seabirds and shorebirds. Many migratory marine animals find refuge in the nutrient rich waters of the Pacific during their long journeys up and down the North American coast and even around the world. It's no wonder why more than half of all Californians visit the coast at least once a year to take in the sights and reconnect with nature.

California's unique network of 124 Marine Protected Areas (MPAs) makes the state a global leader in protecting the critical habitats and life existing in and around our oceans. However, with a warming planet, rising sea level, and historic species extinctions, it is clear that California must strengthen and expand our existing network of protections with highly and fully protected MPAs.

Highly protected areas only allow light extractive activities, while fully protected areas do not allow any extractive or environmentally destructive activities. Highly and fully protected areas provide space for marine life to rebound from harmful stressors so that they are more resilient and can better adapt to changing ocean conditions like climate change. Because of this, highly and fully protected MPAs are the most effective protected areas in the ocean. Please prioritize expanding the network of protected areas and strengthening the protections and management of our coastal waters.

Sincerely,  
Kayleigh Rubin  
3435 Wilshire Blvd  
Suite 385  
Los Angeles, CA 90010

**From:** Aubrie Fowler <aubrie@mpacollaborative.org>  
**Sent:** Friday, July 7, 2023 2:56 PM  
**To:** FGC <FGC@fgc.ca.gov>; Ashcraft, Susan@FGC <Susan.Ashcraft@fgc.ca.gov>  
**Cc:** Calla Allison <calla@mpacollaborative.org>; nicole@mpacollaborative.org  
**Subject:** FGC MRC - Slides - MPA Collaborative Network

Hi Susan (and all),

Please see the attached slides that will aid Calla's in-person presentation to the MRC on July 20th, to also please be included in the meeting materials packet for Commissioners. I've attached as both a PDF and shared as a [PowerPoint via Google Drive](#). Please let me know if you have any issues accessing the files.

Thank you and have a great weekend!

Respectfully,  
Aubrie

**Aubrie Fowler** (she/her)  
South Coast Specialist  
[MPA Collaborative Network](#)  
cell: 858.525.1254  
[Sign-up for our Quarterly Newsletter](#)  
[Find and join your local Collaborative](#)



**COLLABORATIVE  
NETWORK**

The future of resource management

**Fish and Game Commission  
Marine Resources Committee  
Agenda Item #5  
July 20th, 2023**

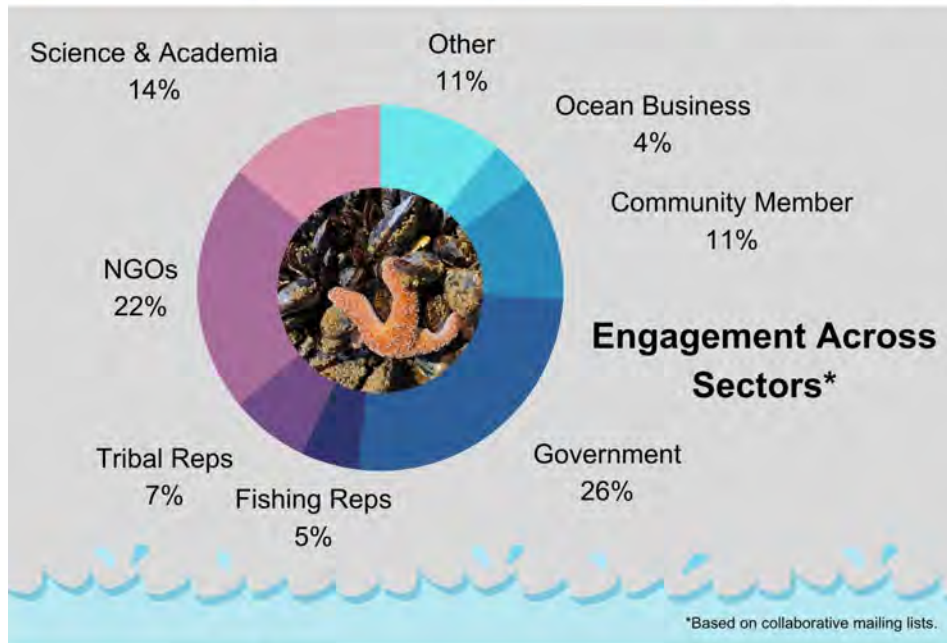
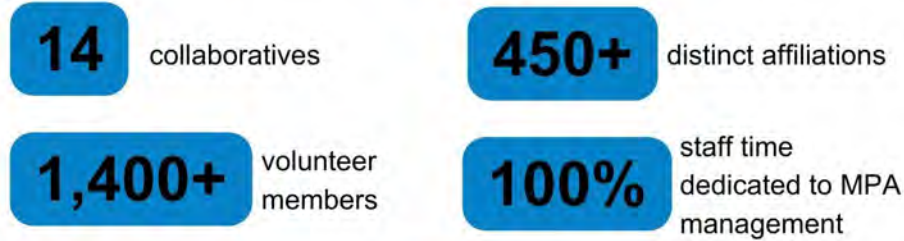
*Calla Allison, Director  
MPA Collaborative Network*

# MPA Collaborative Network



## COLLABORATIVE NETWORK

*The mission of the MPA Collaborative Network is to empower diverse communities to engage in marine protected area stewardship for a healthy ocean.*



**\$20 million**

estimated annual in-kind support to MPA management



**\$1.5 million**

in grant funding for local MPA projects procured and facilitated

# Collaborative Input on Adaptive Management

- Creating process for community-driven adaptive management discussions
  - Input on #4 of Table 6.1
- Have hosted 9 of the 14 collaborative's Regulatory Recommendation meetings
- Includes input on all (near, mid, long-term) CDFW priorities with specifics



MPA	Current Regs	Management problem identified at enforcement training/other meeting	Adaptive Management Recommendation	Consensus?
Bolsa Chica Upper Newport Crystal Cove Laguna Beach Dana Point	Take allowed? Species and method	e.g., hard to determine boundary, confusing regulations, misalignment with other jurisdictional boundaries, etc.	Small tweak to make MPA easier to manage/more effective	Does the collaborative agree?

# Input on CDFW Priority Recommendations

Other General Recommendations for CDFW or the Fish and Game Commission from each MPA Collaborative are being gathered and coded according to new table prioritized by CDFW

- Management recommendations
  - Suggestions for CDFW to improve education and outreach, compliance, or research opportunities
- General regulations clean-up
  - Regulatory changes that can be applied statewide or to an entire region
  - Include Tribal considerations

# How would you like to receive this information?

## What other information would be helpful?

### County/Collaborative Discussion Summary

#### Los Angeles MPA Collaborative Regulations Discussion Summary

##### General Recommendations for CDFW from the LA MPA Collaborative:

###### Management

- More shore-based LED officers and interpreters for LA County mainland
- Explore impacts of film permittees in Point Dume and other MPAs (thinking they are exempt from MPA regulations because of permit)
- Identify cases where feasibility of boundary marking (buoys or land markers) should be [reevaluated](#)

###### Regulatory

- Explore options for adding non-federally recognized Tribes to Tribal [exemptions](#)
- Simplify color coding for ease of public understanding i.e., change all purple no-take MPAs to red for consistency/understanding of no-take areas

##### Discussion by MPA (click MPA name for link to full regulations and map):

MPA	Current Regs Summarized	<a href="#">LA County Compliance Concerns and/or management problem identified at enforcement training/other meeting</a>	Adaptive Management Recommendation	Consensus?	Justification	Management suggestion
<a href="#">Point Dume SMCA</a>	Rec take by spearfishing of white seabass and pelagic finfish. Commercial take of swordfish by harpoon and coastal pelagic species by round haul net, trawl gear, and light boat.	Frequent noncompliance with MPAs and limited enforcement	Delete allowance for commercial take of Swordfish by harpoon	Yes	Swordfish fishing does not occur that close to shore	Additional enforcement personnel/efforts are needed

### Input According to CDFW Priorities List

#### MPA Collaborative Network - Collaborative Input on CDFW Priorities

Prioritization tables in order of expected timeframe: 1) Near-term Priorities, 2) Mid-term Priorities, and 3) Long-term Priorities.

##### 1) Near-term Priorities (Ongoing – 2 Years)

Cornerstone	Category	Recommendation	Collaborative(s)	Specific Recommendation(s)
Governance	Tribal Coordination	01. Improve state agencies' tribal engagement and relationship building efforts	All 14	SD: OC: LA:
Governance	Regulatory and Review Framework	04. Apply what is learned from the first Decadal Management Review to support proposed changes to the MPA Network and Management Program	All 14	See Regulatory Recommendation
Governance	Justice, Equity, Diversity, and Inclusion	07. Expand targeted outreach and education materials and events to under-represented user groups.	SD, OC, LA,	Tribes, fishing community, youth
Governance	MPA Statewide Leadership Team and Partner Coordination	09. Continue to coordinate and collaborate with OPC and other agencies on California's ocean and coastal priorities to enhance coastal biodiversity, climate resiliency, human access and use, and a sustainable blue economy.	SD	
Governance	MPA Statewide Leadership Team and Partner Coordination	10. Improve partnership coordination across the four pillars of the MPA Management Program.		
Management Program	Research and Monitoring	11. Update the MPA Monitoring Action Plan framework to improve and sustain a cost-effective long-term monitoring program, including guidelines to ensure monitoring consistency and sustainable funding.		
Management Program	Outreach and Education	16. Conduct more targeted outreach to specific audiences to connect stakeholders with coastal resources and to encourage stewardship and compliance with regulations.		
Management Program	Policy and Permitting	17. Improve the application and approval process for scientific collecting permits.	OC	
Management Program	Policy and Permitting	18. Utilize OPC's Restoration and Mitigation Policy to develop a framework to evaluate and approve appropriate restoration and mitigation actions within MPAs and MMAs.		
Management Program	Enforcement and Compliance	20. Increase enforcement capacity.		
Management Program	Enforcement and Compliance	21. Enhance MPA citation record keeping and data management.	SD	

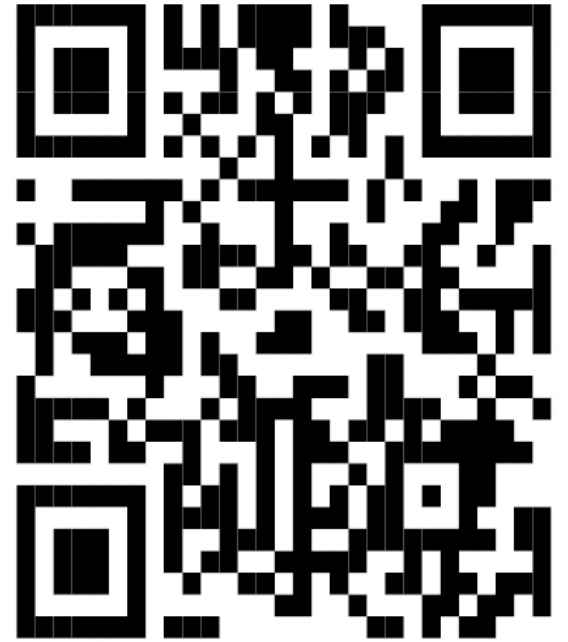
# Thank you



**Calla Allison**  
**Director**

**MPA Collaborative Network**

**[calla@mpacollaborative.org](mailto:calla@mpacollaborative.org)**



**MPACOLLABORATIVE.ORG**

**From:** Keith Rootsart <keith@g2kr.com>  
**Sent:** Wednesday, June 14, 2023 9:25 PM  
**To:** FGC  
**Subject:** MRC Meeting July 20

**WARNING:** This message is from an external source. Verify the sender and exercise caution when clicking links or opening attachments.

Commissioners,

The best pathway for kelp restoration and protection in Marine Protected Areas is by three CDFW recommended actions in the Draft prioritized recommendations from California's Marine Protected Area Decadal Management Review short term (0-2 year) tier.

04. Apply what is learned from the first Decadal Management Review to support proposed changes to the MPA Network and Management Program. - With kelp forest restoration must come protection and we learned from the DMR research that reserves perform much better than fished areas. So let's learn from that and prohibit fishing in the kelp forests we work so hard to restore, the fish nurseries. We can restore biodiversity and create better fishing opportunities with a productive kelp ecosystem.

11. Update the MPA Monitoring Action Plan framework to improve and sustain a cost-effective long-term monitoring program, including guidelines to ensure monitoring consistency and sustainable funding. - With restoration must come monitoring to ensure that we have confidence in the outcome, we can improve our efficiency, and our success is validated by independent researchers. Reef Check is our monitoring partner in this effort, and they struggle yearly to obtain funding for their very long-term effort. Citizen Science data is the best data for so many reasons and it needs to be valued and paid for annually.

18. Utilize OPC's [Ocean Protection Council] Restoration and Mitigation Policy to develop a framework to evaluate and approve appropriate restoration and mitigation actions within MPAs and MMAs. - OPC's Strategic Plan, objective 3.2 is to Protect and Restore Kelp Ecosystems. According to Michael Esgro, Senior Biodiversity Program Manager & Tribal Liaison at the 4/24 OPC meeting "We believe in this as a policy and we're just figuring out the details"

Sincerely,

Keith Rootsart  
G2KR.com



**Giant Giant Kelp**  
Restoration Project

**From:** Keith Rootsaert <keith@g2kr.com>  
**Sent:** Thursday, July 6, 2023 11:50 AM  
**To:** FGC  
**Cc:** G2KR Team  
**Subject:** MRC PPT presentations 2 of 2  
**Attachments:** G2KR\_Presentation\_23.0720 Item 5.pptx

**Follow Up Flag:** Follow up  
**Flag Status:** Flagged

**WARNING:** This message is from an external source. Verify the sender and exercise caution when clicking links or opening attachments.

Dear FGC,

Please find attached power point presentations for the July 20, MRC meeting, Items #2 and Items #5. Due to their large size, they are sent separately.

They are being sent to FGC in advance of the **July 7 at 5:00 Written Comment Deadline** which is also the deadline to submit Visual Presentations/Materials. The Electronic Materials deadline used to be the Supplemental Comments Deadline, which was an unexpected change, but nonetheless we are early.

We would appreciate pre-approval of 3 minutes speaking time for each presentation.

Thank you,

Keith Rootsaert  
G2KR.com



**Giant Kelp**  
Restoration Project

# Giant Giant Kelp Restoration

Fish and Game Commission  
July 20, 2023

Agenda Item 5, Marine Protected Areas DMR

## Table 6.1 - Governance

### **04. Apply what is learned from the first Decadal Management Review to support proposed changes to the MPA Network and Management Program.**

Kelp forest restoration needs protection.

DMR proved that MPAs harbor greater biomass overall of fish and invertebrate species.

Prohibit fishing in the kelp forests.

Protected kelp forests will have a spillover effect.



## Table 6.1 — Management Program

**11. Update the MPA Monitoring Action Plan framework to improve and sustain a cost-effective long-term monitoring program, including guidelines to ensure monitoring consistency and sustainable funding.**

Kelp forest restoration needs monitoring.

Citizen Science data is sound, involves the community, and produces data with a granularity and long-term scope.



## Table 6.1 — Management Program

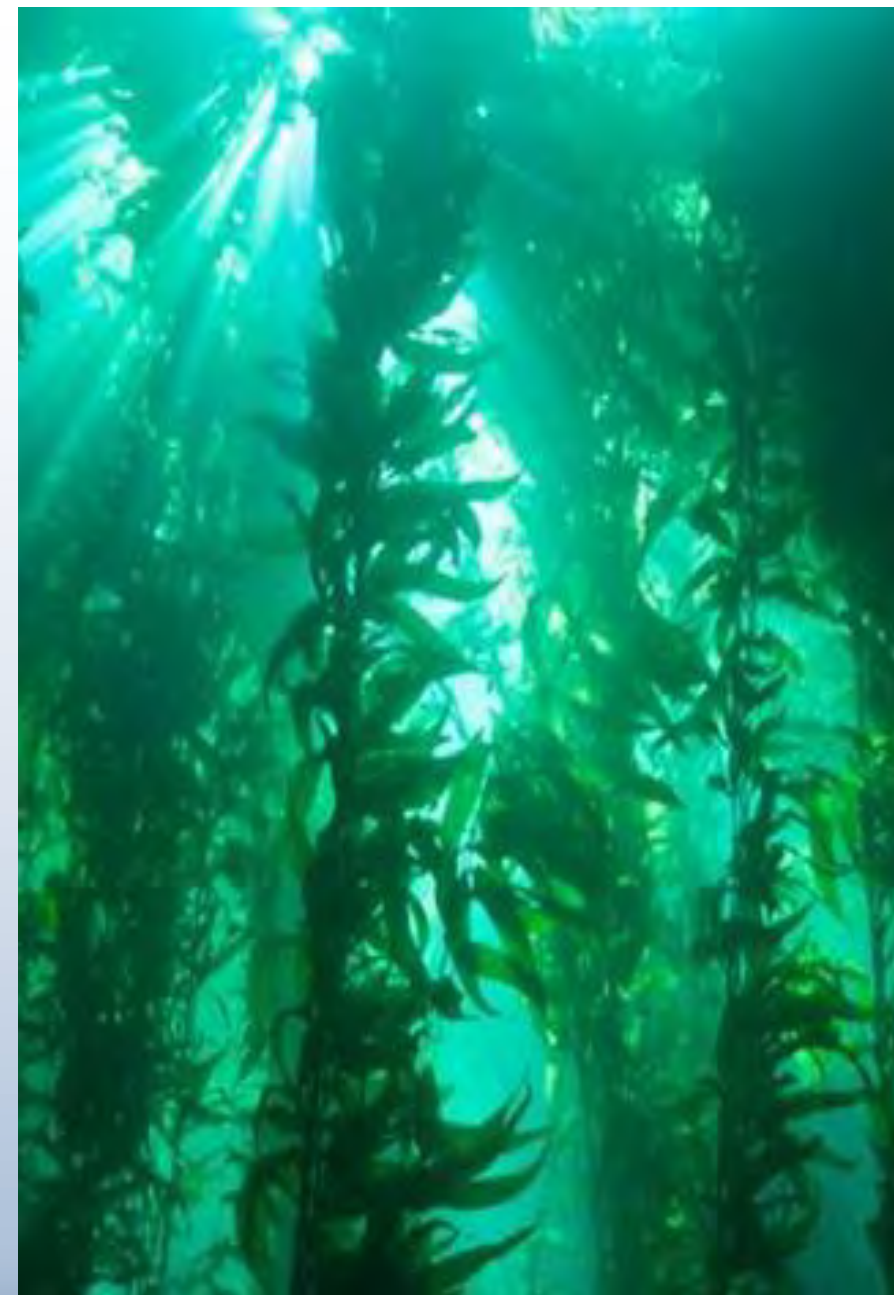
**18. Utilize the California Ocean Protection Council's (OPC) Restoration and Mitigation Policy to develop a framework to evaluate and approve appropriate restoration and mitigation actions within MPAs and MMAs.**

The Marine Protected Area 6 goals:

Goal 1: Protect the natural diversity and abundance of marine life, and the structure, function, and integrity of marine ecosystems.

Goal 2: Help sustain, conserve, and protect marine life populations, including those of economic value, and rebuild those that are depleted.

Goal 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.

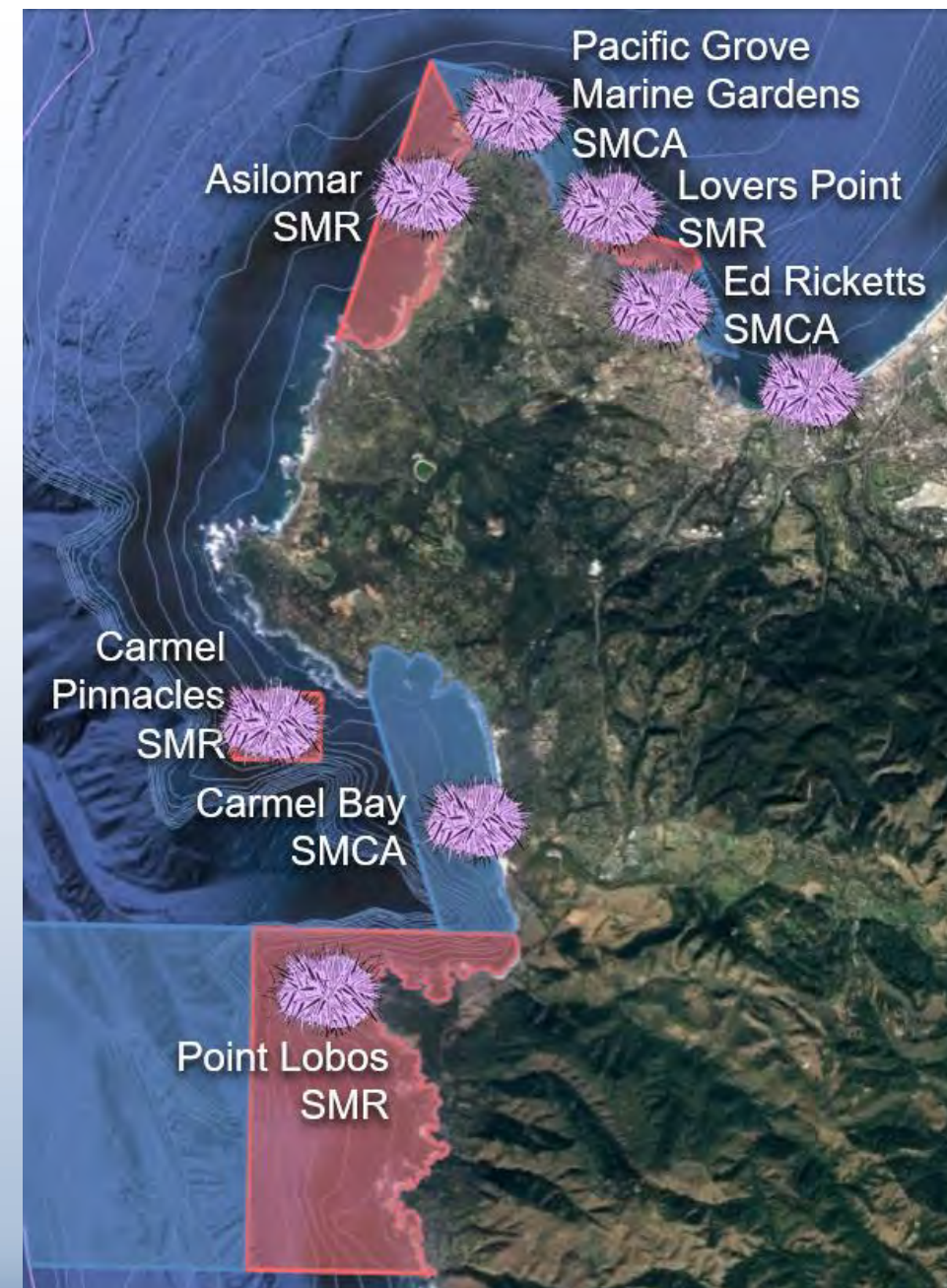


## Table 6.1 — Management Program

**18. Utilize the California Ocean Protection Council's (OPC) Restoration and Mitigation Policy to develop a framework to evaluate and approve appropriate restoration and mitigation actions within MPAs and MMAs.**

Goal 7: Do not disturb these areas (except rec. fishing). This is a suicide pact.

**NOT A GOAL!**





Still Waiting

G2KR.com  
Keith@g2kr.com

**From:** Azsha Hudson <ahudson@environmentaldefensecenter.org>  
**Sent:** Thursday, June 29, 2023 3:49 PM  
**To:** FGC  
**Cc:** Linda Krop  
**Subject:** Marine Resources Committee Meeting July 20: Item # 5  
**Attachments:** MRC-DMR-Priority-List\_FINAL\_06.29.23.pdf

**WARNING:** This message is from an external source. Verify the sender and exercise caution when clicking links or opening attachments.

Hello,

Attached is EDC's comment letter for the MRC July 20<sup>th</sup> meeting, item # 5. Thank you!

**AZSHA HUDSON (she/her/hers)**

MARINE ANALYST  
906 Garden Street  
Santa Barbara, CA 93101  
805.963.1622 X 115  
[www.EnvironmentalDefenseCenter.org](http://www.EnvironmentalDefenseCenter.org)





June 29, 2023

Eric Sklar, President  
California Fish and Game Commission  
715 P Street, 16<sup>th</sup> Floor  
Sacramento, CA 95814

**Re: California Fish and Game Commission, Marine Resources Committee  
July 20, 2023 Meeting, Agenda Item #5: Marine Protected Areas  
Decadal Management Review Priority List**

Dear President Sklar and Honorable Commissioners:

On behalf of the Environmental Defense Center (“EDC”), please consider our comments on California Department of Fish and Wildlife’s (“CDFW”) report, California’s Marine Protected Area (“MPA”) Network Decadal Management Review (“DMR”), specifically table 6.1 in the report. EDC is a non-profit, public interest law firm that has worked to protect and restore California’s environmental and natural resources for more than 45 years. Our mission is to protect and enhance the local environment through education, advocacy, and legal action. Program areas at EDC include the Santa Barbara Channel, clean water, open spaces and wildlife, and climate and energy. EDC’s work focuses primarily within San Luis Obispo, Santa Barbara, and Ventura Counties, including the northern Channel Islands and the ocean waters seaward of this region’s shores.

EDC has been a longtime advocate for MPAs as an ocean management tool and is very pleased that research and monitoring efforts show that the creation of California’s MPA Network was an effective action that has positively impacted ocean conservation. In addition to its advocacy for the creation of California’s MPA Network, EDC has remained engaged in MPA implementation through our staff’s various roles as Conservation Member on the Channel Islands National Marine Sanctuary Advisory Council and as past co-chair and current member of the Santa Barbara Channel MPA Collaborative. We commend CDFW, Ocean Protection Council (“OPC”), and California Fish and Game Commission (“CFGF”), along with myriad supporting partners, on the impressive outcomes described in the DMR Report.

## **I. INTRODUCTION**

As we look towards the next decade, it is imperative to keep the impressive display of the MPA Network's success, boasting ten years of research and monitoring activities that indicate MPAs are positively contributing to the six goals of the Marine Life Protection Act ("MLPA"), as evidenced by results that suggest "California's MPAs support populations of bigger and/or more abundant fish and invertebrates," are "more connected to one another and other parts of the coast than areas outside of MPAs," "contribut[e] to larval connectivity outside of their boundaries," and that "resilience to climate change-driven events is thought to be a core benefit of a connected network of MPAs." (DMR Report at ES-4)

In this letter, we highlight areas in table 6.1 in the DMR that we would like to see take priority in the long and short term. Our recommendations are grouped into three categories: evolving research and survey techniques, adaptive management, and improved information sharing and communication. Many of our recommendations align with CDFWs priority list, and in the chance that changes are made we strongly recommend choosing the recommendations that fall into the forementioned categories. Please note the following:

- Short-term Priority List
  - Evolving research and survey techniques
    - Justice, Equity, Diversity, and Inclusion 7.A.
    - Outreach and Education 15. A, D.
    - Enforcement and Compliance 21.A.
    - Climate Resilience and Adaptation 25.B.
  - Adaptive Management
    - Regulatory and Review Framework 5. A.
    - MPA Network Design 23. A.
  - Improved information sharing and communication
    - Tribal Coordination 2.B.
    - MPA Statewide Leadership Team and Partner Coordination 10.B.
    - Research and Monitoring 14.D.
    - Policy and Permitting 18.A.
    - Fisheries Integration and Other Influencing Factors 27.A.
- Long-term Priority List
  - Evolving research and survey techniques
    - Justice, Equity, Diversity, and Inclusion 6.A.
    - Research and Monitoring 12.C, D.
    - Climate Resilience and Adaptation 25.A.
    - Fisheries Integration and Other Influencing Factors 27.B.
  - Adaptive management
    - Regulatory and Review Framework 4.B.
    - Outreach and Education 15.C.
    - Policy and Permitting 17.B, 18.B.
    - MPA Network Design 23.C.

- Improved information sharing and communication
  - Tribal Coordination 3.A.
  - MPA Statewide Leadership Team and Partner Coordination 10.D.
  - Enforcement and Compliance 20.B.

## II. **SHORT TERM PRIORITY LIST**

Utilizing the CDFW Draft Prioritized Recommendations, we combined both the near term (present-2 years) and the mid-term priorities (2-5 years). We agree with CDFW in requesting that recommendations 2, 7, 10, 14, 15, 18, 21, 23, 25, and 27 be accomplished in the next 5 years. The one dissenting opinion EDC has for our short-term list of priorities is our belief that Recommendation 5 should not be listed as a long-term priority. Instead, Recommendation 5 should be incorporated into the next steps and continued throughout the next decade of MPA work.

### **A. Evolving research and survey techniques.** Short term priorities for EDC look towards improving the methodology and techniques for the next decade of research.

#### 1. Justice, Equity, Diversity, and Inclusion 7.A.

We applaud CDFW and its partners for the multitude of events planned and outreach materials created and distributed. We encourage the next decade of efforts to focus on improving equitable access to knowledge about MPAs, as the DMR Report states that almost half of the population in California speak a non-English language at home. (DMR Report at 62) We support recommendation 7.A to conduct a language assessment of census blocks to translate MPA outreach materials and work on finding new approaches to effectively engage underrepresented audiences.

#### 2. Outreach and Education 15.A, D.

We encourage the next decade of efforts to focus on improving equitable access to knowledge about MPAs as described in the above paragraph, and by the other methods of access identified in the report (e.g., use of universally understood symbols). We support recommendation 15.A and urge the state to conduct a gap analysis on CDFW and core partner MPA outreach materials to identify whether initial objectives are being met and how to improve outreach projects and materials. We also support recommendation 15.D, a call to improve the CDFW website interface, to increase accessibility for the public.

#### 3. Enforcement and Compliance 21.A.

We applaud CDFW for transitioning to a digital enforcement records management system, because a complete understanding of enforcement actions is necessary to adequately assess the effectiveness of the MPA Network. We support recommendation 21.A and urge the state to identify enforcement gaps and violation hotspots for inclusion in the enforcement plan

and finalize manual data entry of any citations not yet entered the database from before 2016, as well as citations from 2021 through May 2022.

4. Climate Resilience and Adaptation 25.B.

Enhancing strategies to improve resilience should be integral to the next steps of MPA Network management. It is important to note that the MPA Network was not designed with our current (and future) understanding of climate impacts in mind. We support recommendation 25.B to investigate resilience conferred by MPAs by adding new climate resilience monitoring metrics to the MPA Monitoring Action Plan.

- B. Adaptive management.** Short term priorities for EDC include basing adaptive management decisions on scientific evidence to further progress towards MLPA goals.

1. Regulatory and Review Framework 5.A.

Future MPA research should prioritize habitats that were not as well documented in the DMR Report, such as sandy beach and surf zone, and estuaries and coastal marsh. Building a robust data set for these areas will increase our general understanding of the interconnectivity of costal and marine habitats as well as the interconnectivity of the MPA Network. Adaptive management can be interwoven into new studies and used to build management strategies to adapt to climate impacts. We support recommendation 5.A to utilize the results and tools crafted from the first Review to develop interim MPA status reports to guide future evaluations.

2. MPA Network Design 23.A.

To include adaptive management into the DMR process we must quickly enhance the learning section of the cycle. (Marine Life Management Act Master Plan at Chapter 9) To best inform future decision making we must “identify specific MPA attributes such as size, spacing, and levels of protection on monitored species, habitats, and human communities.” (DMR Report at Table 6.1) We support recommendation 23.A to tailor data collection and analyses to address the effects of specific MPA attributes.

- C. Improved information sharing and communication.** Short term priorities for EDC encourage a diversification and expansion in the state’s communication with other entities.

1. Tribal Coordination 2.B.

We urge the state to further broaden the (federally recognized and non-federally recognized) tribes included in policy/legislation, research, outreach, etc., and continue to grow tribal relationships to foster more robust tribal engagement and leadership in ocean stewardship and management. We support recommendation 2.B to improve relationships with tribes and to

develop and support co-management programs that can enrich tribal cultural practices and renew traditional values.

2. MPA Statewide Leadership Team and Partner Coordination 10.B.

The other half of the adaptive management cycle is structured decision-making (Marine Life Management Act Master Plan at Chapter 9). Creating a plan to better communicate with state and international partners will improve California's ability to protect migratory species and those shifting due to climate change. We support recommendation 10.B to develop a strategic plan to strengthen communications between MPA Monitoring Program partners, tribes, and agencies that have overlapping jurisdiction at monitoring sites.

3. Research and Monitoring 14.D.

We hope to see the state encourage a more equal distribution of scientific permit applications statewide to enhance our understanding of the Network as a whole (e.g., connectivity, differences between regions, etc.). To support the above statement, coordination between existing community science programs can garner insights and understandings. It will allow for a more robust data set that could span a longer time scale and will also make gaps in area coverage apparent. We support recommendation 14.D as information and data sharing is necessary for future research.

4. Policy and Permitting 18.A.

We support recommendation 18.A to work with a broad range of partners, including state and federal agencies, tribes, the fishing community, and other ocean users to tailor restoration and mitigation projects to regional needs consistent with a statewide restoration and mitigation framework.

5. Fisheries Integration and Other Influencing Factors 27.A.

We support recommendation 27.A to improve data sharing and integration between MPA and fishery-focused management programs.

### **III. LONG TERM PRIORITY LIST**

The priority list given by CDFW for its long-term priorities is not as expansive as EDC's list. CDFW listed recommendations 5, 19 and 24 as the goals to enact and accomplish in about 5-10 years. Some of the mid-term goals listed by CDFW are in EDC's long-term list like, 3, 6, 12, 15, 23, and 25. We did not include recommendations 19 and 24 to either of our priority lists not because they are not important goals to implement but due to our belief that other recommendations in the same governance category were our priorities that we would like the state to reach first.

**A. Evolving research and survey techniques.** Top priorities for EDC, look towards improving the methodology and techniques for the next decade of research.

The research conducted under the DMR is integral to deepening our understanding of coastal and marine habitats and may lead to better management practices. In the coming decade, integrating new technology and diversifying the demographic of researchers will be integral to the continued success of the DMR. In this section, we highlight opportunities for improvements or innovations in survey and research efforts in future management actions and descriptions of outcomes.

1. Justice, Equity, Diversity, and Inclusion 6.A.

The state has taken steps to intermix various stakeholder voices into the research process, with the California Collaborative Fisheries Research Program (“CCRFP”) and the tribal Marine Stewards Network (“TMSN”). We support recommendation 6.A. to continue to encourage and fund a diverse community of researchers that will bring new insights, relationships, and understandings of the natural world we all want to protect. Within this recommendation we also support more diverse community science activism, especially in areas with higher densities of marginalized communities, to encourage infrequent ocean users to strengthen their relationship with California beaches and oceans.

2. Research and Monitoring 12.C, D.

As the ocean is composed of many different facets that allow for it to function, so is the DMR process one singular component that lends toward the protection and function of the state. An important section of fisheries management like the groundfish fishery management program has been in place since the 1980s. This program has similar goals to some of the DMR pillars, therefore, an important question to ask is how has the MPA Network further benefited groundfish populations and the fishery? Other programs that have been in operation before the DMR was implemented should be reviewed to see if there have been any compounding effects. We support recommendation 12.C to ensure that the state considers studies examining the compound effect that fishery management actions have on MPA results.

Another facet that supports the function of the state is the economy. Continuing to conduct economic analysis on commercial fish landings and recreational fishing will lead to a better understanding of how the MPA Network may be impacting the fishing industry. The National Oceanic and Atmospheric Administration (“NOAA”) conducts domestic analysis of the economic impact of fisheries. The 2023 report found that in 2020 commercial landing revenue was \$143,022 and the economic value added to the state from recreation fishing was \$301,622.<sup>1</sup> Data from reports like this will allow for a more quantitative analysis of how the MPA Network may impact fisheries. We support recommendation 12.D, for the state to conduct a broad economic assessment of the MPA network on California’s coastal communities.

---

<sup>1</sup> National Marine Fisheries Service. 2023. Fisheries Economics of the United States, 2020. U.S. Dept. of Commerce, NOAA Tech. Memo. NMFS-F/SPO-236, 231 p.

3. Climate Resilience and Adaptation 25.A.

The DMR report and supplemental research indicated climate change as a threat to biodiversity, habitat health, and the overall productivity of the oceans. It is crucial to better understand how climate change impacts California marine areas and the Marine Protected Areas Network (“MPA Network”). Recommendation 25.A calls for the development of models to evaluate climate change risks on a shorter time scale. EDC places this as our priority as global climate change has already started to impact everyday life, therefore, gathering data to help mitigate the effects of climate change on California marine life is integral to the continued health and productivity of our oceans.

4. Fisheries Integration and Other Influencing Factors 27.B.

Currently we do not have spatially explicit data to show where catches are, and we do not have the spatial resolution in the data to know how MPAs may or may not be impacting fisheries. If we know where people catch fish, and the locations relative to MPAs, and had good data, we could make much better predictions. With enhanced data collection, new or changed MPAs would have more scientific backing as well as human use understanding. We support recommendation 27.B to explore tools to capture spatially explicit metrics of fishing catch and effort that are more appropriate for MPAs in California.

**B. Adaptive management.** A top priority for EDC is to base adaptive management decisions on scientific evidence to further progress towards MLPA goals.

Creating a robust framework for adaptive management to increase benefits to species abundance and climate resilience, considering expected changes to habitats and species distribution in response to climate change, is important. In this section, we highlight opportunities for adaptive management to be integrated into future management actions and descriptions of outcomes.

1. Regulatory and Review Framework 4.B.

As the DMR Report aptly acknowledges, climate change and climate resilience will continue to affect the ocean and coast. Enhancing strategies to improve resilience should be integral to the next steps of MPA Network management. The changing climate is expected to lead to an increase in species migration,<sup>2</sup> and MPAs have shown to increase the stability of ecosystems and the species protected within the MPAs.<sup>3,4,5</sup> MPAs are suited to act as a tool to

---

<sup>2</sup> Velásquez-Tibatá, J., Salaman, P. & Graham, C.H. Effects of climate change on species distribution, community structure, and conservation of birds in protected areas in Colombia. *Reg Environ Change* 13, 235–248 (2013). <https://doi.org/10.1007/s10113-012-0329-y>

<sup>3</sup> Carr, M. H., et.al. (2021). Monitoring and Evaluation of Kelp Forest Ecosystems in the MLPA Marine Protected Area Network. [https://caseagrant.ucsd.edu/system/files/2022-06/Kelp%20Forest%20Technical%20Report%20Narrative\\_v2.pdf](https://caseagrant.ucsd.edu/system/files/2022-06/Kelp%20Forest%20Technical%20Report%20Narrative_v2.pdf)

<sup>4</sup> Hamilton, S., et al. (2022). California Collaborative Fisheries Research Program (CCFRP) – Monitoring and Evaluation of California Marine Protected Areas. *The Ocean Protection Council: Sea Grant*

provide “insurance” in the case of shifting populations. We recommend that the state of California consider shifting baselines as it adaptively manages the MPA Network, which may include shifting/enlarging MPA boundaries or creating new MPAs to increase capacity for MPAs as climate refugia.

2. Outreach and Education 15.C.

The state has already done much work to diversify the outreach and education tool kit, with groups like the MPA Collaborative network that created a collection of area and community specific education and outreach products. In 2020, the Pew research center found that 8 out of 10 Americans get their news from an app<sup>6</sup>, a statistic that could have increased through the success of Tik Tok. To keep up with the times, it is imperative for the state to update its education tools to include digital sources. We support 15.C, calling for the increase in the usage of technology (mobile apps, social media, other digital technology) to reach wider audiences to increase MPA awareness.

3. Policy and Permitting 17.B & 18.B.

Scientific research remains vital to our understanding and evaluation of the MPA Network. We support recommendation 17.B to establish a scientific steering committee to guide improvements to CDFW’s environmental impact assessment tool for issuing scientific collecting permits (“SCPs”) within MPAs.

Considering the many existing and unknown future uses of our ocean, cumulative impacts analysis is necessary to understand how management actions impact species and habitats. We support recommendation 18.B to use statewide policy guidance and best available science to inform restoration and mitigation actions and decisions in MPAs and marine managed areas, such as permitting the removal of invasive species.

4. MPA Network Design 23.C.

There is more that we do not know about marine habitat, marine connectivity, marine productivity, and how all of those are impacted by climate change. Including adaptive management in the foundational next steps is one of the best ways we can ensure that our next actions have some benefit. We support recommendation 23.C, asking the state of California to consider shifting baselines as it adaptively manages the MPA Network. This may include shifting/enlarging MPA boundaries or creating new MPAs to increase capacity for MPAs as climate refugia.

---

<sup>5</sup> Raimondi, P., et al. (2022). Assessment of Rocky Intertidal habitats for the California Marine Protected Area Monitoring Program: Decadal report. *The Ocean Protection Council: Sea Grant*.

<sup>6</sup> Shearer, E. (2021). More than eight-in-ten Americans get news from digital devices. *Pew Research Center*. <https://pewrsr.ch/2MZqns7>

**C. Improved information sharing and communication.** Top priorities for EDC encourage a diversification and expansion in the state's communication with other entities.

Reflecting on the past decade of outreach and education, we recognize the opportunity to improve these efforts. We appreciate that the DMR Report acknowledges the limitations of education and outreach materials, considering they reach mostly English speakers with limited materials translated into Spanish. In this section, we highlight opportunities for innovative ways to improve communication with the public and state/international partners in future management actions and descriptions of outcomes.

1. Tribal Coordination 3.A.

We recognize the progress the state has made to include tribes, which has come a long way from the implementation. We commend OPC for its work with tribes to establish the TMSN and the work it took to get additional funding to support this effort. We urge the state to further broaden the tribes included in policy/legislation, research, outreach, etc., and continue to grow tribal relationships to foster more robust tribal engagement and leadership in ocean stewardship and management. We support recommendation 3.A to provide tribes with adequate resources to participate in changes to the MPA Network and management.

2. MPA Statewide Leadership Team and Partner Coordination 10.D.

The changing climate is expected to lead to an increase in species migration,<sup>7</sup> however many species life history involves migration. Species like the North Pacific Humpback whales, a staple in California waters, migrate from Alaska to feed and then travel through California waters to the warm waters of Hawaii to give birth. Other species of whale, like the eastern North Pacific stock of Gray Whale, has a distribution that encompasses shallow coastal waters spanning Baja California up to Alaska.<sup>8</sup> Improving our management practices must involve better coordination with other state/international partners. We support recommendation 10.D to strengthen cross-border MPA management with West Coast states, Mexico, and Canada.

3. Enforcement and Compliance 20.B.

California state waters are expansive, covering around 5,285 square miles, and the MPA network, composed of 124 protected areas, is about 852 square miles. CDFW enforcement officers are responsible for educating, monitoring, and enforcing the rules and regulations set to protect state waters. Current capacity and equipment hinder the ability of law enforcement to best protect our oceans. We support recommendation 20.B, with future efforts to increase the capacity of the Marine Patrol with additional patrol vessels, staff, new technologies, and

---

<sup>7</sup> Velásquez-Tibatá, J., Salaman, P. & Graham, C.H. Effects of climate change on species distribution, community structure, and conservation of birds in protected areas in Colombia. *Reg Environ Change* 13, 235–248 (2013). <https://doi.org/10.1007/s10113-012-0329-y>

<sup>8</sup> <https://www.fisheries.noaa.gov/species/gray-whale>

new/upgraded equipment (such as M2), continued and improved collaboration with allied agencies, and other means to enhance enforcement.

#### **IV. CONCLUSION**

We celebrate the outcome of the DMR in a time when ocean conservation wins are more important than ever. While we rely on oceans to contribute to many of our societal needs, from food to energy, we must remain committed to protection of our shared resources not only for future generations but the intrinsic value of a thriving ocean. As the MPA Network enters its second decade, we encourage CFGC, CDFW, OPC, and other partners to ensure future actions: 1) make a connection between research and monitoring results and MLPA goals; 2) include creation of an evaluation tool to support MPA management framework design; 3) base adaptive management decisions on scientific evidence to further progress towards MLPA goals; and 4) support a diversification and expansion in the state's communication with other entities.

Thank you for your consideration of the comments and recommendations.

Sincerely,

Linda Krop  
Chief Counsel

Azsha Hudson  
Marine Analyst

**From:** Ashley Eagle-Gibbs <ashley@eacmarin.org>  
**Sent:** Wednesday, July 5, 2023 6:39 PM  
**To:** FGC  
**Cc:** Ashcraft, Susan@FGC; Ota, Becky@Wildlife; Morgan Patton; Carston Haffner; Eric Sklar; Samantha Murray  
**Subject:** EAC Comments re. FGC Marine Resources Committee Agenda Item 5: MPA DMR + Petition  
**Attachments:** 2023.07.05. EAC Comments re. MRC Agenda Item 5 MPA DMR + petition FINAL.pdf; Attachment 2- 2023.04.15. GFCBNMS Letter to FGC\_Duxbury\_April2023.pdf; Attachment 1 - 2023.04.06. EAC Comments to FGC re. Agenda Item 25 with attachments FINAL.pdf

**WARNING:** This message is from an external source. Verify the sender and exercise caution when clicking links or opening attachments.

Dear President Sklar and Honorable Commissioners,

Please find attached EAC's comments for the Fish and Game Commission Marine Resources Committee meeting Agenda Item 5: MPA DMR, which also includes a petition for modification of Duxbury Reef and Drakes Estero MPAs. Since this also includes a petition, please forward this to the full Commission as appropriate.

*Please note I have also included two previously submitted attachments to our comments in this email for inclusion in the packet.*

We look forward to reviewing the staff report and participating on July 20th.

Sincerely,  
Ashley Eagle-Gibbs

Ashley Eagle-Gibbs, Esq. | Legal and Policy Director  
Environmental Action Committee of West Marin (EAC)  
PO Box 609 | 65 Third Street, Suite 12  
Point Reyes Station, CA | 94956  
(415) 663-9312  
[ashley@eacmarin.org](mailto:ashley@eacmarin.org)  
Typical availability: Tuesday - Friday

**Protecting and Sustaining the Lands, Waters, and Biodiversity of West Marin Since 1971**



The information contained in this message may be privileged, confidential, and protected from disclosure. If the reader of this message is not the intended recipient, or an employee or agent responsible for delivering this message to the intended recipient, you are hereby notified that any dissemination, distribution or copying of this communication is strictly prohibited. If you have received this communication in error, please notify EAC immediately and delete this message from your computer. Thank you.



July 5, 2023

California Fish and Game Commission  
P.O. Box 944209  
Sacramento, CA 94244-2090  
*Sent via Email: [fgc@fgc.ca.gov](mailto:fgc@fgc.ca.gov)*

#### **Board of Directors**

Brigder Mitchell, Ph.D.  
*President*

Ken Drexler, Esq.  
*Vice-President*

Mairi Pileggi, Ph.D.  
*Treasurer*

Cynthia Lloyd, Ph.D.  
*Secretary*

Terence Carroll  
*Director*

Sarah Killingsworth, Esq.  
*Director*

Jerry Meral, Ph.D.  
*Director*

Patty Neubacher  
*Director*

David Weinsoff, Esq.  
*Director*

David Wimpfheimer  
*Director*

#### **Staff and Consultants**

Morgan Patton  
*Executive Director*

Ashley Eagle-Gibbs, Esq.  
*Legal and Policy Director*

Leslie Adler-Ivanbrook  
*Program Director*

Jessica Reynolds Taylor  
*Development Director*

Grace Milstein  
*Communications Associate*

Patricia Wimpfheimer  
*Bookkeeper*

Re. Fish and Game Commission MRC Agenda Item 5: MPA DMR  
Petition for Modification of Duxbury Reef and Drakes Estero MPAs

Dear President Sklar and Honorable Commissioners,

The Environmental Action Committee of West Marin (EAC) has been working to protect the unique lands, waters, and biodiversity of coastal Marin County since 1971. We are deeply committed to California's marine protected area (MPA) network and have been actively supporting MPAs through outreach, education, and community science activities since the first regional stakeholder meetings that would eventually establish the network of 124 MPAs.

We submit this letter to request that the letter we previously addressed to the Fish and Game Commission (Commission) in support of the MPA decadal management review (DMR), submitted on April 6, 2023, also be considered a petition to the Commission submitted pursuant to California Fish & Game Code Section 2861(a), for addition to and modification of the MPAs at Duxbury Reef and Drakes Estero. A copy of that letter is enclosed herewith. This request is being made to ensure we are compliant with any additional procedures that are entailed in the presentation to the Commission of a "petition" as contemplated in Fish and Game Code Section 2861(a), which might not have been satisfied by the April 6 DMR comment letter submittal.

Furthermore, this letter also serves as a comment on the MPA DMR (Marine Resources Committee Agenda Item 5) for the July 20th meeting. We commend the Commission for the vision of the draft prioritized recommendations dated June 12, 2023. We thank the Department of Fish and Wildlife (Department) for their hard work on this prioritization, and we generally agree with the prioritization and timelines.

As an overall comment related to the prioritization, we urge the Commission to institutionalize climate-cognizant adaptive management to ensure that management of the MPA network can respond to sea-level rise and other climate changes. We also hope that the Commission will broadly embrace recommendation 4 and support changes to the MPA network and management program. We were pleased to see that recommendation 4 was identified as a near-term priority.

As requested in our prior comments, specifically, we petition for the Commission to recommend the following additions to and modifications of the

Drakes Estero State Marine Conservation Area (SMCA) and the Duxbury Reef SMCA, as currently described in California Code of Regulations Title 14, Section 632(b)(47) and (50), respectively:

1. Change the designation of Drakes Estero SMCA to a “State Marine Reserve” as described in California Code of Regulations (CCR) Title 14 § 632(a)(1)(A).
2. Change the designation of the Duxbury Reef SMCA to a “State Marine Reserve.”
3. Extend the southern boundary of the Duxbury MPA to the most southerly tip of Duxbury Reef exposed at mean lower low water, that is, to a point at approximately 37 deg. 53.1315' N. lat, 122 deg. 41.7549' W. long.
4. Extend the northern boundary of the Duxbury MPA to the Double Point/Stormy Stack Special Closure as described in CCR Title 14 § 632(b)(49).

We also request that: (1) the letter to the Commission dated April 15, 2023, from the Greater Farallones and Cordell Bank National Marine Sanctuaries (copy enclosed) be made a part of the record in support of this petition; and (2) that EAC and others be allowed to submit further written evidence and testimony in support of this petition.

Please advise us if there is any further step(s) that should be taken by EAC and/or others to present a “petition” to the Commission pursuant to California Fish & Game Code Section 2861(a). Finally, please do not hesitate to ask for any further information that the Commission believes will assist it in addressing this petition.

We also request that the Commission clarify the process of public engagement regarding the DMR going forward. A more streamlined and intuitive comment and petition system would allow for easier public engagement and would further the justice, equity, diversity, and inclusivity goals of the Commission. Clarity would be especially helpful regarding what type of regulation changes could be considered in the DMR and what types would require their own petition.

While we understand that this may be forthcoming, it would also be helpful to have clarity related to the focus of future meetings and the Department and Commission’s proposed work plan with some additional specificity related to how the public and stakeholders can participate most effectively.

Thank you for your consideration of our comments and all your work on the DMR process. We look forward to continuing to engage including review of the staff report and participation at the July 20th meeting.

Sincerely,



Ashley Eagle-Gibbs  
Legal & Policy Director

cc: Susan Ashcraft, Marine Advisor, Fish and Game Commission  
Becky Ota, Marine Habitat Conservation Program Manager, Department of Fish and Wildlife

Attachments: (1) EAC April 6, 2023, comments to Fish and Game Commission  
(2) Greater Farallones and Cordell Bank National Marine Sanctuaries April 15, 2023, comments to Fish and Game Commission



ESTABLISHED 1971

## Board of Directors

Bridger Mitchell, Ph.D.  
*President*

Ken Drexler, Esq.  
*Vice-President*

Mairi Pileggi, Ph.D.  
*Treasurer*

Cynthia Lloyd, Ph.D.  
*Secretary*

Terence Carroll  
*Director*

Sarah Killingsworth, Esq.  
*Director*

Jerry Meral, Ph.D.  
*Director*

Patty Neubacher  
*Director*

David Weinsoff, Esq.  
*Director*

David Wimpfheimer  
*Director*

## Staff and Consultants

Morgan Patton  
*Executive Director*

Ashley Eagle-Gibbs, Esq.  
*Legal and Policy Director*

Leslie Adler-Ivanbrook  
*Program Director*

Jessica Reynolds Taylor  
*Development Director*

Grace Milstein  
*Communications Associate*

Patricia Wimpfheimer  
*Bookkeeper*

April 6, 2023

California Fish and Game Commission  
P.O. Box 944209  
Sacramento, CA 94244-2090  
*Via Electronic Mail: fgc@fgc.ca.gov*

Re. Agenda Item 25. Marine protected areas decadal management review

Dear President Sklar and Honorable Commissioners,

The Environmental Action Committee of West Marin (EAC) has been working to protect the unique lands, waters, and biodiversity of coastal Marin County since 1971. We are deeply committed to California's marine protected area (MPA) network and have been actively supporting MPAs through outreach, education, and community science activities since the first regional stakeholder meetings that would eventually establish the network of 124 MPAs.

We submitted written comments dated March 13th in advance of the Fish and Game Commission (Commission) Marine Resources Committee (MRC) meeting (attached to this letter), as well as providing oral comments at the March 16th MRC meeting related to the decadal management review. We appreciated the hybrid meeting format, which allowed us to participate remotely.

We submit this follow up letter with locally specific boundary and designation change requests to the full Commission to facilitate discussion at the April meeting. Related to our previously submitted requests (March 13 and 16), we highlight our key requests here for discussion and prioritization at the April meeting:

- 1) Request evaluation of Drakes Estero State Marine Conservation Area (SMCA) for a designation change to a State Marine Reserve,
- 2) Request evaluation of Duxbury Reef State Marine Conservation Area for a designation change to a State Marine Reserve and extension of the southern boundary to fully encompass the reef habitat area, and

- 3) Request a science-based analysis to review a northern extension of the Duxbury Reef SMCA to Double Point Special Closure based on increased visitation by the public to the Area of Special Biological Significance.

This letter and our prior letter are also supported by prior written comments submitted by the National Park Service dated (November 14, 2022, also attached).

As a final request, we would like to gain clarity on the process for boundary and designation changes.

- 1) Specifically, is it necessary to submit a formal petition related to these aforementioned requests and correspondence? It was not entirely clear at the March MRC meeting whether a petition is required or if the Department of Fish and Wildlife is able to recommend adaptive management strategies based on the Decadal Review and submitted comments. We respectfully request clarification to facilitate effective public participation in this process.

Thank you for your dedication to adaptive management, and we look forward to the April Commission meeting and more collaboration on the adaptive management prioritization and recommendations as we approach the July MRC meeting.

Sincerely,



Morgan Patton, Executive Director



Ashley Eagle-Gibbs, Legal and Policy Director



March 13, 2023

Fish and Game Commission Marine Resources Committee  
California Fish and Game Commission  
P.O. Box 944209  
Sacramento, CA 94244-2090  
*Via Electronic Mail: [fgc@fgc.ca.gov](mailto:fgc@fgc.ca.gov)*

#### **Board of Directors**

Bridger Mitchell, Ph.D.  
*President*

Ken Drexler, Esq.  
*Vice-President*

Mairi Pileggi, Ph.D.  
*Treasurer*

Cynthia Lloyd, Ph.D.  
*Secretary*

Terence Carroll  
*Director*

Sarah Killingsworth, Esq.  
*Director*

Jerry Meral, Ph.D.  
*Director*

Patty Neubacher  
*Director*

David Weinsoff, Esq.  
*Director*

David Wimpfheimer  
*Director*

#### **Staff and Consultants**

Morgan Patton  
*Executive Director*

Ashley Eagle-Gibbs, Esq.  
*Legal and Policy Director*

Leslie Adler-Ivanbrook  
*Program Director*

Jessica Reynolds Taylor  
*Development Director*

Grace Milstein  
*Communications Associate*

Patricia Wimpfheimer  
*Bookkeeper*

Re. MRC Agenda Item 9: Marine Protected Areas (MPA) Decadal Management Review

Dear President Sklar and Commissioner Murray,

The Environmental Action Committee of West Marin has been working to protect the unique lands, waters, and biodiversity of coastal Marin County since 1971. We are deeply committed to California's marine protected area (MPA) network and have been actively supporting MPAs through outreach, education, and community science activities since the first regional stakeholder meetings that would eventually establish the network of 124 MPAs.

We continue our support for the network as members of the Golden Gate MPA Collaborative Network, collecting human-use activity data through our local MPA Watch program, Marin MPA Watch, with partners at the Point Reyes National Seashore, and we have created a team of local volunteers who provide outreach and education as intertidal docents at Duxbury Reef State Marine Conservation Area (SMCA).

Thank you for this opportunity to submit comments on the MPA Decadal Review. We want to thank the Department of Fish and Wildlife (CDFW) and Fish and Game Commission staff and partners for the momentous achievement related to the completion of the Decadal Review and accompanying report. The report highlights the effectiveness and importance of our state's unique and precedent setting MPA network.

Before our specific comments, we would like to note that due to the flooding in Monterey County, our team is unable to travel to the in-person meetings, including the Decadal Management Review Forum. We are grateful the Marine

Resources Committee meetings will have the opportunity for hybrid participation and the Monterey County emergency highlights the continued need for hybrid meetings to ensure broad-based public engagement opportunities in the future. We look forward to viewing the Decadal Management Review Forum online and we are disappointed we will not be able to ask questions or contribute to the discussion in person.

In general, we are supportive of many of the recommendations and future steps outlined in Chapter 6; however, we have included some specific comments related to our geographic area in coastal Marin County for additional consideration. We have organized our comments by the MPA Network Performance categories noted in Chapter 6.

## **1. MPA Network Design / Boundaries and MPA Designation Changes**

We have included three specific requests below related to designation and boundary changes with additional discussion following.

**Request 1: Include condition and use change data for MPAs to provide an assessment of changed conditions (i.e. on-shore and offshore activities and uses) that would inform the need for adapting the MPA Network Design that would include boundaries and designation changes that are in alignment with today's conditions and circumstances.**

**Request 2: Request evaluation of Drakes Estero State Marine Conservation Area for a designation change to a State Marine Reserve.**

**Request 3: Request evaluation of Duxbury Reef State Marine Conservation Area for a designation change to a State Marine Reserve and extension of the southern boundary to fully encompass the reef habitat area.**

The Decadal Review needs to include a reference of site conditions of the 124 MPAs from the date of MPA designation compared to current-day conditions that include changes in surrounding on-shore or offshore commercial/recreational consumptive and non-consumptive uses, and visitation data. This information would be beneficial when analyzing information for boundary and designation changes based on changed conditions. We highlight two Marin County examples below:

### *Example 1: Drakes Estero State Marine Conservation Area*

Drakes Estero State Marine Conservation Area (SMCA) was established at a time when a commercial aquaculture operation was in business. The commercial operator closed in 2012, and offshore and on-shore infrastructure has been removed. Drakes Estero was designated as Marine Wilderness in 2012 following the

closure of the commercial operation in its waters. Following the Marine Wilderness designation, the Point Reyes National Seashore completed an expensive restoration project (\$4 million) in the waters of Drakes Estero. The Estero is one of the last fully intact wetlands in the state of California, is an Area of Special Biological Significance, and a biologically rich estuary that consists of extensive eelgrass beds, tidal flats, wetlands, sand bars, and open water that supports a variety of fish, invertebrates, shorebirds, waders, waterfowl, and mammals including harbor seals and river otters.

On November 14, 2022, the Point Reyes National Seashore<sup>1</sup> submitted a letter to Dr. Craig Shuman, California Department of Fish and Wildlife Marine Region Manager, and to Samantha Murray, Fish and Game Commissioner, that supports a MPA designation change of Drakes Estero from a SMCA to State Marine Reserve (SMR) for the below reasons:

*2010 designation as SMCA relied on presence of commercial aquaculture operation. DOI authorization of commercial aquaculture ended in 2012, and operations ceased in 2014. Area is now Congressionally Designated Wilderness, \$4m estuary restoration completed in 2017. Recreational take of shellfish appears to be very rare, requires long kayak trips in wilderness area with no cell service and limited emergency response. Increased protections for eelgrass, estuarine biodiversity, and marine wilderness. If converted to an SMR, join Estero de Limantour into a single SMR for naming and outreach purposes.*

#### Example 2: Duxbury Reef SMCA

Duxbury Reef SMCA was established at a time when visitation to this area was very low and not many people were visiting the intertidal area. However, visitation to this MPA has been steadily and significantly increasing as previously unknown trails and beaches of Point Reyes National Seashore have begun to attract visitors to locations such as Alamere Falls.

Since 2017, MPA Watch volunteers documented approximately a 70 percent increase in visitation to Duxbury Reef that continued to increase in 2020 and 2021 during the pandemic.



Figure 1.  
MPA Watch Recreational and Consumptive Activity 2014-2020 and 2020

<sup>1</sup> Letter from Point Reyes National Seashore to California Department of Fish and Wildlife, November 14, 2022

A comparison of the MPA visitation trends across all designated MPAs in coastal Marin County, Duxbury has the highest overall visitation count of all MPA Watch transects in Marin, the smallest area, and is a highly sensitive intertidal habitat.

Our MPA Watch 2020 Annual Report notes the rise in visitation in 2020:

*This MPA [Duxbury Reef State Marine Conservation Area] recorded a use rate of 29.4 activities per mile surveyed. This is an increase of 79% compared to the prior year. 11% of the observations in the MPA are on-shore consumptive. 305 incidents of hand collection of biota in the intertidal were observed in the months of June, July, and August 2020 (emphasis added). Duxbury Reef SMR has the highest use count [66%] of all MPAs surveyed by Marin MPA Watch ... in one of the smallest survey areas. Duxbury Reef is a sensitive intertidal habitat where human impacts (trampling and collecting) may have long-term negative impacts to habitat and species.*

In 2022, we established the Duxbury Docent program in partnership with Marin County Parks and Open Space which provides visitor education and collects MPA Watch human-use data. On the ground, our docents are engaging with the public and have first-hand experience in the confusion of the designation of the MPA that is leading to unintended compliance issues at this location. Specifically, we summarized below our docent experiences while interacting with visitors,

*The allowance of finfish fishing from shore and notice about the allowance of abalone take at Duxbury generates confusion in the community and among visitors about what is and is not allowed.*

At Duxbury Reef SMCA, our experience on the ground is that the permitted allowance of recreational finfish and abalone from shore is confusing to the public, and with increased visitation since 2017 this tends to lead to non-compliance that may be hindering the goals of the MLPA at this site.

The inclusion of community science data on human use, activities, and visitation data from overlapping jurisdictions, like the Point Reyes National Seashore in coastal Marin County, would provide a wealth of data that could assist in informing the adaptive management strategies of the MPA Network.

This would be especially beneficial when analyzing information for boundary and designation changes that would provide up-to-date information on changing conditions that would ensure the management of the MPAs are meeting the goals of the Marine Life Protection Act (MLPA)'s six goals<sup>2</sup>.

---

<sup>2</sup> MLPA Goals: Protect the natural diversity and abundance of marine life, and the structure, function and integrity of marine ecosystems. 1) Help sustain, conserve and protect marine life populations, including those of economic value, and rebuild those that are depleted. 2) 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. 3) Protect marine natural heritage, including protection of representative and unique marine life habitats in CA waters for their intrinsic values. 4) Ensure California's MPAs have

## 2. Regulatory and Framework Review / MPA Network Design:

### **Request 4: Need for inclusion of biological and environmental condition status, community science data, and ecological habitat mapping when analyzing a need for MPA designation and boundary changes.**

We support Recommendation #4 and request as part of the identification of science-based approaches to inform analysis that biological and environmental conditions, ecological habitat maps, and environmental designations (like Marine Wilderness, Areas of Special Biological Significance, etc.) are included.

We provide two examples below, Duxbury Reef and Double Point, related to immediately connected habitat areas excluded from MPA boundaries.

#### *Example 1: Duxbury Reef SMCA*

The current MPA boundaries of Duxbury Reef SMCA fail to encompass the entire reef that is exposed at a low tide. At low tide, people can walk to the portion that is outside the MPA, making it fully accessible. Figure 2 highlights the area that is part of the intertidal ecological habitat area but has been excluded from the MPA boundary.

In addition, the regulations state that the MPA seaward boundary is 1,000 feet from the seaward of mean, low, low tide, but the MPA boundary designation includes 1,000 feet from high tide. This language is ambiguous and confusing to the public.



Figure 2.

Overlay of Duxbury Reef SMCA with an orange outline of the portion of the reef that is exposed at low tide that is not currently included in the MPA. A southern boundary extension of Duxbury Reef is needed to fully connect the ecological habitat area and reduce confusion for the public on what activities are allowed.

---

clearly defined objectives, effective management measures and adequate enforcement and are based on sound scientific guidelines. 5) Ensure the State's MPAs are designed and managed, to the extent possible, as a network.

### *Example 2: Double Point*

North of Duxbury Reef SMCA is a Special Closure Area (Double Point) that is ecologically significant and connected to Duxbury Reef. In the November 2022 letter from Point Reyes National Seashore, they note there are concerns about the protection of seabirds, marine mammals, and concerns with kayaking disturbances of harbor seals. A long-established harbor seal monitoring program by Point Reyes National Seashore at this location includes datasets on harbor seal pupping and movements. At the time the Special Closure was established, there was little human activity and disturbance in this area until about 2017 when hiking to Alamere Falls became very popular.

A science-based analysis to review whether it would make sense to extend the Duxbury Reef MPA further north to the Special Closure should be considered with data provided by the Point Reyes National Seashore on the presence of marine mammals and disturbance events. A review of this type would inform whether there is a need to extend the Duxbury MPA boundary north or expand the Double Point Special Closure, which we think is likely warranted based on our current understanding and available data.

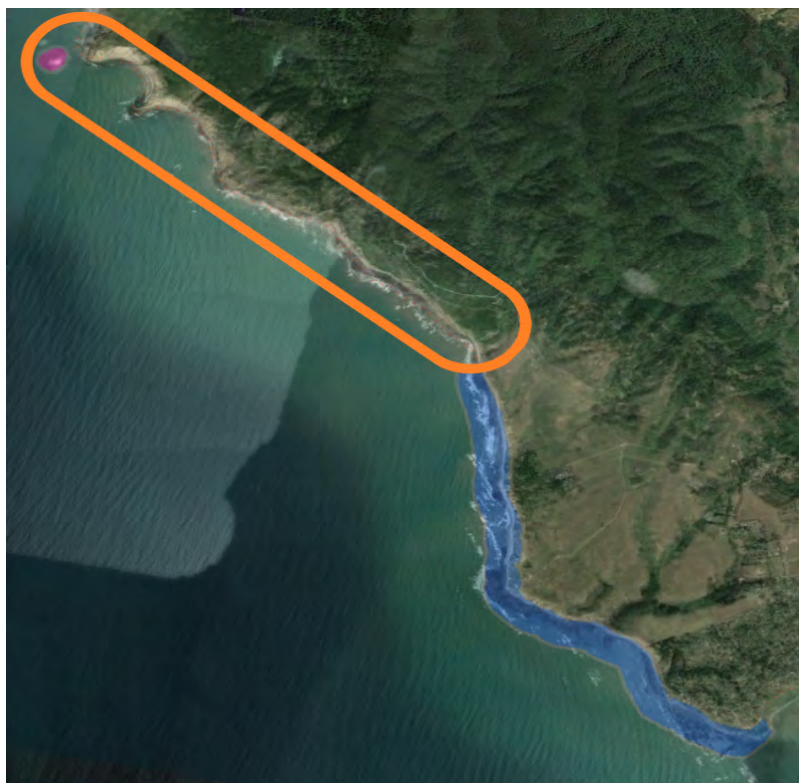


Figure 3.

Image of Double Point Special Closure and Duxbury Reef SMCA boundary. The orange highlight indicates the area outside of the MPA network that is interconnected and includes an additional Area of Special Biological Significance (cove near Double Point closure).

### 3. Enforcement and Compliance:

**Request 5: Need for enforcement volunteer programs in rural areas, specifically an extension of CDFW-trained enforcement volunteers piloted in 2020 at Pillar Point due to the high visitation and poaching incidents.**

Duxbury Reef SMCA is located within a nexus of overlapping jurisdictional authority, including the CDFW, Greater Farallones National Marine Sanctuary, Point Reyes National Seashore, and Marin County Parks and Open Space. However, the only agencies who can issue citations in the areas where most people visit at Duxbury Reef are the CDFW and the Marin County Sheriff.

Duxbury Reef SMCA is a rural location with limited signage and a lack of cellular service. Prior to 2022 and the creation of our program, there was no established outreach and education program for visitors to learn about the intertidal environment and limited oversight from regulatory agencies to ensure compliance with MPA regulations.

MPAs, like Duxbury Reef SMCA, need additional resources to enhance outreach and educational efforts, otherwise, the area becomes an MPA only in name and is not meeting MLPA goals.

Since 2014, the MPA Watch program has collected human-use data including potential violation data that is not reflected in the public enforcement violation data. Specifically, the MPA Watch and Duxbury Docent programs have collected data on increased visitation prior to the noted influx of visitation due to the pandemic in 2020:

*Since 2017, MPA Watch volunteers documented approximately a 70 percent increase in visitation to Duxbury Reef, and in 2020, more than 300 observations of hand-collection of biota were documented at Duxbury Reef over a three-month period along with a 79 percent increase in visitation compared to 2019.*

*In 2022, the Duxbury Docent program completed 65 shifts. Docents engaged with more than 1,000 members of the public and successfully deterred 37 potential consumptive use violations (hand-collection of biota) during those shifts through outreach and education.*

While establishing the Duxbury Docent program is an important step, additional resources are needed from CDFW to help meet the goals of the MLPA at this MPA. For example, establishing a partnership program like the pilot program of CDFW-trained outreach volunteers at Pillar Point in 2020 would benefit the Duxbury Docent program as a partnership to improve outreach, education, and MPA regulatory compliance.

#### **4. Enforcement and Compliance:**

##### **Request 6: Need for transparency in violation tracking and numbers of visits by wardens to specific MPAs.**

It would be beneficial to the public to have a quarterly report available that lists the number of cited violations at each MPA and the number of visits by CDFW wardens to that location. This information would assist with reconciling the community science data collected by programs like MPA Watch with the enforcement data. This would assist with finding compliance and enforcement gaps and subsequently allocating resources for increased capacity, or establishing community partnerships for outreach and educational programs in the future.

#### **5. Outreach and Education:**

##### **Request 7: Need for up-to-date signage that incorporates information/access to seasonal fishing regulations.**

Throughout the MPAs located in coastal Marin County, signage continues to be a challenge. Locations within the Point Reyes National Seashore sometimes include signage that an area is an MPA and closed to fishing and collecting, while other locations include do not have signage. If there are other pressing public noticing requirements like during the pandemic, MPA signage was removed and replaced.

As CDFW analyzes what is useful for MPA signage and effectiveness related to compliance and education, it would be helpful to include options for the public to obtain up-to-date information using QR codes, including current fishing regulations and definitions. This is especially important in areas where there are overlapping jurisdictional responsibilities and within SMCAs where regulations may differ on what is allowed or not allowed. Specifically, as noted previously by our Duxbury Docent program volunteers,

*Signage is not kept up to date to reflect specific closures and hyperlinks to Fish and Game Code is not included for visitors to reference and look up current regulations.*

In general, much of the public is not up to date on the fishing seasons or what fisheries are open or closed, and the lack of information at access points creates confusion. Information for outreach and education also needs to be designed for the average recreational MPA visitor, and special signage for intertidal areas should be shared collaboratively throughout the state with intertidal groups to standardize messaging.

## **6. Tribal Coordination:**

### **Request 8: Need for pathways to increased tribal coordination and inclusion.**

We recommend increased and meaningful tribal engagement and co-management across all aspects of the MPA network including community science, building tribal capacity, improved coordination, and outreach and inclusion of all tribes, federal and non-federally recognized tribes.

## **7. Climate Resilience and Adaptation:**

### **Request 9: Need to develop pathways to integrate with California's 30x30 Initiative, climate resilience, and adaptation goals.**

We are actively engaged in coastal resiliency planning and the state's 30x30 implementation. Related to 30x30, we hope to continue the dialogue around how our MPA network intersects with California's 30x30 goals. Careful coordination is required between all these goals and planning processes to ensure the best outcome.

The Fish and Game Commission should work towards climate-resilient MPAs through an equitable, science-based process that is adaptive and includes additional monitoring metrics, connecting to the state's long-term monitoring goals. Our MPAs must be climate ready. It is important that the CDFW and the Fish and Game Commission consider the need for our MPA network to adapt to sea level rise, as wetland and public trust boundaries shift. The MPAs can also serve as important climate refugia sites.

## **8. Public Engagement and Timeline:**

### **Request 10: Outline the opportunities for public engagement and timeline for consideration of incorporation of public comments on the Decadal Review.**

We are grateful for the opportunity to comment on the Decadal Review but would like clarification from CDFW and the Fish and Game Commission on the recommended pathways to ensure that concerns raised in this comment letter are considered for inclusion in the adaptive management plans.

We also raise specific boundary and designation change requests that are localized to our geographic region and clarification on how those items will be considered and if it is appropriate as part of this process or would need to be raised independently of the Decadal Review.

## **Summary of Requests**

**Request 1: Include condition and use change data for MPAs to provide an assessment of changed conditions (i.e. on-shore and offshore activities and uses) that would inform the need for adapting the MPA Network Design that would include boundaries and designation changes that are in alignment with today's conditions and circumstances.**

**Request 2: Request evaluation of Drakes Estero State Marine Conservation Area for a designation change to a State Marine Reserve.**

**Request 3: Request evaluation of Duxbury Reef State Marine Conservation Area for a designation change to a State Marine Reserve and extension of the southern boundary to fully encompass the reef habitat area.**

**Request 4: Need for inclusion of biological and environmental condition status, community science data, and ecological habitat mapping when analyzing a need for MPA designation and boundary changes.**

**Request 5: Need for enforcement volunteer programs in rural areas, specifically an extension of CDFW-trained enforcement volunteers piloted in 2020 at Pillar Point due to the high visitation and poaching incidents.**

**Request 6: Need for transparency in violation tracking and numbers of visits by wardens to specific MPAs.**

**Request 7: Need for up-to-date signage that incorporates information/access to seasonal fishing regulations.**

**Request 8: Need for pathways to increased tribal coordination and inclusion.**

**Request 9: Need to develop pathways to integrate with California's 30x30 Initiative, climate resilience, and adaptation goals.**

**Request 10: Outline the opportunities for public engagement and timeline for consideration of incorporation of public comments on the Decadal Review.**

## Conclusion

Thank you for the opportunity to comment on the Decadal Review and for your consideration of our comments. We look forward to additional dialogue in the coming months as the public can comprehensively engage and participate in the pathways forward that will inform the future adaptive management decisions that help to ensure an inclusive, responsive, and resilient MPA Network.

Sincerely,

A handwritten signature in black ink, appearing to read 'MP', with a long horizontal flourish extending to the right.

Morgan Patton  
Executive Director  
Environmental Action Committee of West Marin

cc: Susan Ashcraft, Senior Environmental Scientist and Marine Advisor, California Fish and Game Commission; Melissa A. Miller-Henson, Executive Director, California Fish and Game Commission; Becky Ota, Marine Habitat Conservation Program Manager, California Department of Fish and Wildlife; Craig Shuman, Marine Region Manager, California Department of Fish and Wildlife; and Dennis Rodoni, Marin County Supervisor District 4



# United States Department of the Interior



NATIONAL PARK SERVICE  
Point Reyes National Seashore  
1 Bear Valley Road  
Point Reyes Station, CA 94956  
Department of the Interior Region 10

IN REPLY REFER TO:

L7617

November 14, 2022

Craig Shuman, Marine Region Manager, CDFW  
[REDACTED]

Samantha Murray, President, California Fish and Game Commission  
[REDACTED]

Dear Mr. Shuman and President Murray:

The National Park Service (NPS) strongly supports the continued science-based and stakeholder driven designation and management of the most significant biodiversity focused Marin Protected Area (MPA) network in the United States. We anticipate the 10-year review will strengthen and reinforce the unparalleled benefits to protecting California's unique ecologically and economically important and irreplaceable marine biodiversity.

The NPS participated in the 2008 – 2009 stakeholder working groups recommending proposed Network of MPAs for the North-Central Coast. Since that time, NPS continues to support and conduct protection, education, monitoring, and research in the four State MPAs that overlap with the boundaries of Point Reyes National Seashore: Estero de Limantour State SMR, Drakes Estero SMCA, the Point Reyes SMR, and Duxbury Reef SMCA. Similarly, we also protect and monitor seabird and marine mammal populations in the three special closures within park boundaries: Point Reyes Headlands, Point Resistance Rock, and Double Point/Stormy Stack. We are proud to help protect and monitor these MPAs that both stakeholder subgroups overwhelmingly concurred on the Commission enacted MPA designations along the Marin County coastline.

The biodiversity protections established by these seven MPAs within the boundaries of Point Reyes National Seashore are key components in the NPS mission to “...*preserve unimpaired the natural and cultural resources and values of the National Park System for the enjoyment, education, and inspiration of this and future generations.*” Importantly, the majority of Point Reyes National Seashore's outer coast out to ¼ mile from shore is Congressionally designated as Potential Wilderness, which restricts commercial activities (including commercial fishing) and motorized equipment (including motorboats). These federal marine wilderness areas overlap partially or entirely with all seven State MPAs in Marin County.

Our continued support and engagement with the State MPA designations is summarized below where NPS, in collaboration with many partners, conducts ecological restoration, ecological monitoring, human use monitoring, research, protection, and education.

**Table 1: Summary of National Park Service programs and projects in the seven State MPAs that overlap with NPS waters at Point Reyes National Seashore.**

<b>State MPA</b>	<b>Ecological Restoration</b>	<b>Ecological Monitoring</b>	<b>Human Use Monitoring</b>	<b>Research</b>	<b>Education</b>	<b>Protection</b>
Drakes Estero SMCA	X	X	X	X	X	X
Estero de Limantour SMR				X	X	X
Point Reyes SMR	X	X	X	X	X	X
Duxbury Reef SMCA		X	X	X	X	X
Point Reyes Headlands Special Closure		X	X	X	X	X
Point Resistance Rock Special Closure		X	X		X	X
Double Point/Stormy Stack Special Closure		X	X	X	X	X

Recent and ongoing NPS investments in these State MPAs include:

- \$4m restoration of the Drakes Estero SMCA in 2016-2017 removing 3.6m lbs. of aquaculture debris and continued annual monitoring of eelgrass restoration.
- Annual harbor seal and/or elephant seal monitoring in all the MPAs (except Estero de Limantour).
- NPS Visitor and Resource Protection patrol and response at all MPA sites, including vessel response and coordination with Marin County Sheriff and CDFW game wardens.
- NPS rocky intertidal monitoring at the Duxbury Reef SMCA as well as additional reference sites throughout the park
- NPS and Partner Rocky Intertidal habitat mapping for oil spill response and climate change tracking.
- Ashy Storm-Petrel Monitoring at the Double Point/Stormy Stack Special Closure
- Logistical support for USFWS Seabird Monitoring at five of the seven MPAs.
- \$250,000 in funding to match OPC funded ROV fish and invertebrate surveys at the Point Reyes Headlands SMR (via UCSD).
- Funding to supplement and support seafloor habitat mapping between Tomales Point and Duxbury Reef to support the MPA stakeholder working groups and science teams (via Moss Landing Marine Lab).
- Funding supporting UC Davis research developing MPA larval dispersal models (Botsford Lab) in the Point Reyes region used by the MPA Science advisory Team.
- Endangered Black Abalone Restoration research (with UCSC) at the Point Reyes SMR and Point Reyes Headlands Special Closure.
- Hosting regular joint law enforcement trainings on MPA law, science, policy, and emerging issues.
- Co-development and support for of an MPA Watch program for Marin County that covers all the MPAs.

- Advising on an MPA-intertidal docent program at Duxbury Reef SMCA.
- MPA science, policy, and protection education at NPS visitor centers, interpretive programs and media.

NPS scientists, interpreters, law enforcement and partners regularly work and perform outreach, research and monitoring in these seven State MPAs. Based on our intimate long-term understanding of these areas and to continue support for the NPS Mission and Federal wilderness policies, we respectfully submit our MPA designation recommendations in Table 2 as CDFW and the Commission undergoes the 10-Year MPA review.

**Table 2: National Park Service’s State MPA recommendations for MPA 10-year review.**

State MPA	NPS Recommendation	Rationale
Drakes Estero SMCA	Convert from SMCA to SMR	2010 designation as SMCA relied on presence of commercial aquaculture operation. DOI authorization of commercial aquaculture ended in 2012, and operations ceased in 2014.  Area is now Congressionally Designated Wilderness, \$4m estuary restoration completed in 2017. Recreational take of shellfish appears to be very rare, requires long kayak trips in wilderness area with no cell service and limited emergency response. Increased protections for eelgrass, estuarine biodiversity, and marine wilderness.  If converted to an SMR, join with Estero de Limantour into a single SMR for naming and outreach purposes.
Estero de Limantour SMR	No Change/or merge with proposed Drakes Estero SMR	Protection of eelgrass and estuarine biodiversity.
Point Reyes SMR	No Change	Continued protection of marine biodiversity, including Seabirds, Marine Mammals, Black Abalone
Duxbury Reef SMCA	Continue as SMCA or Convert to SMR	NPS staff observe periodic illegal take of invertebrates after 12 years despite SMCA status. Full SMR status would clarify regulations and ease enforcement/education needs. Premier site for intertidal and ocean education in Marin County. NPS and UCSC long-term intertidal monitoring sites.
Point Reyes Headlands Special Closure	No Change	Protection of Seabirds, Marine Mammals, Black Abalone
Point Resistance Rock Special Closure	No Change	Protection of Seabirds. NPS has concerns about boating and kayaking disturbances. However, these are generally due to the public not following existing regulations.
Double Point/Stormy Stack Special Closure	No Change	Protection of Seabirds, Marine Mammals. NPS has concerns about boating and kayaking disturbances. However, these are generally due to the public not following existing regulations. NPS continues to monitor harbor seals outside the special closure for disturbance events.

Please contact NPS Cooperative Ecosystems Studies Unit Science Advisor Ben Becker at [ben\\_becker@nps.gov](mailto:ben_becker@nps.gov) if you would like any additional supporting information on NPS MPA support activities or our MPA recommendations.

Sincerely,

Anne Altman  
Acting Superintendent



**UNITED STATES DEPARTMENT OF COMMERCE**  
**National Oceanic and Atmospheric Administration**  
**NATIONAL OCEAN SERVICE**  
**Greater Farallones and Cordell Bank**  
**National Marine Sanctuaries**

991 Marine Drive, The Presidio, San Francisco, CA 94129

California Fish and Game Commission  
P.O. Box 944209  
Sacramento, CA 94244-2090  
***Sent Via Email:*** [fgc@fgc.ca.gov](mailto:fgc@fgc.ca.gov)

April 15, 2023

**RE: Adaptive Management of California's Marine Protected Area Network**

Dear President Sklar and Members of the Fish and Game Commission:

Greater Farallones National Marine Sanctuary (sanctuary) includes the state waters designated between Marin County and Point Arena. In addition, Greater Farallones National Marine Sanctuary staff (GFNMS) manage the northern portion of the Monterey Bay National Marine Sanctuary between Año Nuevo and Marin County. As such, GFNMS' management area aligns with the California Marine Life Protection Act (MLPA) North Central California Region providing an opportunity for shared management of the waters overlapping 25 state MPAs and 6 special closures. Since the designation of these protected areas, we have worked to support the statewide network through education, outreach, enforcement, and research. We look forward to continuing to work together to protect these nationally important marine areas, and appreciate the opportunity to provide comments to the Commission on adaptive management of the statewide MPA network.

This letter is intended to share information about the importance of Duxbury Reef, the need to consider additional conservation measures to effectively protect it, and to support a community-based process to recommend enhanced protections at Duxbury Reef State Marine Conservation Area.

**The Importance of Duxbury Reef**

Duxbury Reef is a place of special significance to California's coast. Its shale reef ecosystem is the largest in California, and supports over 100 species of invertebrates and marine plants. Accessible tidepools are frequently used to teach the next generation of marine scientists how to monitor ecosystem health and to engage the public in responsible wildlife watching. Since 2000, Duxbury has been a survey site of GFNMS and Greater Farallones Association's LIMPETS program, in which Bay Area students conduct intertidal monitoring of the reef. For many, Duxbury is their first experience visiting a marine protected area. In addition to its state and federal protections, Duxbury is part of the Golden Gate Biosphere Network, a United Nations' World Network of Biosphere Reserves established as sites of excellence. At less than three quarters of a square mile in area, it is one of the smallest MPAs in the statewide network.

## **The Need to Consider Additional Conservation Measures at Duxbury Reef**

With rising sea levels intertidal animals need the space and time to adapt and build resilience to climate change. Duxbury Reef, an easy-to-access, popular coastal location in the Bay Area, is highly impacted by increased visitation. The impacts of increased visitation since its designation as an SMCA in 2010 have been well documented by agencies and partner organizations. Preliminary findings from the GFNMS Condition Report, an assessment of the health of the sanctuary over the last 10 years, revealed that Duxbury is the most easily accessed reef within the sanctuary. Although visitor use occurs at multiple rocky reef locations throughout the sanctuary, documented trampling and collecting of intertidal species at Duxbury reef makes it the location of highest concern for intertidal impacts in the sanctuary. These activities can cause long-term negative impacts to sanctuary habitat and species and reduce the resilience of species to adapt to changing ocean conditions.

The 2020 MPA Community Compliance Forum Report<sup>1</sup> offers details about illegal collections at Duxbury. Community members observed visitors using buckets, small nets and tools to collect reef animals including purple urchins and turban snails. They also expressed concern about increased visitation and impacts to tidepools from trampling, moving rocks for viewing, and crushing animals.

Data from Marin MPA Watch supports observations about increased visitation and illegal take. Marin MPA Watch has conducted surveys at Duxbury Reef since 2013 documenting significant increases in visitation, as well as human impacts to the reef. In recent annual reports, they noted the following use patterns at Duxbury<sup>2</sup>:

- In spite of being the smallest MPA, Duxbury has the highest use count (visitation) of all MPAs surveyed in 2022, accounting for 49% of total human activities in Marin MPA Watch locations.
- 16 observations were made of illegal hand collection of biota in 2022, as well as 62 observations of hand collection of biota in 2021.
- 305 incidents of hand collection of biota in the intertidal were observed in the months of June, July, and August 2020.

Duxbury's SMCA designation allows for certain kinds of take, which may confuse visitors that are not familiar with the regulations. Current regulations allow for "recreational take of finfish from shore and abalone", which is an unusually broad definition for an SMCA. Most SMCA designations include specific gear types (e.g. hook and line, dip net), but at Duxbury, the lack of specificity implies all gear types used to target finfish from shore, including hook and line, poke poles, and other gear are permissible. Poke poles used to target eels on the reef are a common

---

<sup>1</sup> Golden Gate Compliance Forum Report, 2020. see <https://www.mpacollaborative.org/goldengate/>

<sup>2</sup> MPA Watch Regional Report, Marin County, 2022 and 2020.

sight and are permitted under current regulations. Seeing legal take of finfish by various gear types occurring on a busy day may cause uninformed visitors to Duxbury to think that other forms of collection are legal. This confusion may be resulting in illegal take, which has been frequently observed on the reef by MPA Watch volunteers and docents.

Another potential source of confusion amongst coastal visitors may be from the allowed take at the southernmost extent of Duxbury Reef, which is unprotected by the current SMCA. This southern boundary area is accessible at low tide via the main parking lot, as well as a goat trail accessed at the end of Ocean Boulevard and Maple Road in Bolinas. Since collection is allowed at this part of the reef, unfamiliar visitors may see legal take occurring and assume that it is allowed on all areas of the reef.

### **Community Input on Adaptive Management of MPAs**

GFNMS supports a community-based approach to recommending additional conservation tools to ensure the Duxbury Reef ecosystem thrives and is offering to help support such an effort. GFNMS is offering to propose to our Sanctuary Advisory Council (SAC) a GFNMS-CDFW working group composed of community members and science experts to recommend conservation measures and tools to address concerns about the health of Duxbury Reef. A joint working group of GFNMS and CDFW could provide a meaningful forum for community members and scientists to discuss and propose adaptive management recommendations to ensure a healthy State and Federal MPA.

Community-led processes to manage and protect our ocean are a valuable way to achieve community support, which in turn can promote better compliance. GFNMS is committed to attending future meetings of the Fish and Game Commission and Marine Resources Committee for our shared areas in which adaptive management of MPAs will be discussed and will participate in community processes that the state chooses to undertake in our region.

Thank you in advance for considering a Duxbury Reef community process whether led through GFNMS, CDFW, or a NGO to ensure that our shared resources thrive.

Sincerely,

A handwritten signature in black ink that reads "Maria Brown". The signature is written in a cursive, flowing style.

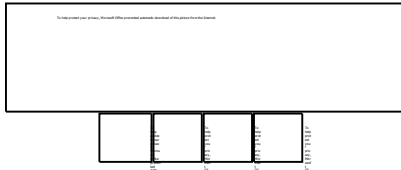
Maria Brown, Superintendent  
Greater Farallones and Cordell Bank National Marine Sanctuaries

**From:** Lillie Mulligan <lillie@wildcoast.org>  
**Sent:** Thursday, July 6, 2023 5:02 PM  
**To:** FGC  
**Cc:** Lisa Gilfillan; angela@wildcoast.org  
**Subject:** WILDCOAST Written Public Comment: FGC MRC Re. Agenda #5  
**Attachments:** WILDCOAST Comment Letter DMR Update.pdf

You don't often get email from lillie@wildcoast.org. [Learn why this is important](#)

**WARNING:** This message is from an external source. Verify the sender and exercise caution when clicking links or opening attachments.

To whom this may concern,  
Attached you will find WILDCOAST's written public comment regarding agenda item #5 for the July 20th FGC MRC meeting.  
Thank you for considering our recommendations.  
Sincerely,  
Lillie Mulligan



**Lillie Mulligan**  
Ocean Conservation Coordinator  
Direct phone: (619) 248-6356  
[lillie@wildcoast.org](mailto:lillie@wildcoast.org)  
[www.wildcoast.org](http://www.wildcoast.org)  
2120 Jimmy Durante Blvd  
Suite #106  
Del Mar, California 92014  
Support your coast and ocean.

July 6, 2023

President Eric Sklar, California Fish and Game Commission  
Sacramento, CA 95814

Sent via electronic mail to: [fgc@fgc.ca.gov](mailto:fgc@fgc.ca.gov)

**Re: Agenda Item #5 MPA DMR**

Dear President Sklar and Honorable Commissioners,

WILDCOAST is committed to conserving coastal and marine ecosystems and addressing climate change through natural solutions. Through these efforts, we are dedicated to the success of marine protected areas. We submit this letter to share our suggestions following the release of California's first MPA Decadal Management Review. We hope the following suggestions will be considered in the adaptive management of California's MPA Network.

WILDCOAST supports the following San Diego County specific recommendations set forth by the San Diego MPA Collaborative Network.

- Change the purple 'no-take SMCAs' to the color red like the 'state marine reserves'. Their regulations are the same as a red SMR for the general public. In San Diego County this would include Batiquitos Lagoon SMCA, San Elijo SMCA, and Famosa Slough SMCA.
- Restrict San Diego-Scripps Coastal SMCA to no surf fishing from shore as it has posed a safety issue for beach recreators.
- Work with local Kumeyaay Tribes to rename MPAs to their indigenous name. Cabrillo State Marine Reserve would be a good starting point.

As the statewide coordinators of the MPA Watch community science program, WILDCOAST supports recommendation #12 to "invest in improving understanding of the human dimensions of MPAs and develop a human dimensions working group and research agenda" and #14, to "develop a comprehensive community science strategy for MPAs and better utilize community science to supplement core monitoring programs."


- MPA Watch is a statewide network that trains volunteers to observe and collect data on human uses of coastal and marine resources both inside and outside of MPAs. Volunteers use standardized protocols to collect relevant, scientifically rigorous, and broadly accessible data. This data can help guide adaptive MPA management and enhance the ability of stakeholders to engage in stewardship activities.
- A working group would help all parties define expectations, roles, and strategies for implementation of this work.
- MPA Watch would benefit from a program analysis of effectiveness, a clear framework for defining a program's intended use, centralized data management, and improved coordination between groups.

WILDCOAST also supports #13, to "explore the use of innovative technologies such as remote sensing, drones, and eDNA, to enhance and streamline traditional monitoring projects."

- Marine Monitor (M2), a shore-based RADAR system, autonomously tracks and reports on vessel activity in and around select MPAs. This data is vital in managing and properly enforcing MPAs.

Finally, WILDCOAST endorses the additional written comments provided by the MPA Collaborative Network, MPA Compliance Working Group and NGO MPA Working Group.

Sincerely,



Angela Kemsley  
Conservation Director, WILDCOAST

**From:** Lisa Gilfillan <lisa@wildcoast.org>  
**Sent:** Friday, July 7, 2023 9:48 AM  
**To:** FGC  
**Subject:** Written public comment for July 20th MRC meeting  
**Attachments:** FGC MRC 7\_20\_23 Letter from CWG.pdf



You don't often get email from lisa@wildcoast.org. [Learn why this is important](#)

**WARNING:** This message is from an external source. Verify the sender and exercise caution when clicking links or opening attachments.

To whom this may concern,

Attached you will find the MPA Compliance Working Groups written public comment regarding agenda item #5 for the July 20th FGC MRC meeting.  
Thank you for considering our recommendations.

Sincerely,  
Lisa Gilfillan on behalf of the MPA Compliance Working Group

**Lisa Gilfillan**  
Ocean Conservation Manager  
MPA Watch Coordinator  
WILDCOAST  
W: 619.285.2341  
C: 440.315.0415  
[lisa@wildcoast.org](mailto:lisa@wildcoast.org)  
[www.wildcoast.org](http://www.wildcoast.org)  
925 Seacoast Dr.  
Imperial Beach, CA 91932, USA  
Support your coast and ocean.

July 7, 2023

California Fish and Game Commission  
Marine Resources Committee  
715 P Street, 16th Floor  
Sacramento, CA 95814

*Sent via electronic mail to: [fgc@fgc.ca.gov](mailto:fgc@fgc.ca.gov)*

**RE: Marine Resources Committee July 20, 2023 Meeting Agenda Item 5 -  
Marine Protected Areas (MPA) Decadal Management Review**

Dear Chair Sklar and Honorable Commissioners,

The California Marine Protected Area (MPA) Compliance Working Group (CWG) was created to support compliance with the regulations of California's MPA network. The MPA CWG consists of 16 members representing 10 stakeholder groups and includes NGOs, prosecutors from City and District Attorney offices, MPA resource managers, university researchers, local enforcement officials, MPA Collaborative Network staff and co-chairs, allied agency representatives, and others. Monthly virtual meetings address MPA compliance priorities and propose collaborative solutions at the local, regional, and statewide scale. MPA CWG focal areas include the roll-out of AB 2369, targeted outreach events, ensuring adequate funding for MPA enforcement, M2 RADAR monitoring, and supporting new compliance projects in partnership with MPA management agencies. MPA CWG members participated in the Decadal Management Review (DMR) in a variety of ways, including participation as panelists on the Research and Monitoring, Enforcement and Compliance, and Education and Outreach panel discussions at the March 15, 2023 DMR Forum in Monterey, CA.

We write in support of the California Department of Fish and Wildlife's (CDFW) [prioritized recommendations from the DMR](#), and have outlined specific strategies to support their implementation.

**Near-term compliance-focused priorities (Ongoing – 2 Years)**

Critical near-term priorities, and our suggestions:

- Recommendation #20 (to increase enforcement capacity)
  - Identify violation hot spots and provide effective and responsive Law Enforcement Division (LED) presence at these "problem areas".
- Recommendation #21 (to enhance MPA citation record keeping and data management).
  - Implement comprehensive usage of electronic violation tracking technology (such as eFins) and to go beyond just citation data and include all compliance data collected by CDFW and allied agencies to truly measure and understand compliance and inform the Enforcement Plan;
  - Track violator demographic information;

- Ensure partners (allied agencies) have access to data needed to identify repeat offenders; and
- Develop and disseminate MPA compliance information via popular venues and outlets used by boaters, anglers, port captains and other on the water stakeholder groups.

We also recommend inclusion of a new near-term priority focused on the Fish and Game Commission making full use of its existing administrative authority in MPA enforcement cases. License suspension and revocation is an important tool to address illegal fishing activities. We strongly encourage the FGC to expand its use of administrative penalties and work with its counsel and CDFW to explore how the process for imposing administrative penalties can be improved and made more efficient.

### **Mid-term compliance-focused priorities (2 – 5 years)**

Critical mid-term priorities, and our suggestions:

- Recommendation #22 (to increase information gathering regarding MPA violation prosecutions and judicial outcomes)
  - Publish verdicts and fines in a publicly accessible website (for example it was past practice for LED to share enforcement case outcomes via press releases on the CDFW LED Facebook site);
  - Encourage DAs to share case dispositions with MPA Statewide Leadership Team (MSLT) partners;
  - Developing a system for tracking prosecution outcomes as it is critical to know what the consequences are for MPA violations; and
  - Require electronic monitoring system as a term of probation for vessels convicted of poaching in MPAs.

General strategies for reducing violations, including:

- Encouraging FGC to use its full authority when possible, ensuring appropriate fines and penalties, and publicizing outcomes of prosecutions to serve as deterrent;
- CDFW providing targeted outreach and education specifically around compliance; and
- Utilize MPA Watch surveys and data more for compliance purposes.

### **Long-term compliance-focused priorities (5 – 10 years)**

Critical long-term priorities, and our suggestions:

- Recommendation #19 (to create and implement a cohesive and actionable MPA Enforcement Plan). This Plan should include:
  - Comparing and overlaying data layers from allied agencies alongside CDFW LED data to determine hotspots for violations and understand gaps;
  - Targeting the biggest enforcement problems (in terms of non compliance areas/hotspots and targeting commercial scale violations and repeat offenders) is critical given capacity constraints; and

- Ensuring the Enforcement Plan includes a dedicated strategy to increase equity in MPA enforcement actions.

We would like to thank state agencies, the Commissioners, and the countless individuals who helped make our MPA Network a reality and a resounding success. We appreciate the opportunity to comment on management of California's MPA network at this momentous milestone. The last ten years of management have begun to shift the course for our ocean from unsustainable practices towards adaptive, community-based leadership to protect our ocean for future generations. We look forward to working with the FGC and CDFW to continue to strengthen and protect our California MPA Network.

Sincerely,

MPA Compliance Working Group

(with questions please contact Lisa Gilfillan, [lisa@wildcoast.org](mailto:lisa@wildcoast.org))

**From:** Asokan, Anupa <aasokan@nrdc.org>  
**Sent:** Friday, July 7, 2023 4:17 PM  
**To:** FGC  
**Subject:** Written comment for July 20 MRC meeting  
**Attachments:** FGC - MRC - July 20, 2023 - Item 5.pdf

**WARNING:** This message is from an external source. Verify the sender and exercise caution when clicking links or opening attachments.

Please accept the attached letter for Agenda Item #5 for the July 20 Marine Resources Committee meeting.

Thank you,  
Anupa

**ANUPA ASOKAN** [SHE/HER]  
*Senior Oceans Advocate*  
*Nature Program*

**NATURAL RESOURCES DEFENSE COUNCIL**

1314 SECOND STREET  
SANTA MONICA, CA 90401  
C 352-804-8744  
[AASOKAN@NRDC.ORG](mailto:AASOKAN@NRDC.ORG)  
[WWW.NRDC.ORG](http://WWW.NRDC.ORG)



July 7, 2023

California Fish and Game Commission  
715 P Street, 16th Floor  
Sacramento, CA 95814

**Re: California Fish and Game Commission, Marine Resources Committee Meeting,  
Agenda Item 5: Marine Protected Areas Decadal Management Review**

Dear President Sklar and Commissioner Murray,

We, the undersigned organizations representing conservation, recreation, youth and environmental justice advocates, are grateful for the opportunity to offer our support and recommendations to inform adaptive management for the continued success of California's Marine Protected Area (MPA) network in the decades ahead.

***General comments on Near-term Priorities***

We appreciate and support the California Department of Fish and Wildlife's (CDFW or Department) "Draft prioritized recommendations from California's Marine Protected Area Decadal Management Review" with a few exceptions and notable points of clarity. As top priorities that will be ongoing and initiated over the next two years, we particularly and wholeheartedly agree with the grouping of the following recommendations:

- 01. Improve state agencies' Tribal engagement and relationship building efforts.
- 04. Apply what is learned from the first Decadal Management Review to support proposed changes to the MPA Network and Management Program.
- 07. Expand targeted outreach and education materials and events to under-represented user groups. (With greater clarity, noted below.)
- 09. Continue to coordinate and collaborate with OPC and other agencies on California's ocean and coastal priorities to enhance coastal biodiversity, climate resiliency, human access and use, and a sustainable blue economy. (With greater clarity, noted below.)
- 11. Update the MPA Monitoring Action Plan framework to improve and sustain a cost-effective long-term monitoring program, including guidelines to ensure monitoring consistency and sustainable funding.

Recommendations 01, 09 and 11 offer a critical basis upon which many of the subsequent actions compiled by CDFW depend. We fully support efforts by the state to improve Tribal engagement and coordination, and note that management actions may be subject to iterative input and feedback from Tribal communities themselves. With respect to Recommendation 09, we encourage the Commission and Department to collaborate with OPC as they develop a scientific framework for evaluating conservation areas under the state's 30x30 goals. This framework can also serve to support the Commission's decision-making as it can then be integrated into the evaluation of petitions and other proposed changes to the MPA network under Recommendation 04. Similarly, Recommendation 11 will not only support current and future adaptive management actions, but will also be critical to understanding if and how effectively the state is meeting its 30x30 goals.

While Management Actions under Recommendation 27 may be valid, we question its characterization as a near-term priority. We would prefer to see the state direct resources to the actions highlighted above in short-term and consider elevating Recommendation 08 (with the essential points of clarity noted below) while moving Recommendation 27 to the suite of mid- to long-term actions. Ecosystem recovery can take decades,<sup>1</sup> and moreover, California's MPAs are still young relative to the life span of some of the species that live within the Network. For example, many nearshore rockfish live more than 20 years, and bocaccio and black rockfish around 50 years.<sup>2</sup> This Decadal Management Review (DMR) and sustained long-term monitoring are important opportunities to better understand MPAs broadly, as well as the impacts on California's coastal ecosystem. Given we are still learning about the impacts of the Network, and coupled with the rapid pace of climate change on our coastal ecosystem, it may be imprudent to integrate MPA specific stock analyses into fisheries management decisions at this early stage.

### ***Criticality of Recommendation 04***

California's MPA Network is a case study in MPA Network design and implementation that serves as a model for the world. California has now contributed considerably to the body of knowledge on MPAs through long-term monitoring and the first DMR Report—all with evidence of success. Adaptive management is our opportunity to further support and build the global understanding of MPA efficacy and best practices in MPA management. As we have noted previously, California's MPA network was not designed with the impacts of climate change and of precise future threats in mind, yet the adaptive management process is an opportunity to assess the network within California's current ecosystem and social contexts. By prioritizing Recommendation 04, we can help ensure the resilience of our Network—and thus, California's coast and communities—to climate change, its impacts, and pending new ocean industries, such as offshore wind energy development and aquaculture. We support the Department's

---

<sup>1</sup> Heike K. Lotze et al., "Recovery of Marine Animal Populations and Ecosystems," *Trends in Ecology and Evolution* 26, no. 11 (November 2011): 595–605, <https://doi.org/10.1016/j.tree.2011.07.008>.

<sup>2</sup> Marine Species Portal: "Black Rockfish: Species-at-a-Glance," California Department of Fish and Wildlife, <https://marinespecies.wildlife.ca.gov/black-rockfish/false/>; California Department of Fish and Wildlife, Marine Species Portal: Bocaccio Rockfish, <https://marinespecies.wildlife.ca.gov/bocaccio-rockfish/false/>.

recommendation to prioritize Recommendation 04 in the near term, particularly Management Actions A and B, for these reasons:

- 1) *Climate and biodiversity crises*: While the DMR process is distinct from the state's 30x30 effort, the call to action is both imminent and explicit. Climate change and biodiversity loss are having profound impacts on our planet and require swift action.<sup>3</sup> As the DMR Report elucidates, our MPA Network is a highly effective and proven line of defense to both biodiversity loss and climate impacts. Changes to the MPA network through the adaptive management process are one of California's four pathways to 30x30 for the ocean. As the science has shown<sup>4</sup> and Secretary Crowfoot has written<sup>5</sup>, MPA network modification and expansion through the adaptive management process is a critical step toward conserving an additional 500,000 acres of coastal waters by 2030 and effectively meeting the 30 percent goal. We encourage the Commission to begin considering petitions for network modifications and expansion as soon as feasibly possible. A clear and thoughtful process for public proposals to expand and strengthen our MPA Network can, and should, happen concurrently with minor, yet essential, modifications to the network compiled by the MPA Collaborative Network and which are intended to support better management and study.
- 2) *Equity*: When California's MPA network was implemented, the steps taken to create an open, stakeholder-driven process were well-intentioned and groundbreaking, however not perfect or truly inclusive. Today, with a more robust and mainstream body of knowledge on equity practices, the Commission has an important role to advance and pioneer a better process to right past wrongs through adaptive management. Prioritizing Recommendation 04 is a chance to offer such an opportunity, and consider and prioritize perspectives from communities marginalized by the original decision-making process.

In addition supporting equity for those marginalized communities, we urge the Commission to also see the opportunity to enhance intergenerational equity by earnestly considering the youth perspectives that have been trying to engage in this process. The decisions made ten years ago have impacted their current ocean experiences, and they stand to gain or lose the most from the adaptive management decisions made in the coming months and years.

- 3) *Pending threats*: As new industries, such as offshore wind energy and aquaculture, look to California's coast for development, it is also essential to consider if and how the state's MPA Network can be strengthened to ensure habitat and biodiversity are adequately protected in the face of new and pending threats. We have an opportunity to

---

<sup>3</sup> Nature's Dangerous Decline, 'Unprecedented'; Species Extinction Rates 'Accelerating', <https://www.ipbes.net/news/Media-Release-Global-Assessment>.

<sup>4</sup> Barbara Lausche, Aaron Laur, and Mary Collins, Marine Connectivity Conservation 'Rules of Thumb' for MPA and MPA Network Design, IUCN WCPA Connectivity Conservation Specialist Group's Marine Connectivity Working Group, 2021, [https://conservationcorridor.org/wp-content/uploads/Marine-ConnectivityConservation-Rules-of-Thumb-for-MPA-and-MPA-Network-Design\\_2021.pdf](https://conservationcorridor.org/wp-content/uploads/Marine-ConnectivityConservation-Rules-of-Thumb-for-MPA-and-MPA-Network-Design_2021.pdf)

<sup>5</sup> California Department of Fish and Wildlife, California's Marine Protected Area Network: Decadal Management Review, 2022, <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=209209&inline>

be prudent and proactive to the pending threats to our coastal and marine ecosystems. In addition to developing these ocean-based industries in a manner that safeguards areas that support the structure and function of natural ecosystems through careful siting and operations, we must establish new fully and highly protected areas free from as many stressors as possible to allow marine habitats and wildlife to recover and flourish.

***Needed clarity on Recommendations 06, 07, 08 and 09***

As many of our organizations have expressed in previous letters to the Commission regarding the DMR Report, commercial industry engagement as a component of any justice, equity, diversity and inclusion (JEDI) initiative undermines the intent to correct systemic marginalization. Given the Department's harmful (mis)characterization of certain recommendations supporting efforts to achieve justice, equity, diversity and inclusion, it is first necessary for the Commission and the Department to either, 1) acknowledge and correct the critical error in Table 6 and Appendix A of the DMR Report which NRDC, Azul, Environment California, Environmental Defense Center, and others have contextualized at length in previous comment opportunities; or 2) offer clear definitions and explanations of which user groups are considered "underrepresented" and/or "diverse" by the Commission and the Department.

We also strongly recommend the Commission clarify and commit to an equity lens with respect to any adaptive management action that addresses "access" and "accessibility" of MPAs (Recommendations 08 and 09). The concluding section of the DMR Report correctly notes, "MPA designations do not restrict public access, non-consumptive recreational experiences may be improved through better wildlife viewing opportunities." It is important for the state to consider other cultural value systems and approach any decision-making or consideration of recommendations involving "access" with an understanding of direct and indirect social costs and benefits. For example, though an MPA may limit "fishing access" for a subset of Californians, it may confer "access" that benefits a larger segment of the population. These benefits may include opportunity for enhanced psychological well-being, increased food availability for low-income subsistence fishers, enhanced education opportunities, gained cultural space and local knowledge, and an enhanced sense of place.<sup>6</sup>

We further recommend that evaluations of accessibility focus on community groups that have historically and continue to face greater barriers to accessing MPAs and healthy coastal areas, such as BIPOC communities, low-income communities, inland communities and communities living outside of the coastal zone, communities living with a disability, youth, etc. This evaluation should center environmental justice, which is meant to be a remedy for communities that have faced discrimination and exclusion from—in this scope—the ocean and decision-making about the ocean. An "access" evaluation through this lens can also serve to inform the state's 30x30 efforts, which has an additional goal of improving equitable access to nature for all Californians.<sup>7</sup>

---

<sup>6</sup> Michael B. Mascia and C. Anne Claus, "A Property Rights Approach to Understanding Human Displacement from Protected Areas: the Case of Marine Protected Areas," *Conservation Biology*, January 2009, <https://doi.org/10.1111/j.1523-1739.2008.01050.x>

<sup>7</sup> Executive Department of the State of California: Executive Order N-82-20, October 7, 2020, <https://www.gov.ca.gov/wp-content/uploads/2020/10/10.07.2020-EON-82-20-signed.pdf>

### ***Adaptive Management Process Requests***

The state has dutifully acknowledged systemic barriers that have and continue to marginalize communities from decision-making. In addition to adaptive management acting to better support the ecological health of California's coastal waters, the Commission also has an opportunity to be leaders in equity and environmental justice by setting an example of what improvements to public process in decision-making can look like, while remedying oversights and exclusions from the original MLPA process. New voices, communities of color, and particularly young people would benefit from greater planning, transparency and guidance to engage, along with actions to make public meetings feel more welcoming and accessible. To that end, we recommend the Commission work to support:

- A work plan and/or clear schedule that links Commission and Committee meetings to specific outcomes related to the DMR and the opportunities for public input for each.
- Procedural changes to meetings that ensure equity best practices. Guidance may be drawn from the California Coastal Commission's Environmental Justice Policy<sup>8</sup> (see page 16, "Public Participation"). FGC should also consider removing additional barriers to participation such as requiring a thorough understanding of published policy documents (ex. requests for comments to reference specific Recommendation numbers from Table 6 of the DMR Report) or brief windows of time to queue for comments.
- Clarity, well in advance of meetings, of the expected scope of comments so that the public has adequate time to prepare and can tailor comments most efficiently within the broader DMR process. Public engagement would greatly benefit with longer lead times for posted agendas and supplemental information.

These actions will help ensure that more Californians have the opportunity to weigh in on the state's MPA network and its management. Having expanded public participation will also provide the Commission and the Department a more representative sampling of perspectives from the wide array of Californians who use and appreciate our ocean, and this will lead to a more accurate understanding of what Californians want for the future of our ocean.

\*\*\*

Our organizations understand that the adaptive management process will be resource and time-intensive. We are eager to support the Commission, Department, OPC and other agencies in this process however we can. To do so, we urge the agencies to be candid about their resource needs. We also note that conducting meaningful Tribal outreach and diversifying stakeholder outreach is demanding—we are eager to support the agencies in this work and willing to support efforts to modernize meeting outreach, procedures and protocols to ensure safe, adequate participation.

---

<sup>8</sup> California Coastal Commission, Environmental Justice Policy, Adopted March 18, 2019, [https://documents.coastal.ca.gov/assets/env-justice/CCC\\_EJ\\_Policy\\_FINAL.pdf](https://documents.coastal.ca.gov/assets/env-justice/CCC_EJ_Policy_FINAL.pdf)

We appreciate the Commission's commitment to protect California's invaluable coast and ocean and we look forward to future collaborations to strengthen and expand our state's MPA network through the DMR process.

Sincerely,

Anupa Asokan  
Senior Oceans Advocate  
Natural Resources Defense Council

Karla Garibay Garcia  
Senior Conservation Manager  
Azul

Laura Deehan  
State Director  
Environment California

Jules Jackson  
Founder  
Coastal Defenders

Toby Ngo  
Save our Seas Campaign Coordinator  
CALPIRG Students

Lisa Gilfillan  
Ocean Conservation Manager  
WILDCOAST

**From:** rikki@californiamsf.org  
**Sent:** Friday, July 7, 2023 3:47 PM  
**To:** FGC  
**Subject:** Letter of Comment for MRC meeting on estuaries  
**Attachments:** Copy of Comments on estuaries for DMR.docx

**WARNING:** This message is from an external source. Verify the sender and exercise caution when clicking links or opening attachments.

Thank you.

Regards, Rikki

Rikki Eriksen, Ph.D.  
California Marine Sanctuary Foundation  
Marine Ecologist  
Director of Marine Programs  
831 331 6113

*Unless someone like you  
Cares a whole awful lot  
Nothing is going to get better  
Its simply not....  
Dr. Seuss, The Lorax*



Please note change of last name from Grober-Dunsmore.

Please visit the California MPAs website for more information and resources to support marine protected areas education and outreach: [www.californiampas.org](http://www.californiampas.org)

><(((°>` . . . . ° ^ ^ . . . . ° ^ ^ . . . . ,><(((°>



**CMSF**

CALIFORNIA  
MARINE  
SANCTUARY  
FOUNDATION

west  
marin  
environmental  
action  
committee



July 7, 2023

President Eric Sklar  
California Fish and Game Commission (FGC)  
Marine Resources Committee  
Sacramento, CA 95814  
*Sent via electronic mail to: [fgc@fgc.ca.gov](mailto:fgc@fgc.ca.gov)*

**Re: Support for Agenda Item # 5**

Dear President Sklar and Commissioner Murray,

As organizations dedicated to the study and effective management of estuarine ecosystems, we urge the Fish and Game Commission (FGC) to prioritize adaptive management needed to adequately protect these critical ecosystems. We submit this letter to provide comments on adaptive management following California's first Decadal Management Review (DMR) of the state's MPA Network, with a specific focus on estuarine ecosystems. Often-overlooked is the incredibly biodiverse network of **estuaries, marshes, coastal wetland lagoons** distributed along the vast California coastline. These ecosystems are essential feeding, breeding, and nursery habitats. Ensuring that our globally-heralded MPA Network is robust and ecologically functional, including protecting essential estuarine ecosystems, is crucial to the health of California's ocean. Unfortunately, we have already lost many of our estuarine ecosystems, which necessitates the protection of those remaining, which will also aid in climate adaptation.

We suggest the following to achieve DMR recommendations (particularly DMR #4, 5, and 25) found on page 109-117 of the DMR report.

1. We urge the FGC to **evaluate whether the existing network of 24 estuarine MPAs is sufficient and appropriate for protecting the suite of environmental services provided by these unique California ecosystems**. While California has 534<sup>1</sup> documented estuaries, only 20 of these estuaries currently include MPA protections. The 2022 EMPA report documents the lack of regional or system specific considerations (large vs. small, rivermouth vs. open, salt vs. brackish) regarding the current population of estuaries with MPA designation, limiting MPA representation of the entire population of estuaries found in California. We encourage FGC to provide necessary leadership to document existing state and local estuary conservation and management efforts and work with other state agencies to establish a framework to expand estuarine management and protection to other underrepresented and degraded systems.
2. Support standard data collection techniques necessary to document current estuarine ecosystem condition and resource management success. The recently developed estuary marine protected

---

<sup>1</sup> Heady, W.N., K. O'Connor, J. Kassakian, K. Doiron, C. Endris, D. Hudgens, R. P. Clark, J. Carter, and M. G. Gleason. 2014. An Inventory and Classification of U.S. West Coast Estuaries. The Nature Conservancy, Arlington, VA. 81pp.

area (EMPA) monitoring system offers a standard systematic program to track the health of these vital ecosystems and can be used to help drive statewide as well as estuary specific conservation and management decisions. Furthermore, because of limited funding, EMPA monitoring has focused on those 20 estuaries and a small set of reference sites, which limits our capacity to make systematic statewide decisions regarding the current state of estuarine resources or document a clear understanding of the status, health, and adaptive process to drive management measures that may be required to ensure the long-term functioning of these ecosystems. We stress that resource protection, standard monitoring, and focused research must be expanded to include a larger more representative suite of California's estuaries.

3. California's estuaries face a wide range of impacts. **Regulations and management efforts inside existing and new (see below) estuarine MPAs should be developed** based on systematic site evaluations aimed at reducing site specific stressors to these essential ecosystems. For each estuary, new management efforts directed to reduce key resource impacts must be identified and implemented with regular monitoring. A focused effort to coordinate resource protection and management among regulatory and granting agencies would better support the success of both programs.
4. We urge the FGC to evaluate increasing the **range of estuaries designated as MPAs to provide necessary protections and management actions for a more representative set of estuarine habitats**. In addition, criteria to prioritize designation of new estuarine MPAs should account for: a) regional representation of systems within north, central and south, b) estuary type (embayment, bay, lagoon, riverine), c) current conditions and adjacent stressors, and d) proximity to other estuaries and offshore MPAs.
5. We strongly recommend **co-locating MPAs in estuarine ecosystems with water quality protections such as ASBS (Areas of Biological Significance) designations** where water quality degradation is a key concern to better address the real suite of stressors that act upon these systems. We also encourage the FGC to work closely with the State Water Quality Control Board to pursue adding water quality protections to existing MPAs.
6. We recommend that **FGC coordinate with other state agencies (such as State Parks, the Ocean Protection Council, State Coastal Conservancy, and Coastal Commission)** with coastal resource protection mandates to **establish funding mechanisms** directed at addressing site specific management actions called for through the EMPA/Reference site monitoring efforts.
7. Finally, we recommend **focus on DMR #25 to develop and implement climate change research** and monitoring priorities and metrics for California's MPA network. For the network to truly perform as designed, we must understand the impacts of a changing climate to identify viable alternatives and adaptation measures to protect our coastal ecosystems in the future.

We would like to thank the many state agencies, the Commissioners, and the countless individuals who help make our MPA network a reality and a resounding success. We look forward to working with the FGC and Department of Fish and Wildlife to strengthen and protect our California MPA network.

Sincerely,

Ashley Eagle-Gibbs, Legal and Policy Director  
Environmental Action Committee of West Marin

Ross Clark, Director  
Central Coast Wetlands Group

[Kevin O'Connor](#)

San Jose State University

Rikki Eriksen, Ph.D. Marine Programs Director  
California Marine Sanctuary Foundation

[Robert Mazurek](#), Director

California Marine Sanctuary Foundation

---

**From:** Penny Owens <penny@sbck.org>  
**Sent:** Friday, July 7, 2023 2:40 PM  
**To:** FGC  
**Subject:** RE: SB Channelkeeper Written Comments on FGC MRC MPA DMR  
**Attachments:** SB Channelkeeper support for prioritized recommendations for MPA DMR.pdf

**WARNING:** This message is from an external source. Verify the sender and exercise caution when clicking links or opening attachments.

Good Afternoon,

Please accept the attached file as Santa Barbara Channelkeeper's written comments on the upcoming Fish and Game Commission Marine Resource Committee July 20, 2023 Meeting, Agenda Item #5, Marine Protected Areas (MPA) Decadal Management Review.

Please don't hesitate to contact me at this email if you require any further information or have any questions.

Sincerely,  
Penny Owens  
Education & Outreach Director  
Santa Barbara Channelkeeper

714 Bond Ave  
Santa Barbara, CA 93103  
805-563-3377 ext. 4





714 Bond Avenue  
Santa Barbara, CA 93103  
tel: 805.563.3377  
info@sbck.org  
www.sbck.org

**BOARD OF DIRECTORS**  
Brad Newton  
President

Karen Telleen-Lawton  
Vice President

Walt Wilson  
Treasurer

Kathleen Rogers  
Secretary

Mimi deGruy

Ken Falstrom

Sherry Madsen

Nick Mucha

Jeff Phillips

Sarah Preston

Sarah Sikich

John Simpson

Robert Warner

**ADVISORY COUNCIL**  
Michael S. Brown  
President

David Anderson

Michael Crooke

Dan Emmett

Rae Emmett

Steven Gaines

Holly Sherwin

Jack Stapelmann

Carla Tomson

Robert Wilkinson



July 7, 2023

California Fish and Game Commission  
Marine Resource Committee  
715 P Street, 16th Floor  
Sacramento, CA 95814

**Re: Prioritized Recommendations for Agenda Item # 5 Marine Protected Areas (MPA) Decadal Management Review**

*Submitted electronically via [fgc@fgc.ca.gov](mailto:fgc@fgc.ca.gov)*

Dear President Sklar and Honorable Commissioners:

Please accept the following comments on behalf of Santa Barbara Channelkeeper and our members. Santa Barbara Channelkeeper, founded in 1999, is a 501(c)3 nonprofit organization dedicated to protecting and restoring the Santa Barbara Channel and its watersheds. We write in support of the California Department of Fish and Wildlife's (CDFW) prioritized recommendations from the Decadal Management Review (DMR). Below are priorities that we particularly would like to express our support for.

**Near-term Priorities (Ongoing - 2 Years)**

Channelkeeper strongly supports the recommendations to improve tribal coordination, justice equity, diversity and inclusion, and outreach and education. We also offer the following comments in response to the recommendations:

- Recommendation #4 (apply lessons learned from DMR to MPA Network & Management Program)
  - At this time, Channelkeeper strongly supports, at a minimum, maintaining the existing MPA Network.
  - If there are proposed changes to the MPA Network, a framework needs to be developed by CDFW where the proposed changes are filtered and reviewed by policy and resource experts. This framework should incorporate all of the MLPA goals.
- Recommendation #21 (enhance MPA citation record keeping and data management)
  - Incorporate technology, such as eFins, comprehensively to better track citation and compliance data.

**Mid-term Priorities (2 - 5 years)**

Channelkeeper supports the mid-term priority recommendations to improve tribal coordination and capacity to participate in MPA management activities. We also support the recommendations for continued work on justice equity, diversity, and inclusion. We also offer the following comments in response to the recommendations:

- Recommendation #14 (to develop community science strategy)
  - Community science programs are a great resource, cost effective, and provide an opportunity to leverage community engagement.
- Recommendation #22 (to increase information gathering of MPA violation prosecutions)
  - Channelkeeper supports moving this to a near-term priority.
  - Ensuring that the Law Enforcement Division (LED) is strongly supported and has necessary resources to enforce MPA regulations is critical to the success of the MPA Network.
- Recommendation #25 (climate change priorities and metrics)
  - Channelkeeper supports moving this to a near-term priority as our coast and ocean and the MPA Network are already being impacted by climate change.

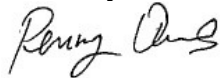
### **Long-term Priorities (5 - 10 years)**

- Recommendation #19 (to create and implement an MPA Enforcement Plan)
  - Channelkeeper supports moving this to a mid-term priority.

We acknowledge and greatly appreciate the time and efforts the California Fish and Game Commission, the Department of Fish and Wildlife, and many other partners have dedicated to the Decadal Management Review and in support of California's MPA Network. Channelkeeper looks forward to supporting the DMR recommendations as they are implemented in the future.

Thank you for your consideration of our comments.

Sincerely,



Penny Owens  
Education and Outreach Director

**From:** Greg Helms <[ghelms@oceanconservancy.org](mailto:ghelms@oceanconservancy.org)>  
**Sent:** Friday, July 7, 2023 4:16 PM  
**To:** FGC  
**Subject:** comment letter: MRC 7/20 Item 5 MPA decadal review  
**Attachments:** 2023.07 CA MPA DMR comments.pdf

**WARNING:** This message is from an external source. Verify the sender and exercise caution when clicking links or opening attachments.

Hi Please accept the attached letter from Ocean Conservancy to the FGC MRC on the MPA DMR. Thanks and have a great day. g



Greg Helms  
Manager, Fish Conservation Program  
1528 Castillo Street  
Santa Barbara, CA 93101  
O: 805.963.4332  
Mobile: 805.886-8645  
[ghelms@oceanconservancy.org](mailto:ghelms@oceanconservancy.org)  
[Web](#) | [Facebook](#) | [Twitter](#)

725 Front Street  
Suite 201  
Santa Cruz, CA 95060



831.854.4630 Telephone  
831.425.5604 Facsimile  
[www.oceanconservancy.org](http://www.oceanconservancy.org)

July 7, 2023

California Fish and Game Commission  
Marine Resources Committee  
715 P Street, 16th Floor  
Sacramento, CA 95814

**RE: Marine Resources Committee July 20, 2023 Meeting Agenda Item 5 - Marine Protected Areas (MPA) Decadal Management Review**

*Submitted electronically via: [fgc@fgc.ca.gov](mailto:fgc@fgc.ca.gov)*

Dear Chair Sklar, Commissioners, and Commission Staff:

Ocean Conservancy<sup>1</sup> welcomes the inaugural decadal evaluation of California's marine protected area (MPA) network as a longstanding participant in the historic process to design, enact and implement these critical tools for ocean biodiversity conservation. We appreciate the extensive work of the Commission and the Department of Fish and Wildlife both in stewarding these young MPAs and in guiding the decadal management review (DMR).

Current and recent past conditions affecting the nearshore ocean on the West Coast have only deepened the rationale for a coast-wide, connected, and lasting network of protected areas that fully represents the State's marine habitats and more comprehensively secures the benefits of our marine environment. Since regional stakeholder groups designed MPAs in four sections of the coast, wildlife crises and biodiversity concerns have continued (e.g. *pycnopodia* seastars, abalone) and climate change's forecast effects have been realized both in destructive marine heat waves and in drastic range shifts in species ranging from market squid to humpback whales. Within California's communities as well, calls for broader perspectives and more inclusive processes and outcomes from communities of color and from tribes and tribal groups bear significantly on MPA management. These trends argue for continued and enhanced MPA protections and new efforts to deepen the role of diverse communities in their stewardship. To that end, we offer the following recommendations and input for the DMR discussion at the Marine Resource Committee on July 20.

---

<sup>1</sup> Ocean Conservancy is a non-profit organization that educates and empowers citizens to take action on behalf of the ocean. From the Arctic to the Gulf of Mexico to the halls of congress, Ocean Conservancy brings people together to find solution for our water planet. Informed by science, our work guides policy and engages people in protecting the ocean and its wildlife for future generations.

### CDFW's Prioritized List

The Department of Fish and Wildlife's (CDFW) [draft prioritized DMR recommendations](#) serve as a realistic basis to structure phased action for continued MPA network management and administration in the near, mid, and long term; they broadly capture the essential themes offered by stakeholders, community organizations and other key MPA administrative partners, and set realistic timeframes for progress across the major pillars of MPA network management.

### Regulatory and Review Framework

Recommendation 04. *Apply what is Learned from the first Decadal Management Review to support proposed changes to the MPA Network and Management Program.* We believe the current status of network implementation and the information in the DMR can support consideration of a limited set of proposals for change. Since modifications to individual MPAs will likely affect aspects of the network itself, however, we support consideration of a single, coastwide set of proposed changes rather than reviewing individual petitions. This approach would best support the essential step of evaluating potential changes against the MLMA goals and objectives. To address key themes raised in the DMR process, the Commission's interest in centering climate resilience in considering MPA change proposals, and recent ocean conditions raised earlier in this letter, we offer the following suggested considerations for Commission evaluation of proposed changes:

- Enforcement – Most changes to established MPA regulations will tend to burden enforcement capacity and efforts to ensure compliance. Changes that simplify these regulations will minimize these burdens or potentially even serve as tools to facilitate efficient compliance and enforcement efforts. For example, confirming compliance with State Marine Reserve regulations entails only observing, often feasible from a distance, whether fishing gear is deployed. More complex MPA regulations require more proximate, time consuming and uncertain efforts with greater opportunity for evasion<sup>2</sup>. Changing the boundaries of existing MPAs will pose similar challenges – simplifying boundaries by better linking them to known landmarks or habitat features could benefit enforcement, while re-negotiating decade-old boundary decisions may result in lost investment in MPA awareness and compliance. MPA modifications should advance and extend the ability of limited enforcement capacity to secure compliance with the network, consistent with draft near term priority recommendation 20 – Increase enforcement capacity.

---

<sup>2</sup> Regulations pertaining to transit across and operation within MPAs at the Channel Islands required fishing gear to be “stowed and not available for immediate use.” Update MLPA regulations changed this to require simply that gear not be deployed in the water. This change has likely affected the feasibility and efficiency of distant confirmation of SMR regulation compliance.

- Key habitat representation –Recognizing that establishing MPA and network performance targets is proposed as a long-term priority, it is essential that the core goal of habitat representation within and among MPAs is retained and, where appropriate, adjusted to ensure all marine habitats are protected in replicate within each study region. The drastic loss of kelp forest habitat, particularly of bull kelp, raises concerns about the representation of this habitat in the network and should be a focal concern in considering network modifications that implicate areas of existing or historic kelp canopy. As one of most productive and diverse of the nearshore marine habitats, kelp forests are essential drivers of biodiversity, ecosystem function and wildlife abundance. Protecting these habitats adequately and, as appropriate, dynamically is a powerful and fundamental nature-based ecosystem protection tool.
- Climate resilience –Increasing climate resilience and sustaining biodiversity are interrelated and interdependent challenges, as reflected in California Governor Newsom’s [Executive Order](#) addressing these pressing concerns together. MPAs can support climate resilience and biodiversity because they promote more, larger and more diverse wildlife better able to cope with change<sup>3</sup>. MPA networks of large geographic scale may apply these benefits broadly enough to provide “stepping stones” of protection against climate shifts and disturbance<sup>4</sup>. Carbon sinks, or habitats that absorb and store atmospheric carbon, are also recognized as a potential tool in mitigating climate change. Ocean and coastal carbon sinks are gaining recognition under the term “blue carbon” as an especially potent potential nature-based climate mitigation tool.

Policy and research about best practices and management to optimize MPA networks for climate benefits will continue to grow, and the draft prioritized recommendations present important steps to link MPA network management to this emerging body of research and practice. Positioning California’s MPA network to best support climate resilience in the near term would emphasize proposed modifications that strengthen the network’s role in providing climate stepping stones and ensuring inclusion of significant and representative *blue carbon* habitats. Habitats that contribute blue carbon value include not only kelp and other macroalgae communities, but estuaries, salt marshes and other wetlands. Optimizing these habitats’ value in climate mitigation will entail work by agencies well beyond the Commission and CDFW (per Priority 09), but early Commission action to maintain or include these habitats in the network can help preserve options for future action.

### Diversity and Inclusion

---

<sup>3</sup> <https://onlinelibrary.wiley.com/doi/10.1111/gcb.16109>

<sup>4</sup> [https://www.opc.ca.gov/webmaster/ftp/pdf/agenda\\_items/20210615/Item3\\_Climate\\_Resilience\\_and\\_Californias\\_MPA\\_Network\\_2021.pdf](https://www.opc.ca.gov/webmaster/ftp/pdf/agenda_items/20210615/Item3_Climate_Resilience_and_Californias_MPA_Network_2021.pdf) at page 21

We welcome and appreciate numerous efforts by CDFW and the Commission to increase outreach to and input from more diverse voices, as reflected in several draft DMR recommendation priorities and the FGC Justice, Equity, Diversity and Inclusion (JEDI) policy and work plan. The FGC Tribal Committee and CDFW Tribal Liaison are two additional important resources. With time and continued commitment, these efforts should begin to expand and deepen diversity of partnerships, engagement, and shared stewardship. Indigenous-led conservation initiatives are another important aspect of equitable and diverse resource protection, and we look forward to joining the Department and FGC in exploring these. Several agencies and organizations are also working to operationalize JEDI considerations in their efforts, and continuing to engage and partner with these groups may be the most fruitful way to build and maintain progress. Sanctuary Advisory Councils, the Marine Protected Area Collaborative Networks are two examples.

### Conclusion

Ocean Conservancy shares great pride in the globally significant conservation effort represented by the California Marine Protected Areas Network, and urges the Commission to learn from, improve and build upon ten years of successful experience managing for biodiversity and conservation. We support a statewide framework to consider and evaluate modifications to the network to sustain and extend the network's benefits to ocean wildlife and value to California communities.

Sincerely,

A handwritten signature in black ink, appearing to read 'G. Helms', with a stylized flourish at the end.

Greg Helms  
Manager, Fish Conservation Program  
Ocean Conservancy

**From:** Ray Hiemstra <ray@coastkeeper.org>  
**Sent:** Friday, July 7, 2023 4:18 PM  
**To:** FGC  
**Subject:** Orange County Coastkeeper Comments on MRC meeting agenda item 5  
**Attachments:** CA FGC\_MRC Comment letter 0723.pdf

**WARNING:** This message is from an external source. Verify the sender and exercise caution when clicking links or opening attachments.

Dear Chair Sklar and Commissioners,  
Orange County Coastkeeper is pleased to submit the attached comment letter on Agenda Item 5 for consideration at the July 20 Maring Resources Committee meeting.

Thanks,

Ray Hiemstra

Associate Director of Policy and Projects

Orange County Coastkeeper

Inland Empire Waterkeeper

714-850-1965 x 1003

[www.coastkeeper.org](http://www.coastkeeper.org)



3151 Airway Avenue, Suite F-110  
Costa Mesa, CA 92626  
Phone 714-850-1965  
Fax 714-850-1592  
[www.coastkeeper.org](http://www.coastkeeper.org)

July 7, 2023

Via email: [fgc@fgc.ca.gov](mailto:fgc@fgc.ca.gov)  
California Fish and Game Commission  
Marine Resources Committee  
715 P Street, 16th Floor  
Sacramento, CA 95814

**RE: Marine Resources Committee July 20, 2023 Meeting Agenda Item 5 - Marine Protected Areas (MPA) Decadal Management Review**

Dear Chair Sklar and Commissioners:

Orange County Coastkeeper is an environmental organization with the mission to protect the region's water resources, so they are swimmable, drinkable and fishable for present and future generations. We have been following the Marine Protected Areas Decadal Management Review since the public process began in February 2023 and have the following comments for you to consider at your July 20<sup>th</sup> meeting.

1. Process:

Additional clarity on the Decadal Management Review (DMR) process is needed for the public to understand and effectively participate in the process. At the March Marine Resources (MRC) hearing the public provided a wide variety of comments on how the process should work and what tasks should be carried out. At the April Fish and Game Commission (FGC) meeting the Commission directed the staff to present the MRC with prioritized options and they have done so. Looking at the timelines for the different priorities can give the appearance that the DMR will go on for a period of ten years or more. However, we assume the goal of the Commission is to select and approve the priorities for DFW action by a date in late 2023 or early 2024, at which time the public DMR process would end and the prioritized actions would continue independently on their own timeframe. It would be helpful for the Commission and staff to make it as clear as possible how this process will play out so the public can plan for participation going forward.

2. Scientific Collection Permits

Improve the application and approval process for scientific collecting permits is listed as priority 17. We believe that this issue is something that should be a very high priority due to the necessity of the permits, the numerous comments about them and the (perceived) ability to accomplish this task in a short timeframe. This issue is particularly important to our organization and others that have active restoration and monitoring projects in MPAs that need the permits to continue.

3. Enforcement.

Create and implement a cohesive and actionable MPA Enforcement Plan is listed as priority 19. We believe that this issue must be given a higher priority due to its impact on the success of MPAs statewide. While this is a long term effort, we believe that significant progress can be

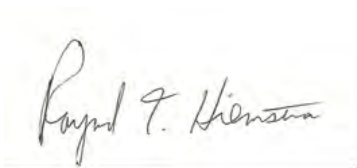
made in the short term with proper investment of time and funds. Specifically we would like to see the DFW leverage the large number of local enforcement personnel statewide to help increase MPA enforcement. Orange County can serve as an example, as our local enforcement agencies have stepped up to help with enforcement at different levels. Laguna Beach in particular has empowered its lifeguards and off beach enforcement personnel by prioritizing MPA protection in the city. The key is that MPAs as a priority for enforcement is clearly communicated. We think that the Commission and DFW can help with this by working directly with County and City staff to recognize MPA enforcement as an asset and prioritize it at the local level.

4. Petitions

We do not see the review of existing and future petitions on the priority list. This is an important issue and we think it deserves a spot on the list. Filing a petition is a very clear process that the public can understand and do on their own. That empowers them to be part of the process and gives them another chance to be heard on their specific issue. Lack of action (either denial or moving the petition on for more detailed review) gives the public the appearance they are being ignored. We suggest implementing a relatively quick initial review period to determine if the Commission will consider a petition at all. The state Water Resources Control Board can serve as an example. If an appeal is not accepted by the state board within ninety days of submission, it is automatically rejected. Many petitions likely lack the scientific or regulatory backing to be considered. These decisions should be made quickly so the public knows whether something will be reviewed or not.

In conclusion we thank the Commission and staff for the diligent work on this complex and new process. We think that there has been a sincere and effective effort to inform the public and facilitate public input into the process. We look forward to participating in the process going forward and educating the public on how they too can directly participate to make our MPAs the best in the world

Sincerely,

A handwritten signature in black ink, reading "Raymond F. Hinestosa". The signature is written in a cursive, flowing style. The first name "Raymond" is written in a larger, more prominent script, followed by "F." and "Hinestosa". The signature is contained within a thin black rectangular border.

Associate Director of Policy and Projects  
Orange County Coastkeeper

**From:** Emily Parker <eparker@healthebay.org>  
**Sent:** Friday, July 7, 2023 4:28 PM  
**To:** FGC  
**Subject:** Fish and Game July MRC Comment - MPA DMR  
**Attachments:** MPA NGO Coalition\_MPADMR\_FGCMRC\_Letter\_July 7 2023.pdf

**WARNING:** This message is from an external source. Verify the sender and exercise caution when clicking links or opening attachments.

Good Afternoon,

Please accept the attached document as formal written comment on Fish and Game Commission Marine Resources Committee July 20, 2023 meeting agenda item 5 – Marine Protected Areas (MPA) Decadal Management Review. Please do not hesitate to contact me if you have any questions or require any further information.

Best,  
Emily



**EMILY PARKER** | COASTAL AND MARINE SCIENTIST  
She/Her/Hers ([What does this mean?](#))

**Heal the Bay**  
1444 9th Street  
Santa Monica, CA 90401  
**T:** 310.451.1500 x 156 | **F:** 310.496.1902



**Confidentiality Note:** The information contained in this e-mail and any attachments to it may be legally privileged and include confidential information. If you have received this e-mail in error, please notify the sender immediately of that fact by return e-mail and permanently delete the e-mail and any attachments. Thank you.



July 7, 2023

California Fish and Game Commission  
Marine Resources Committee  
715 P Street, 16th Floor  
Sacramento, CA 95814

**RE: Marine Resources Committee July 20, 2023 Meeting Agenda Item 5 - Marine Protected Areas (MPA) Decadal Management Review**

*Submitted electronically via: [fgc@fgc.ca.gov](mailto:fgc@fgc.ca.gov)*

Dear Chair Sklar, Honorable Commissioners, and Commission Staff:

The twelve non-profit signatory organizations are dedicated to ocean protection in California, with a long history of working on marine protected area (MPA) management, research, compliance, education and outreach efforts. We thank the Fish and Game Commission (FGC), the California Department of Fish and Wildlife (CDFW), and staff for continuing to carefully advance the MPA Network Decadal Management Review (DMR) process. We agree overall with the priority actions and related timelines that have been outlined. We have participated in all aspects of the DMR and submit this letter to comment on the [draft prioritized recommendations](#) as well as suggest specific tactics for achieving these recommendations.

The following four goals are priorities to strengthen the MPA Network (Network):

1. Establish a science-based process for making Network changes
2. Prepare the Network to be climate ready
3. Expand diversity of voices in MPA management
4. Improve enforcement to properly support the Network

## #1. Establish a science-based process for making Network changes

Any changes to the MPA Network must be backed by strong science and support the ultimate, original goals of the Marine Life Protection Act (MLPA). Specifically, DMR Recommendation #4, below, should be **THE** top priority.

*Apply what is learned from the first Decadal Management Review to support proposed changes to the MPA Network and Management Program - DMR Recommendation #4*

FGC has stated that it plans to incorporate feedback from the DMR via a petition process. To effectively implement this process, we recognize the need for both clarity on the logistical nature of that process and clarity on the scientific framework that will be used. We suggest that FGC outline how it will receive and review petitions by incorporating a scientific framework that utilizes best available MPA science. Many of our organizations plan to participate in the petition process, and understanding what the process will look like will avoid inefficiency and conflict. A transparent petition review process should make clear that any changes are based on a scientific framework, to strengthen the MPA Network.

In developing the scientific framework to be used for review, we also suggest FGC and CDFW **identify ‘high risk areas’ where increased protection would be effective**, particularly given climate change impacts. High risk areas, such as habitats that are highly vulnerable to climate stressors (ex: bull kelp forests), areas with challenging enforcement needs or difficulties, areas with low compliance, and/or areas where excessive consumptive take must be identified. Identifying ‘high risk areas’ will help ensure that vulnerable areas get the protection they need to be effective in keeping with MLPA goals, and support the long-term viability of the Network. Such an effort will also reveal opportunities to provide overall net protection of the MPA Network. Potential tactics for protecting high risk areas may include modification of certain SMCAs to SMRs, and/or adjusting boundaries based on the findings of a high risk evaluation.

All of our MPAs are very likely facing some threat to their function as a result of cumulative impacts — to some extent, all habitats and biodiversity will be affected by elevated ocean temperatures, hypoxia, acidification, and pollution. While this Commission is not directly tasked with managing this wide scope of impacts, cumulative impacts undoubtedly threaten the viability of the Network. Therefore, we encourage FGC to work closely with partner agencies in the MPA Statewide Leadership Team to examine cumulative impacts in MPAs and to identify solutions to maximize Network resiliency.

## # 2. Prepare the Network to be Climate Ready

Climate change is causing widespread damage to ecosystems and fisheries that were not considered during the original design of the Network. California's 2014-2016 marine heatwave provides a striking example of how climate stress threatens our Network. This event correlated with ecological changes including a coast-wide toxic algae bloom, record whale entanglements, urchin overpopulation, 95 percent loss of bull kelp cover in areas of northern California (total since 2008), and a closure of the red abalone fishery.<sup>1</sup> In its Report on Climate Resilience and Marine Protected Areas, the Ocean Protection Council's Science Advisory Team calls this event a "climate stress-test, potentially indicative of future conditions under climate change." All six goals of the MLPA depend on achieving climate resiliency to buffer against these kinds of impacts. FGC has stated that it plans to embark on an adaptive management planning process that centers climate resilience, and we support this idea. As a first step, the petition process described in the last section should prioritize opportunities to build climate resilience in the Network.

We support the intention to research and monitor climate impacts captured in DMR Recommendation #25, below. However, research and monitoring priorities should be classified as a near-term priority rather than a mid-term priority, given the widespread impacts that climate change is already having on the Network.

*"Develop and implement climate change research and monitoring priorities and metrics for California's MPA Network" - DMR Recommendation #25*

If it is not feasible to classify this as a near-term priority for administrative reasons, FGC should explore the administrative barriers and how to address them. Regardless of administrative obstacles, climate change is already threatening the Network and must be addressed.

An adaptive management plan should further include such tactics as 1) Map, identify and designate high priority areas for conservation that are currently experiencing rapid climate impacts or that act as refugia, 2) Invest in restoration activities in key areas, 3) Evaluate ability to mitigate for loss of ecosystems like wetlands, estuaries and tidepools due to sea level rise, and 4) Collaboration with partner agencies to support state regulatory actions to prevent land-based sources of harm that exacerbate climate stressors (ex: wastewater discharges of nutrients to the ocean).

---

<sup>1</sup>[https://www.opc.ca.gov/webmaster/ftp/pdf/agenda\\_items/20210615/Item3\\_Climate\\_Resilience\\_and\\_Californias\\_MPA\\_Network\\_2021.pdf](https://www.opc.ca.gov/webmaster/ftp/pdf/agenda_items/20210615/Item3_Climate_Resilience_and_Californias_MPA_Network_2021.pdf)

Our organizations are eager to partner on these efforts. Many of our groups are working on the ground to evaluate threats and possible remedies including potential boundary and designation changes and/or restoration activities in key areas. For instance, the Environmental Action Committee of West Marin has identified a need for boundary and designation changes at Duxbury Reef to facilitate a more effective ecosystem-based approach to conservation, which includes making sure that the full reef habitat is protected. Our organizations are eager and ready to provide additional examples of needs and adjustments as a part of the petition process.

### **#3 Expand Diversity of Voices in MPA Management**

A continuous theme throughout the DMR has been a recognition of the need to expand voices in both management and leadership of our MPA Network. The MPA Network must incorporate local knowledge, account for diverse and changing values, promote equitable participation in decision making, and encourage and rely on efficient knowledge exchange between parties. Those values are reflected in many prioritized recommendations including DMR Recommendation #7:

*“Expand targeted outreach and education materials and events to under-represented user groups” - DMR Recommendation #7*

We recommend that FGC and CDFW work to aggregate diverse community knowledge and experience to inform changes to the DMR Network by seeking community-based input from the MPA Collaborative Network (MPACN) and other stakeholders working in communities with MPAs. The MPACN is comprised of thousands of educators, researchers, interpreters, anglers, business owners, and other ocean users that interact with the MPA network on a daily basis and their suggestions can help elevate management opportunities to keep MPAs effective. We encourage FGC to strongly consider stakeholder feedback in an incoming report from the MPACN of recommended minor modifications to the MPA network to fill management gaps and improve compliance.

Beyond the MPACN, there are thousands of stakeholders across California, such as community science networks like MPA Watch and LiMPETs, ocean businesses, Sanctuary Advisory Councils, educator networks, enforcement agency allies, Indigenous leaders and Tribal members, and more that have gleaned specific knowledge of the needs and inner workings of each MPA. Input from these community voices in the decision-making process will be critical, and we encourage FGC and CDFW to seek out and include this community-based input.

Additionally, FGC should approach any adaptive management action that addresses access and accessibility of MPAs through an equity lens. One way to begin doing this is to define equitable access and state a priority for it. Appendix A of the DMR Report includes

recommendations that indicate MPAs may “unfairly limit access.” The concluding section of the DMR offers an important correction to this characterization, stating that “MPA designations do not restrict public access, non-consumptive recreational experiences may be improved through better wildlife viewing opportunities.”

Though an MPA may limit “fishing access” for a subset of Californians, it may confer access that benefits a larger segment of the population. It is important to consider other cultural value systems and approach any decision-making or consideration of recommendations involving “access” with an understanding of direct and indirect social costs and benefits. These benefits may include opportunities for enhanced psychological well-being, increased food availability for low-income subsistence fishers, enhanced education opportunities, gained cultural space and local knowledge, and an enhanced sense of place.<sup>2</sup>

We also recommend the creation of an Equitable Inclusion Plan. While FGC has already adopted a Justice, Equity, Diversity, and Inclusion policy and work plan, the DMR process and MPA Management Program as a whole would greatly benefit from a specific Equitable Inclusion Plan dedicated to expanding equity and inclusion in MPA management and review. Community groups can feel welcome and better understand how they can engage with the DMR process as it moves forward if FGC and CDFW are transparent about their plans to include broad voices and update meeting procedures to minimize barriers to equitable participation, which can be pursued through a formal Equitable Inclusion Plan.

Making participation in FGC meetings easier can also immediately go a long way in bringing new voices to the table. We recommend making public comment less intimidating and easier, for instance by allowing virtual commenters to ‘raise their hand’ on zoom for a window of time beyond the two minutes that is currently offered at the beginning of an item. To further this recommendation, the FGC and staff could publish a schedule of public participation opportunities and associated decisions for the entirety of the DMR ahead of the November Marine Resources Committee meeting and provide additional guidance on the types of comments that will best inform each decision making moment within the process one month in advance of each meeting.

#### **#4. Improve enforcement to properly support the MPA Network**

A successful MPA Network relies on enforcement that is able to deter would-be violators, appropriately punish ‘bad actors,’ and promote equity. We support DMR Recommendation

---

<sup>2</sup> Michael B. Mascia and C. Anne Claus, “A Property Rights Approach to Understanding Human Displacement from Protected Areas: the Case of Marine Protected Areas,” Conservation Biology, January 2009, <https://doi.org/10.1111/j.1523-1739.2008.01050.x>

#20, below to Increase Enforcement Capacity because this is necessary to deter violations and to capture egregious non-compliance.

*“Increase Enforcement Capacity” - DMR Recommendation #20*

To enhance capacity beyond simply hiring more enforcement staff, there must be increased effort from CDFW to support local agency enforcement.

Community eyes on the water are another valuable asset to CDFW wardens in identifying possible violations and violation hot spots which increases the possibility of follow up by CDFW wardens available in those areas. Ongoing communication and regular sharing of reliable MPA related data and observances between CDFW and eyes-on-the-water collaborators can help build relationships focused on protecting our MPAs. In the process, the seeds of trust will grow between CDFW, NGOs, commercial and recreational fishers, and other government organizations who are regularly on the water as well as working within communities onshore. NGOs, docents, community scientists, rangers and lifeguards may not be citing MPA violations, but they can inform CDFW as to where possible violations are occurring and conduct outreach to encourage compliance with MPA regulations and possibly stop illegal activity in process. More CDFW boots on the ground or on the water are still needed to follow through on submitted observations.

Our groups also strongly recommend continuing to apply the administrative penalty to cases of egregious poaching violations. Unfortunately, poaching continues in California, including in MPAs, and has significant adverse impacts on recovering ecosystems and wildlife populations — particularly at a commercial scale. This kind of poaching penalizes law-abiding fishers who follow the rules, and illegal take gives an unfair business advantage to poachers relative to law-abiding fishing businesses. Strict enforcement of the Fish and Game Code, including MPA regulations, is absolutely critical to protect biological resources and to deter future violations. We urge the Commission to continue to apply its administrative penalty authority related to license and permit suspension and revocation, as appropriate.

Finally, we recommend being efficient and equitable with enforcement resources available. Enforcement, in and of itself, is a complex process with ongoing social justice concerns and a careful balance must be struck between curbing egregious, repetitive, and/or large-scale commercial violations while ensuring equitable and safe access for all communities. Working closely with both allied agencies and community experts in justice and equity work to implement the Equitable Inclusion Plan described above can also improve enforcement overall.

Many of our groups interact with thousands of community members every year in local and culturally distinct contexts and look to partner to advance these compliance measures to

diverse people who interact with the coast. This could include sharing of information, equipment, and educational and docent programming to complement existing enforcement efforts.

## Conclusion

We thank FGC and CDFW for the draft prioritized recommendations and reiterate our overall strong support of this prioritization process and the presented draft. Our organizations stand ready to assist the State in conserving our MPA Network, and we contain many dedicated, effective organizations who collectively reach tens of thousands of individuals and work closely at the local level, with culturally relevant and effective ways of promoting stewardship of our ocean. We look forward to partnering in the future to put these priorities into action.

Sincerely,

Rikki Eriksen, PhD.  
MPAs Director  
California Marine Sanctuary Foundation

Penny Owens  
Education and Outreach Director  
Santa Barbara Channelkeeper

Emily Parker  
Coastal and Marine Scientist  
Heal the Bay

Michael Quill  
Marine Programs Director  
Los Angeles Waterkeeper

Laura Walsh  
California Policy Manager  
Surfrider Foundation

Sean Bothwell  
Executive Director  
California Coastkeeper Alliance

Ashley Eagle-Gibbs, Esq.  
Legal and Policy Director  
Environmental Action Committee of West  
Marin

Karla Garibay Garcia  
Sr. Conservation Manager  
Azul

Lisa Gilfillan  
Ocean Conservation Manager  
WILDCOAST

Anupa Asokan  
Senior Oceans Advocate  
Natural Resources Defense Council

Ray Hiemstra  
Associate Director  
Orange County Coastkeeper

Laura Deehan  
State Director  
Environment California

**From:** Katelyn Sprofera <katelyn@californiamsf.org>  
**Sent:** Friday, July 7, 2023 4:32 PM  
**To:** FGC  
**Cc:** rikki@californiamsf.org; Robert Mazurek; Danielle Brown  
**Subject:** July 20 MRC Meeting Public Comment Submission  
**Attachments:** CMSF FGC Comment\_ Priority Recs.pdf

**WARNING:** This message is from an external source. Verify the sender and exercise caution when clicking links or opening attachments.

Hello,

Please accept our comments for Agenda Item #5: Marine Protected Areas (MPA) Decadal Management Review on behalf of the California Marine Sanctuary Foundation (CMSF).

Kind Regards,

Katelyn Sprofera and the CMSF team

--

Katelyn Sprofera  
Program Manager and Evaluation Specialist  
*California Marine Sanctuary Foundation*  
[CaliforniaMSF.org](https://californiamsf.org)  
[CaliforniaMPAs.org](https://californiaMPAs.org)



## FGC 7/20/23 Written Comment

July 7, 2023

President Eric Sklar, California Fish and Game Commission Marine Resources Committee  
Sacramento, CA 95814

*Sent via electronic mail to: [fgc@fgc.ca.gov](mailto:fgc@fgc.ca.gov)*

### **Re: Prioritized Recommendations for Agenda Item # 5 Marine Protected Areas (MPA) Decadal Management Review**

Dear President Sklar and Honorable Commissioners,

On behalf of the California Marine Sanctuary Foundation (CMSF), we submit this letter to support the prioritized recommendations for California's first Decadal Management Review (DMR) of the state's marine protected area (MPA) Network. In addition, we offer specific tactical approaches for strengthening MPA management.

California Marine Sanctuary Foundation's mission is to advance understanding and stewardship of coastal resources through creating a more resilient Pacific Ocean. [CMSF has remained an active contributor](#) to MPA enforcement, compliance, research, monitoring, and education and outreach since 2007.

Selected early on to lead the development of outreach and education resources for the Central coast MPAs, CMSF coordinated with partners statewide to develop the first MPA outreach materials, including developing many templates still in use today. In addition, CMSF leads innovative compliance, enforcement, and evaluation efforts through M2 Radar monitoring, eFINS, and evaluation of various approaches. CMSF staff have been integrally involved for over 15 years, participating on CDFW's Education and Outreach Steering Committee, supporting and contributing to the MPA Collaborative Networks outreach programs, actively coordinating with an array of NGO working groups, and addressing the outreach needs of diverse groups including consumptive and non-consumptive ocean recreationists, Tribes, youth, and others. Below we point to specific success stories and offer specific tactical strategies to assist California Department of Fish and Wildlife's (CDFW) prioritized recommendations in the coming years.

### **Near-term Priorities (Ongoing – 2 Years)**

**DMR Recommendation #16: Conduct more targeted outreach to specific audiences to connect stakeholders with coastal resources and to encourage stewardship and compliance with regulations.**



With over 15 years helping to lead MPA education and outreach for the California MPA Network, CMSF is in a unique position to offer specific recommendations for building upon collective successes in outreach and education. We highlight specific past successes and offer tactical strategies for building upon these effective approaches.

- **Invest in opportunities for targeted engagement with critical audiences.** Several success stories demonstrate the power and reach of directly engaging with key ocean users about local MPAs. Through a small grant to outreach to key ocean users, CMSF established informational and exchange sessions with fishing, diving and ocean businesses, reaching thousands of consumptive users and non-consumptive users. CMSF conducted an evaluation of the effectiveness of these presentations and Q & A sessions that were designed to disseminate accurate information and dispel myths, build trust, and create opportunities for involvement in MPA Management. Using existing training materials, CMSF recommends initiating an ongoing MPA training program and collaborating with local businesses and clubs, regularly facilitating two-way dialogue.
- **Improve mobile resources for regulatory information.** Explore interim ways of partnering with successful and popular mobile applications that allow anglers access to critical locational and regulatory information while on the water. While we understand CDFW is working diligently to develop a new mobile app, currently mobile apps such as Fish Legal are functional and widely popular within the angling community.
- **Develop resources to meet the user-specific needs.** Resources developed with the end-user in mind can be more impactful in conveying important MPA messaging (CMSF 2021). Highly effective examples of products developed to meet the specific needs of on-the-water groups include WildCoast's pocket guides, CMSF's waterproof brochures, Fish Legal or other mobile apps that help inform boaters on the water with compliance. Continued evaluation of resources is essential to improving communication mechanisms to ensure that they address audience needs.
- **Implement findings from the [CMSF MPA Education and Outreach Evaluation](#) and the [CMSF MPA Signage Evaluation](#),** which assessed the effectiveness of existing resources in increasing awareness of MPAs and improving compliance. Both research projects returned similar findings that outreach and education is not one-size-fits-all, and the outreach needs of Californians and its visitors vary depending on their interaction with the marine environment. CMSF suggests implementing the specific recommendations for improving these education resources outlined in each report.
- **Conduct low-cost outreach through social media platforms.** CMSF's MPA social media campaign was an outstanding success with the support of statewide partners in advancing MPA messaging through providing curated posts and targeting Californians using Meta advertising. In one year, this campaign reached 1.1 million unique social media users. Since the campaign ended, the campaign hashtag is still in use (#CalifMPAs), with over 7,013 posts reaching over 2.64 million unique users. We suggest supporting continuation of this campaign to share scientific findings and

important events, utilizing targeted advertising to reach specific priority audiences based on geography, interest, and more.

- **Understand and use audience-preferred strategic channels for communication.** Coastal users must be engaged through their preferred, frequented communication networks (anglers: fishing clubs, social media, magazines, online forums, podcasts). Preferred communication channels vary by user group. CMSF has extensive experience working with anglers, boaters, port captains, marinas and other on the water users. We suggest funding be directed to advertising and sharing information in popular outlets such as Western Outdoor News, Bloody Decks, and other highly visited venues. Given the vast reach of the NGO community, specific outlets and forms of communication can be offered to CDFW, to reach and engage those users critical to MPA success more effectively.
- **Disseminate MPA toolkits annually.** For certain user groups, printed materials are invaluable, and dissemination of MPA resources is needed on an ongoing basis. We recommend distributing MPA toolkits, containing maps, waterproof guides, posters, and other popular tools to high value locations to maintain relevant MPA resources in the field. CMSF disseminated nearly 1400 toolkits during 2018-2020; a huge benefit is the dialogue and interactions with store owners, harbor masters, dive shops, bait and tackle shops that helps to dispel myths and meaningfully engage key users about MPAs.

#### **Recommendation # 04: Apply what is learned from the first Decadal Management Review to support proposed changes to the MPA Network and Management Program**

California has now contributed considerably to the body of knowledge on MPAs through long-term monitoring and the first DMR Report, all with evidence of success. Adaptive management is our opportunity to further support and build the global understanding of MPA efficacy and best practices in MPA management. As we have noted previously, California's MPA network was not designed with the impacts of climate change and of precise future threats in mind, yet the adaptive management process is an opportunity to assess the network within California's current ecosystem and social contexts. We can help ensure the resilience of our Network—and thus, California's coast and communities—to climate change, its impacts, and pending new ocean industries, such as offshore wind energy development and aquaculture, if we take a precautionary approach to adaptive management. We recommend that CDFW examine cumulative impacts, as well as adaptive management to use new information from evaluation, scientific and monitoring studies that highlight protection needs in specific ecosystems, such as kelp forests, estuarine environments, and rocky reefs. Furthermore, CMSF suggests that CDFW evaluate the ability of our existing MPA Network to sustain ocean resources into the future,

#### **Mid-term Priorities (2 – 5 years)**

**Recommendations #15: Evaluate outreach needs, assess effectiveness of resources, identify, and pursue the most impactful and cost-efficient outreach tools for increasing MPA awareness and compliance.**

CMSF has demonstrated expertise in evaluating outreach needs (MPA Needs Assessment) and assessing the effectiveness of resources in improving awareness of MPAs and improving compliance with regulations.

- **Conduct an assessment of outreach needs.** In 2018, CMSF released the [California MPA Education and Outreach Needs Assessment](#). The report highlights findings from the assessment used to detect discrepancies between expectations and current offerings, allowing identification of priority needs, problems, and opportunities to fill gaps. This work showcased the importance of conducting assessments to better understand audience-specific needs. With years passed since the last, CMSF recommends investing in a second assessment to shed light on the current state of MPA education and outreach, and develop strategies to overcome and resolve key issues across the state.
- **Continually assess the impact of MPA outreach resources among target audiences and modify resources based on findings.** CMSF conducted research assessing the impact and effectiveness of [MPA brochures, trainings, a social media campaign](#), and [MPA signage](#) in California. Each report features a cadre of recommendations for improving these resources to meet audience-specific needs. CMSF recommends routinely assessing the value of MPA outreach materials and implementing changes to better address audience-specific needs. Once changes are implemented, follow up studies and focus groups can be used to ensure audience-specific and site-specific needs are being addressed.
- **Identify violation hot spots for site-specific and user-group specific education and outreach.** Hot spots can be targeted with specific outreach (signage, volunteer presence, etc.) to address site-specific and audience-specific needs.

**Recommendation #22: Invest in improving understanding of the human dimensions of MPAs and develop a human dimension working group and research agenda.**

While much is known about the ecological components of California's MPAs, the human dimension aspect has been largely neglected. To build a better understanding of how ecological changes in the ocean will impact Californians CMSF recommends:

- **Convening an expert, interdisciplinary working group** to consult with the state on priority research areas. This working group should synthesize existing human dimension research on MPAs and climate change in California and beyond to determine knowledge gaps and priority research areas.
- **Conduct a baseline analysis of perceptions and social values** to identify culturally, spiritually, and aesthetically significant marine and coastal elements.



- **Assess Social Resilience Afforded by the MPA Network.** Identified elements should be mapped with ecological information from the MPA network to better understand human perceptions and values currently afforded protection by the MPA network.

**Recommendation #26: Consider climate change impacts from the outset of planning for monitoring MPA human dimensions.**

Little work has been done to understand how ecological changes in the ocean will impact social values and human resilience, greatly impeding our ability to predict how climate change will affect the ecological and human communities California's MPA Network was intended to benefit. Ecologically resilient marine systems facilitate social resilience, contributing to improved livelihoods, cultural, spiritual, and recreational values, place attachment, access to resources, and wellbeing outcomes. Protection of spiritually, culturally, and aesthetically significant habitats and species may provide benefits for the wellbeing of diverse communities. To address these critical gaps, CMSF recommends:

- **Model predictions of vulnerability of species, habitats, and social values to develop specific recommendations to preserve societal values of MPAs** and inform adaptive management. Findings that reveal how the MPA Network is benefiting key social resilience values, and recommendations for how to best protect these given future climate stressors will be critical to paving a path forward.

Directly engaging and offering meaningful opportunities for dialogue and input with key ocean users and other stakeholders is key to our Network Success. To that end, we highlight a few of these and offer ways for leveraging the hard work of many collaborating organizations to reach Californians. Community engagement is key.

We would like to thank state agencies, the Commissioners, and the countless individuals who helped make our MPA Network a reality and a resounding success. We appreciate the opportunity to comment on management of California's MPA network at this momentous milestone. The last ten years of management have begun to shift the course for our ocean from unsustainable practices towards adaptive, community-based leadership to protect our ocean for future generations. We look forward to working with the FGC and CDFW to continue to strengthen and protect our California MPA Network.

Sincerely,

California Marine Sanctuary Foundation

**From:** Michael Quill <mquill@lawaterkeeper.org>  
**Sent:** Friday, July 7, 2023 2:35 PM  
**To:** FGC  
**Subject:** LA Waterkeeper's Comment Letter for 7.20.23 MRC Meeting  
**Attachments:** LA Waterkeeper DMR Comments Submitted 7.7.23 for 7.20.23 MRC Meeting.pdf

**WARNING:** This message is from an external source. Verify the sender and exercise caution when clicking links or opening attachments.

Good afternoon,

Find attached LA Waterkeeper's comment letter for  
The July 20, 2023, Marine Resources Committee meeting to be held in Petaluma.

You may contact me directly at if you have any questions.

Sincerely,  
Michael

**MICHAEL QUILL, PhD**  
Marine Programs Director  
360 E 2nd Street, Suite 250  
Los Angeles, CA 90012  
@LAWaterkeeper





**July 7, 2023**

**California Fish and Game Commission  
Marine Resources Committee**

715 P Street - 16th Floor  
Sacramento, CA 95814

*Submitted electronically via: [fgc@fgc.ca.gov](mailto:fgc@fgc.ca.gov)*

**Marine Resources Committee July 20, 2023, Meeting Agenda Item 5 –  
Marine Protected Areas (MPA) Decadal Management Review**

Dear Chair Sklar, Honorable Commissioners, and Commission Staff:

Los Angeles Waterkeeper (LAW) has dedicated much of our Marine Program's effort to supporting the Marine Life Protection Act (MLPA) and connecting our community through our Marine Protected Area (MPA) Watch Boat-Based Survey program created in 2011 and on the water in January of 2012 when the So-Cal MLPA regulations went into effect.

During our first survey trip in January 2012, we realized we would have to alter the stealth survey protocol we had been instructed to follow and be more proactive in supporting CDFW's enforcement efforts during our surveys and prioritize public compliance with MPA regulations and especially became focused on supporting warden efforts while in the field and in the courtroom following up on citations they had written and were often being dismissed.

Our consistent eyes on the water presence conducting MPA Watch survey data and weaving on the water, in action and responsive MPA outreach offshore in and around our mainland LA County MPAs at Pt. Dume and Pt. Vicente/Abalone Cove. Our fishing focused perspective influences our suggested priorities that align with CDFGC's priorities that are enforcement focused listed below.

Also influencing our priorities are our long-time relationships with our fishing community built on our outreach efforts during the MLPA hearings and after the MLPA passed and our MPAs were established. LAW stepped into the divide between pro MPA NGOs and the anti-MPA fishing community to conduct outreach to bait and tackle shops and working with various fishing groups, including LA Rod and Reel, Marina Del Rey Anglers in the early days of the MLPA outreach effort connecting with our community and building relationships.

We are dedicated members of the MPA enforcement committee, the NGO MPA committee, the MPA Collaborative Network and we serve as Co-Chair of the LA MPA Collaborative along with colleagues from USC Sea Grant and Heal the Bay. LAW contributed a 10-year report for the DMR and participated and presented in Monterey at each of the three days of infamous DMR meetings in March of 2023. LAW is currently serving on various committees formed around the ongoing DMR responses we are addressing here.

LAW's MPA monitoring and outreach has always been focused on and around boating and fishing activity and inclusion of our systemically bypassed and underserved communities that have crewed our surveys. We support more focus on supporting the expansion of the attention given to non-fishing activities available at the coast and enhanced by the establishment of our MPAs.

LAW has contributed to and signed on to group comment letters from the MPA Collaborative Network, The California MPA Compliance Working Group and the MPA NGO Working Group. We support those comment letters and have teased out our response to CDFW's below.

#### **LAW Responses to CDFW Prioritized Recommendations #19, #20, #19**

##### **#20- Near Term - Increase MPA enforcement capacity:**

- **Direct funding toward more boots on the ground/water CDFW enforcement staff.**

CDFW operating at 33% of warden staff capacity is an ongoing base point of weakness in CDFW enforcement capacity needing action and funding.

##### **#22- Mid Term - Increase information gathering regarding MPA violation prosecutions and judicial outcomes.**

- **An adequate system of record keeping of citations issued and the status of those cases is and has been challenging, that challenge needs to be taken on finally.**

This is not news. CDFW record keeping and tracking of violation citations has long been an admitted CDFW overwhelm needing attention for many years and remains lacking.

##### **#19- Long Term - Create and implement a cohesive and actionable MPA Enforcement Plan.**

- **Include public disclosure of egregious commercial violations serves as invaluable outreach and education tools.**

Cited MPA violators are often untraceable in any publicly accessible formats. For those who violate MPA regulations, threats of hefty fines, loss of gear, loss commercial vessel licenses, loss of fishing licenses and the right to fish may deter those tempted to poach.

Publicizing identities of convicted poachers, as well as the penalties and fines that were levied, serve as incredibly powerful outreach and education tools that can be used to lead to future MPA compliance.



- **Include more appropriate fines and suspensions and revoking of licenses of those committing egregious MPA violations.**

When fines for commercial fishing violations are low and suspension of licenses optional, the financial plus side of commercial poaching can outweigh the negative financial penalty. Without the threat of loss of income imposed the cycle of profitable poaching is likely to continue.

- **Increase CDFW's participation in and contribution to ongoing allied enforcement agency MPA regulation trainings.**

CDFW wardens sharing MPA enforcement knowledge and field experiences at allied agency MPA Enforcement trainings that we have participated in, have served to inform, and open ongoing lines of communication between CDFW and allied enforcement agencies around MPA regulations and share their experiences and their enforcement protocol in the field. These collaborations build relationship foundations on which ongoing collaborative relationships with our diverse and divided community can be built.

We are grateful for the opportunity to be part of this movement and to have the opportunity to submit these comments.

Sincerely,

A handwritten signature in black ink, appearing to read "Michael Quill", with a stylized, cursive script.

**MICHAEL QUILL, PhD**  
Marine Programs Director  
360 E 2nd Street, Suite 250  
Los Angeles, CA 90012  
@LAWaterkeeper



**From:** stephen pacetti <[REDACTED]>  
**Sent:** Sunday, June 18, 2023 11:46 AM  
**To:** FGC  
**Cc:** action@g2kr.com  
**Subject:** Kelp Restoration - Input for the July 20 meeting

**WARNING:** This message is from an external source. Verify the sender and exercise caution when clicking links or opening attachments.

## California Fish and Game Commission, Marine Resources Committee

Dear Commissioners:

I am a scuba diver who, over the past 14 years, has seen much of our kelp forests in MPAs disappear before my eyes. I feel the best pathway for kelp restoration and protection in Marine Protected Areas is via three of the CDFW recommended actions in the Draft prioritized recommendations from California's Marine Protected Area Decadal Management Review short term (0-2 year) tier.

04. Apply what is learned from the first Decadal Management Review to support proposed changes to the MPA Network and Management Program. - With kelp forest restoration must come protection. We learned from the DMR research that MPAs harbor greater biomass overall of fish and invertebrate species compared with outside the MPAs. Consequently, we must learn from this and prohibit fishing in the kelp forests we work so hard to restore, as kelp forests are fish nurseries. Furthermore, protected kelp forests will have a spillover effect that fishermen will take advantage of at MPA boundaries and in nearby areas. We can restore marine communities and create better fishing opportunities with a productive kelp ecosystem.

11. Update the MPA Monitoring Action Plan framework to improve and sustain a cost-effective long-term monitoring program, including guidelines to ensure monitoring consistency and sustainable funding. - With restoration must come monitoring to ensure that we have confidence in the outcome. Long-term data is precious and valuable. For our long-term data to have integrity, we must assure that our monitoring methodologies are robust and science-based. We can improve resource utilization and optimize our methods by use of independent researchers in conjunction with academic sources. Reef Check is our monitoring partner for multiple Kelp Restoration projects. They bring needed manpower and much practical know-how on running robust and efficient marine monitoring programs. However, Reef Check struggles yearly to obtain funding for their critical very long-term efforts. Citizen Science data is sound, involves the community, and produces data with a granularity and long-term scope not generated by other sources. For these reasons it needs to be valued and supported annually.

18. Utilize the California Ocean Protection Council's (OPC) Restoration and Mitigation Policy to develop a framework to evaluate and approve appropriate restoration and mitigation actions within MPAs and MMAs. - OPC's Strategic Plan, objective 3.2 is to Protect and Restore Kelp Ecosystems. According to Michael Esgro, Senior Biodiversity Program Manager & Tribal Liaison at the 4/24 OPC meeting, "We believe in this as a policy and we're just figuring out the details."

Sincerely,

Stephen Pacetti



**From:** Eric Praske <[REDACTED]>  
**Sent:** Thursday, June 29, 2023 7:55 PM  
**To:** FGC  
**Subject:** MPA Decadal Management Review - Public Comment  
**Attachments:** MRC 072023 - Agenda Item 5 - signed.pdf

**WARNING:** This message is from an external source. Verify the sender and exercise caution when clicking links or opening attachments.

Commission Staff,

I am submitting the attached letter, regarding agenda item 5, for consideration ahead of the MRC meeting on July 20<sup>th</sup>.

Regards,  
Eric Praske

Dear California Fish and Game Commissioners,

Thank you for the opportunity to comment on the MPA Draft Prioritized Action List. I am a Laguna Beach resident and ocean paddleboarder who has witnessed the positive impact that the Laguna Beach MPA has had on the ecosystem and local economy.

I would like to begin by stating that I concur regarding the order in which DMR recommendations have been prioritized. However, I would like to bring to your attention some important considerations for the near-term priorities as discussed below.

Recommendation #4 - I support the consideration of limited changes to the MPA Network, provided that these changes are backed by scientific evidence and align with California's 30x30 goals. However, as SMRs and no-take SMCAs comprise less than 10% of state waters, it is paramount to preserve the integrity of these MPAs. The DMR does not present any evidence that justifies weakening or altering the protection status of no-take MPAs, particularly those in the South Coast region that have exhibited significant positive trends in biomass response ratios. Finally, all proposed changes, regulatory or otherwise, should be discussed and agreed upon by the local MPA Collaborative, ensuring broad stakeholder support.

Recommendation #7 – I urge DFW to leverage existing programs to expand outreach and education to under-represented user groups. For instance, the Crystal Cove Conservancy has successfully partnered with sportfishing charters in Newport Beach to offer scientific research cruises to middle school students, focusing on MPAs.<sup>1</sup> Similarly, the Kids Creating Change program brings children from disadvantaged communities to learn about tidepools in the Laguna Beach MPA.<sup>2</sup> Programs that focus on children are especially impactful as they educate the next generation of fishermen about the value and importance of MPAs. I strongly encourage DFW to expand access to similar programs across the state.

Recommendation #10 – Improving partnership coordination is vital to the success of the MPA Network. The City of Laguna Beach has been an active partner in managing the Laguna Beach MPA, as evidenced by their recent comment letter opposing removal of the MPA, which had been requested by some fishermen.<sup>3</sup> In addition, Laguna Beach Lifeguards play a crucial role in educational and enforcement contacts, acting as a force multiplier for Wildlife Officers. The City also employs a dedicated Marine Protection Officer who serves as a liaison with DFW, the MPA Collaborative Network, and other agencies. I urge you to continue fostering these partnerships to effectively protect and enhance California's MPA Network.

Recommendation #16 - I fully support targeted outreach efforts to stakeholders aimed at promoting stewardship and compliance with MPA regulations. In the Laguna Beach MPA, there are robust outreach initiatives in place, such as signage and the presence of tidepool docents and educators, which effectively engage beachgoers. However, it is important to recognize that these forms of outreach are not effective for individuals that access MPAs via the ocean. There is a need for increased outreach in harbors to improve compliance within the boating community, as boaters often cite the lack of buoys

---

<sup>1</sup> <https://www.latimes.com/socal/daily-pilot/news/story/2023-06-10/students-explore-marine-protected-area-turn-into-scientists-on-world-ocean-day>

<sup>2</sup> <https://behindthebadge.com/trip-laguna-beach-proves-big-splash-grads-ocfjcs-kids-creating-change-program/>

<sup>3</sup> Letter from Mayor Bob Whalen, City of Laguna Beach to the MRC. March 1, 2023.

and markers to denote MPA boundaries. Outreach efforts should focus on educating boaters about the ability to display MPA boundaries on marine navigation systems.

Thank you for considering my comments and suggestions. Your dedication to the preservation and enhancement of California's MPA Network is appreciated.

Sincerely,

A handwritten signature in black ink that reads "Eric Praske". The script is fluid and cursive, with the first letters of the first and last names being capitalized and prominent.

Eric Praske  
Laguna Beach

**From:** Mark Smith <mark@smithpolicygroup.com>  
**Sent:** Friday, July 7, 2023 3:41 PM  
**To:** FGC; Cornman, Ari@FGC; Miller-Henson, Melissa@FGC  
**Cc:** Mark Smith  
**Subject:** Recreational angling groups comments for July 20th MRC meeting - Item 5 MPA Decadal Review  
**Attachments:** MRC-MPA Adaptive Management Recommendations to Fish Game Commission 07.07.2023.pdf; Final MPA Adaptive Management Recommendations to Fish & Game Commission.pdf

**WARNING:** This message is from an external source. Verify the sender and exercise caution when clicking links or opening attachments.

Ari, Melissa,

Attached please find comments from BHA, CCACAL, AFTCO, ASA, CSF, and NMMA on Item 5 for the upcoming July 20<sup>th</sup> MRC meeting.

Thank you,  
Mark



**MARK SMITH**

Smith Policy Group  
1001 K Street, 6<sup>th</sup> Floor  
Sacramento, CA 95814  
(916) 335-5072  
[mark@smithpolicygroup.com](mailto:mark@smithpolicygroup.com)  
[smithpolicygroup.com](http://smithpolicygroup.com)



**BACKCOUNTRY**  
HUNTERS & ANGLERS  
CALIFORNIA



*Via electronic delivery*

July 7<sup>th</sup>, 2023

Marine Resources Committee  
California Fish & Game Commission  
715 P Street, 16th Floor  
Sacramento, CA 95814

**RE: Agenda Item 5 Marine Protected Areas Decadal Management Review**

Dear Committee Co-Chairs Sklar & Murray,

Prior to the April 2023 Fish & Game Commission meeting, our coalition of conservation and recreational angling organizations submitted written comment and subsequently provided verbal input regarding the adaptive management recommendations for the Marine Protected Area Network brought forth by the Department of Fish and Wildlife in the Decadal Management Review (DMR).

According to the Department, we were part of the “more than 100 entities or individuals provided several hundred distinct comments” regarding the suite of streamlined and elevated recommendations from table 6.1 of the DMR.

However, not a single change was made to the 28 recommendations listed, despite numerous public comments requesting the list be modified in one way or another.

Specifically, many tribal representatives, fisherman, NGO representatives and community members mentioned the impacts that sewage leaks and pollution are having on our Marine Protected Area Network, yet it remains entirely absent from mention in the list of adaptive management recommendations. With increased levels of nitrates, bacteria and chemicals from the record amounts of sewage and runoff that have been released into California waters since the Marine Life Protection Act was passed, we remain concerned that there is not a higher level of emphasis or coordination on this issue as it pertains to the MPA network. This is underscored by recent increases in harmful algal blooms and deadly domoic acid outbreaks currently killing hundreds of dolphins and other marine mammals along the California Coast. NOAA has indicated that this latest die off is likely related to another outbreak of the Pseudo-

nitzschia algae which produces domoic acid, and scientists have long documented the link between algal blooms and increased run-off/pollution.

Further, we remain concerned that there remains no plan to study and analyze the efficacy of “no-take” versus “limited-take” MPAs and that the vast disparities across the network regarding methods of take are also not being analyzed. Rather, MPA managers appear willing to bypass a constitutional right to fish in certain areas without any scientific documentation justifying the rationale for doing so and often at the expense of Tribes, lower-income anglers, or historically marginalized communities. Given that the primary tool used by MPA managers is restricting access in some form, it is incumbent upon the Commission to evaluate whether those various access restrictions are achieving a conservation gain, if a similar benefit could be achieved with less restriction, or if an access restriction is necessary at all. Furthermore, with the dynamic nature of fisheries management and the numerous laws, agencies and councils dedicated to the task, one would assume that species specific regulations or restrictions would be adjusted to reflect species conservation successes or failures to ensure MPA regulations were up to date with current best practices and information.

We also remain concerned that the scope of the challenges before the FGC and CDFW are complex and multi-jurisdictional, with many key necessary actions outside of the control of either entity; we underscore the fact that the regulatory mechanisms available to the Commission may not be sufficient to address the root problems at hand:

- There is currently no formulated plan of engagement with counterpart agencies, state or federal, to drive desired outcomes that would have beneficial impacts on the results MPAs are seeking to achieve with regard to water quality and ecosystem health. Great examples include the persistent and ongoing toxic sewage and stormwater which continues to flow from Mexico into Southern California waters, directly impacting watersheds, the Tijuana River Mouth State Marine Conservation Area, and fisheries in and around the San Diego area in addition to the hundreds of millions of gallons of raw sewage that have been spilled in California waters since the passage of the MLPA. What is the plan to engage in the factors beyond the Commission’s control to procure solutions? How will the Commission provide recommendations through the MPA Decadal Review process to advocate for necessary actions that other agencies must take to achieve the Commission’s own objectives?
- Understanding that the Commission’s purview and authority is limited, and systemic issues such as water pollution, biodiversity loss, and oil spills require a multilateral coordinated effort to address, how will the Commission ensure that the levers of power at its disposal, namely restricting fishing access and opportunity, are not wielded unnecessarily without clear scientific rationale for doing so? Our groups are concerned that given the lack of alternative actions available to them, the Commission will resort to promulgating or proposing further restrictions on fishing, which may be unjustifiably punitive towards some communities while not addressing the root causes of the issues in the first place.

We strongly encourage you to reconsider the recommendations made in our letter, submitted in April and attached again now, for a more in-depth response to CDFW’s adaptive management recommendations for the DMR of the MPA network. Thank you in advance for taking the time to revisit our comments, and we look forward to a response directly addressing our concerns.

We also hope to discuss some of the following during the upcoming MRC meeting and strongly believe the conversation should not be limited to the 28 recommendations provided by CDFW.

Sincerely,

Devin O'Dea  
Backcountry Hunters & Anglers, California

Wayne Kotow  
Coastal Conservation Association of California

Larry Phillips  
American Sportfishing Association

Keely Hopkins  
Congressional Sportsman's Foundation

Rachel Fischer  
National Marine Manufacturers Association

Bill Shedd  
American Fishing Tackle Company



**BACKCOUNTRY  
HUNTERS & ANGLERS  
CALIFORNIA**



April 14<sup>th</sup>, 2023

California Fish and Game Commission  
715 P Street, 16th Floor,  
Sacramento, CA 95814

**RE: Discussion Item 25 Marine Protected Areas Decadal Management Review**

Dear President Sklar, Vice President Zavaleta & Commissioners,

With the Decadal Management Review (DMR) of California's Marine Protected Area (MPA) network completed, we look forward to supporting state agencies and MPA managers on the development of adaptive management strategies in accordance with the stated goals of the Marine Life Protection Act (MLPA). The following comments are focused on the adaptive management recommendations elevated by the California Department of Fish and Wildlife (CDFW) in Table 6.1 of the DMR. Specifically, we look at this suite of recommendations through the lens of the recreational angler, spear fisher or coastal gatherer and seek to expand upon this list to ensure all goals of the MLPA are met.

We applaud the following recommendations for adaptive management of the MPA network following the first ten years of MPA management and monitoring. While many of the elevated recommendations are laudable beyond the few highlighted here, the following are particularly pertinent to consumptive user groups.

- Build tribal capacity to participate in MPA management activities.
- Create a clear pathway to tribal MPA management.
- Improve state agencies' tribal engagement and relationship building efforts.
- Apply what is learned from the first Decadal Management Review to support proposed changes to the MPA Network and Management Program.
- Evaluate the accessibility of MPAs to various community groups.
- Develop a comprehensive community science strategy for MPAs and better utilize community science to supplement core monitoring programs.
- Develop a framework to evaluate and approve appropriate restoration and mitigation actions within MPAs and marine managed areas.
- Improve understanding of MPA Network effects on fisheries and fish stock sustainability and further integrate MPA monitoring data into fisheries management.
- Further integrate influencing factors into ecological and human study designs and interpretations of MPA performance.

We would like to highlight the following recommendations from Appendix A that were included in the Decadal Review Report, but not selected by CDFW to be prioritized for the next decade of the adaptive management cycle. We feel there are many valid recommendations provided by members of the public, the fishing community, tribes, and various other stakeholders that are left out of CDFW's "streamlined and elevated recommendations to prioritize."

- Conduct annual engagement meetings with stakeholders to inform them about MPA Management Program activities that inform decadal reviews.
- Define clear management reporting goals, including the scale of reporting at the statewide, regional, or local scale.

- Allow take of some migratory and pelagic species in select MPAs that currently do not allow it.
- Determine who may be disenfranchised from MPAs and ensure that MPAs do not unfairly limit access and/or opportunity.
- Improve CDFW's ocean sportfishing web map by making it accessible offline and without a cell signal. Add a notification feature to alert users when they enter an MPA.
- Integrate MPA information into commonly used travel apps such as Google Maps, TripAdvisor, and State Parks OuterSpatial.
- Research opening MPAs on a rotating basis for specific fisheries and continue monitoring for abundance and biodiversity in open and closed areas.
- Consider eliminating MPAs (or modifying them to allow limited take) when no-take MPAs do not provide evidence for improving abundance and biodiversity after credible monitoring.
- Explore and consider opportunities to nominate and designate new State Water Quality Protection Areas that provide additional water quality protections in MPAs.
- Analyze landings in pounds before and after MPA implementation for fisheries that have been identified as impacted by the MPAs.
- Consider amendments to water quality control plans and policies to further protect and improve ocean water quality and marine habitat.

While we remain enthusiastic about the suite of elevated recommendations, and optimistic about some of the additional recommendations put forth in Appendix A, we suggest several additional recommendations to the Department of Fish & Wildlife and the Fish & Game Commission to achieve the stated goals of the MLPA and to ensure robust support for the MPA network and the 30x30 initiative. While the MLPA does not include the regulatory authority to control water quality, it is imperative that state agencies managing the MPA network work to improve coordination with the State Water Quality Control Board and local counties to improve water quality along the coast. Expanding and upholding Areas of Special Biological Significance (ASBS) and State Water Quality Protected Areas (SWQPA) is essential to maintain clean waters and healthy ecosystems within MPAs since many MPA boundaries do not already qualify for these additional water quality protections. In California, hundreds of millions of gallons of raw sewage have been released into the ocean since the MLPA was passed and many millions of those gallons have been within MPAs or close to MPA boundaries. Within LA County alone, in 2021, 25 million gallons of sewage were released into the ocean from easily preventable infrastructure failures, and in January of 2023, 62 million gallons were released into Bay Area waterways.<sup>1</sup> Increasing coordination across agencies and management of pollutants is essential to ensuring robust and resilient fisheries and biodiverse ecosystems. We hope to see additional cooperation, monitoring and resources from the MPA Management process to address this systemic problem along the California coast.

Active management and stewardship of our natural resources is essential to ensuring healthy ecosystems in the face of human disturbance and climate disruption. We encourage managers of the MPA network to promote, plan and execute hands on restoration and stewardship of MPAs and to utilize and leverage the grassroots resources of the fishing community and volunteer networks where possible. For example, purple urchin (*Strongylocentrotus purpuratus*) populations increased 60-fold in 2015 along numerous stretches of the central and Northern California coast, and their numbers have continued to increase<sup>2</sup>, yet culling has not been permitted within MPAs, despite promising scientific research regarding culling at Tankers reef in Monterey. Due to the “physiological and dietary plasticity” of purple urchins and their ability to endure long after primary food sources are gone, purple urchin barrens can persist for decades after kelp forests are extirpated. Research has shown that removal of purple urchin barrens can be an effective tool to help recover decimated kelp forests which are essential to the health of the overall ecosystem, especially the abalone and red urchin fisheries.<sup>3</sup> We encourage MPA managers to permit and promote active restoration of MPA sites where applicable and to incorporate the angling and diving

---

<sup>1</sup> <https://www.kqed.org/news/11938273/our-worst-nightmare-as-storms-raged-millions-of-gallons-of-sewage-spilled-into-bay-area-waterways-streets-and-yards>

<sup>2</sup> Rogers-Bennett, L., Catton, C.A. Marine heat wave and multiple stressors tip bull kelp forest to sea urchin barrens. *Sci Rep* 9, 15050 (2019). <https://doi.org/10.1038/s41598-019-51114-y>

<sup>3</sup> Rogers-Bennett, L., Catton, C.A. Marine heat wave and multiple stressors tip bull kelp forest to sea urchin barrens. *Sci Rep* 9, 15050 (2019). <https://doi.org/10.1038/s41598-019-51114-y>

community as much as possible to achieve management objectives.

Spillover and the positive impacts to fisheries located in waters adjacent to MPAs are often referenced in association with the MPA network, and the initial science has demonstrated some strong positive correlations with spillover of invertebrates like lobsters to adjacent fishing grounds in select study areas. However, there remains an opportunity to further study this hypothesis and to promote scientific research that successfully documents spillover of targeted finfish across the MPA network. Some data from MPA monitoring along the Central California Coast indicated limited evidence of spillover from targeted finfish that were tagged and recaptured at a later point during the study period as evidenced from the Starr et al study: Variation in Responses of Fishes across Multiple Reserves within a Network of Marine Protected Areas in Temperate Waters:

As of July 2014, a total of 251 individual tag recaptures have been reported (Table 8). Tagged fishes were recaptured by commercial and recreational hook-and-line fishermen, commercial trap fishermen, SCUBA divers, and during our fishing surveys. Of all the tagged fishes recapture and reported, 71% were recaptured in the same site and grid cell as they were released, and 22% of recaptured fishes were caught within the same site but outside the original grid cell where they were released. Only 18 fish, or 7% of the recaptured fishes, were recaptured beyond the boundaries of the MPA or REF site in which they were released. The mean net distance moved by eight of nine species recaptured was less than half the length of the MPAs we studied.<sup>4</sup>

While we do not seek to draw conclusions regarding the overall merits of spillover to adjacent fisheries from the results of one study, we do encourage additional research to evaluate the impacts that MPAs have on local fisheries and fisheries as a whole, especially within the context of varied siting and disparate habitat types evidenced across the MPA network. Additional analysis and modeling of larval transport will also help MPA Managers to understand the extent of spillover and how the MPA network operates as a whole. As the Forcada study indicated, “We conclude that spillover effects are not a universal consequence of siting MPAs in temperate waters and they are related to the distribution of habitats inside and around MPAs.” (Forcada et al., 2009).

Understanding how spillover and larval transport occur across the spectrum of MPA habitat types will improve fisheries management and help to guide policies that balance biomass, species diversity and access for sustainable harvest. Improving our understanding and management of spillover and larval transport in various habitat types should also help to improve overall fisheries health and improve harvest rates. According to the DMR,

The aggregate CDFW data on estimated statewide catch from both private boat and CPFV anglers indicates that total catch has risen and fallen, but no consistent trend is apparent from 2006-2021, despite MPA implementation and various other changes in fishing regulations during this time (Figure 4.7). While district-level estimates of recreational catch and effort remain the priority for CDFW, work is underway to make the fine scale spatial data collected through CRFS available to inform management. Future analyses using catch location may reveal spatial shifts in fishing activity following MPA implementation.

We applaud the work of CRFS citizen scientists and are enthusiastic to see continued commitment to integrating CRFS data into adaptive management strategies. We also encourage expanded opportunities for citizen science data collection, especially with shore-based anglers and divers.

While the MPA network may benefit certain species, increase biomass and provide resiliency against a changing climate, these laudable goals and conservation benchmarks should not preclude access to harvest coastal resources where state and federal fisheries managers have demonstrated robust and resilient fisheries stocks without any current threat of overfishing or for those species where a targeted

---

<sup>4</sup> Starr RM, Wendt DE, Barnes CL, Marks CI, Malone D, et al. (2015) Variation in Responses of Fishes across Multiple Reserves within a Network of Marine Protected Areas in Temperate Waters. PLOS ONE 10(3): e0118502. <https://doi.org/10.1371/journal.pone.0118502>

fishery and active management would benefit the overall ecosystem balance. Anglers and consumptive users will often be one of the first and loudest voices to advocate for restrictions or even closures to ensure the sustainability of a fishery, as evidenced by the numerous fishing groups and organizations advocating for the closure of the 2023 salmon season following the data and dismal projections provided by the Pacific Fisheries Management Council and CDFW this year. However, a Californian constitutional right to fish seems to stand in conflict with the presumption that restriction of access is permissible where there is a lack of scientific evidence or data to justify the closure. Section 1, Article 25 of the California Constitution states, “the people shall have the right to fish upon and from the public lands of the State and in the waters thereof,” and the courts in *re Quinn* (1973) defined “public lands of the state” referenced in this article to include “access to fish in the inland streams and coastal waters of the state.”

Shore fishing, diving/spearfishing, kayak/boat fishing and coastal gathering are activities that reflect the broad spectrum of California’s diverse community and constitute a valuable resource for individuals across the economic divide to access nature and provide food for their families at the same time. We encourage state agencies and MPA managers to consider the numerous communities that enjoy the state’s many sustainable food resources when considering protections and recommendations that might unnecessarily exclude these groups. We feel that these considerations are in line with the California Natural Resources Agency’s Outdoors for All initiative and its commitment in the Pathways to 30x30 document to “implement projects that do no further harm or pose unintended consequences to historically marginalized communities.”<sup>5</sup> Specifically, we wish to highlight this issue with regards to the potential expansion of California’s MPA network which might restrict shore-based diving, foraging, and fishing access for all Californians – especially historically marginalized communities, communities of color and Native American tribes. From California’s Constitutional Right to Fish:

Anglers from historically marginalized communities may be less able to travel to fishing locations and are more likely to require shore access, as opposed to access from a boat. Anglers in communities like this need accessible shore-fishing, particularly given the importance of subsistence fishing in poorer communities. Moreover, fishing opportunities offer physical and psychological benefits to disadvantaged communities, not just access to fish as food.<sup>6</sup>

Scientific research and monitoring of the MPA network has helped to model and provide a better understanding of our ocean’s chemistry, composition, and fisheries. Anglers, conservationists, and preservationists alike celebrate this laudable accomplishment. Numerous studies have begun to yield valuable information about the impact of MPAs on fish biomass, biodiversity and more, however, large data gaps still exist that are essential to steering the long-term success of the network and support from coastal communities. While preliminary research suggests that fish and invertebrate biomass may be larger in some MPAs compared to reference sites, especially in the South Coast region, there remains a gaping lack of research and comparison between limited take and no-take MPAs, and this important disparity is scarcely referenced or addressed in the DMR. Furthermore, little has been said or brought forth regarding the great variance in methods of take allowed within limited-take MPAs, with no apparent effort from MPA managers to standardize or analyze efficacy of the regionally varied approaches. For instance, the DMR states:

Large data gaps exist in the human domain of the social-ecological system that defines the MPA Network. There are few human-focused studies that evaluate information related to MPAs over as large a geographic area as the California coast. Research with a social-ecological focus has only recently come to the forefront of MPA science and evaluation and been prioritized by the state. Furthermore, integrating MPA effects on fisheries and the fishing community continues to be a challenge because most fishery-dependent data is collected at a much coarser spatial scale relative to the size of California’s MPAs. California has the opportunity to be a leader in this field, and the next decadal management cycle will aim to more effectively balance the human and ecological domains.

---

<sup>5</sup> [https://resources.ca.gov/-/media/CNRA-Website/Files/Initiatives/30-by-30/Final\\_Pathwaysto30x30\\_042022\\_508.pdf](https://resources.ca.gov/-/media/CNRA-Website/Files/Initiatives/30-by-30/Final_Pathwaysto30x30_042022_508.pdf)

<sup>6</sup> Coats, Francis, and Karrigan Bork. “CALIFORNIA’S CONSTITUTIONAL RIGHT TO FISH.” *Environmental Law*, vol. 51, no. 4, 2021, pp. 1085–147. *JSTOR*, <https://www.jstor.org/stable/48647570>. Accessed 22 Mar. 2023.

While we agree with this statement from the body of the DMR, we feel it should be further emphasized in table 6.1 of elevated recommendations. We agree with the recommendation #12 from table 6.1, to “invest in improving understanding of the human dimensions of MPAs and develop a human dimensions working group and research agenda.” However, we feel that further analysis of angler type and methods of take should be incorporated into the suggested management actions listed alongside this recommendation.

In the draft Pathways to 30x30 document, the CNRA writes: “It should be noted that limited-take State MPAs provide an excellent model for other jurisdictions looking to balance biodiversity conservation with sustainable well-managed commercial and recreational fishing.” While we agree that some SMCAs provide a potential model for future conservation designations, it is important to note the vast disparity between the regulations across SMCAs and to highlight how certain local restrictions can disproportionately impact divers and shore-based anglers, among others. For example, there are some locations where shore-based angling is not permitted, such as the Point Dume SMCA, yet the regulations state “the recreational take by spearfishing of white seabass and pelagic finfish is allowed.” However, there are additional examples of SMCAs that only allow for take of finfish by hook and line from shore such as the Greyhound Rock SMCA, thus excluding spear fishers. Other models such as the San Diego-Scripps Coastal SMCA only allows for the take of coastal pelagic species (bait fish) by hook and line. A final SMCA example is the Crystal Cove State Marine Conservation Area where the regulations state: “the recreational take of finfish by hook-and-line or by spearfishing, and spiny lobster and sea urchin is allowed.” This still leaves out a number of marine species commonly harvested by recreational anglers and foragers for food but includes greater access for individuals to fish or dive according to the method that best suits them. We hope the Decadal Review process and the next adaptive management cycle can expand some of the recreational methods of take within select MPAs so long as the proposed expansions are supported by the laws and the entities tasked with managing fisheries including the regulatory process established by the Magnuson-Stevens Fishery Conservation and Management Act working through the Pacific Fisheries Management Council, NOAA Fisheries, the CDFW, the Fish & Game Commission and the additional state/federal laws and agencies dedicated to this task.

There are few individuals more passionate about ocean conservation issues and the sustainable management of our precious coastal resources than the nearly 2 million anglers who purchase licenses to fish in California. Science-based management of our fish, wildlife, waters and wild places is something many of us have dedicated our lives to. Our collective organizations are enthusiastic about the State’s commitment to conserve our vital resources and we are excited to work with tribes, MPA managers, state agencies and partner organizations to implement enduring coastal conservation measures that are not only in accordance with the stated objectives of the MLPA but also sustain our longstanding North American traditions of coastal fishing and foraging; and perhaps most importantly, we encourage policies that pay homage to the original stewards of our coastal resources, the tribes that inhabited this land long before us. We look forward to engaging with the Fish and Game Commission to work towards these important goals and to ensure sustainable fisheries for generations to come.

Sincerely,

Devin O’Dea  
Backcountry Hunters & Anglers, California

Wayne Kotow  
Coastal Conservation Association of California

Larry Phillips  
American Sportfishing Association

Keely Hopkins  
Congressional Sportsman’s Foundation

Rachel Fischer  
National Marine Manufacturers Association

Gary Brennan  
San Diego County Wildlife Federation

**From:** Michael Blum <theseaofcloudsproject@gmail.com>  
**Sent:** Friday, July 7, 2023 4:38 PM  
**To:** FGC  
**Subject:** Re: CFGC, MRC Meeting, Agenda Item 5: Marine Protected Areas Decadal Management Review  
**Attachments:** 20230707 - Letter to Fish and Game Commission - Marine Resources Committee - Sea of Clouds -- REVISED.pdf

**WARNING:** This message is from an external source. Verify the sender and exercise caution when clicking links or opening attachments.

Good afternoon. We've attached an updated version which corrects a small error in the header. Our apologies for the oversight.

Thank you and be well,

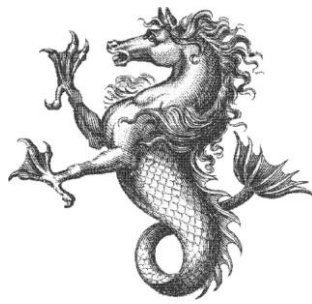
Michael Blum  
Sea of Clouds

On Fri, Jul 7, 2023 at 4:15 PM Michael Blum <[theseaofcloudsproject@gmail.com](mailto:theseaofcloudsproject@gmail.com)> wrote:

Good afternoon. Please find our letter regarding Agenda Item 5 for the upcoming, July 20th Marine Resources Committee Meeting.

Thank you for the opportunity to provide these comments. Be well,

Michael Blum  
Sea of Clouds



## SEA of CLOUDS

July 7, 2023

California Fish and Game Commission  
715 P Street  
16th Floor  
Sacramento, California 95814  
<submitted via email>

RE: CALIFORNIA FISH AND GAME COMMISSION, MARINE RESOURCES COMMITTEE MEETING,  
AGENDA ITEM 5: MARINE PROTECTED AREAS DECADAL MANAGEMENT REVIEW

Dear President Sklar and Commissioner Murray,

Sea of Clouds is a nonprofit historic preservation practice interested in human connections to landscapes and seascapes. We appreciate this opportunity to express our support for California's Marine Protected Area (MPA) network and provide the following recommendations.

We focus our comments on the MPA Decadal Management Review (DMR) report recommendation #24: "Work with [California Fish and Game Commission] CFGC and partners to better incorporate marine cultural heritage into the design of the MPA Network."<sup>1</sup> Maritime heritage recognizes objects and sites of cultural, historical, and recreational importance within the coastal sea.<sup>2</sup> Within the MPA network, maritime heritage promises to strengthen individual MPAs by affirming, enriching, illuminating, and protecting connections human communities have made with coastal sea resources. Maritime heritage also intends to develop a new tradition which can—from its inception—engage, include, and empower communities especially those which have heretofore been underrepresented in marine conservation. We continue to advocate for maritime heritage conservation within and outside the MPA network. We appreciate its recognition as one of the twenty-eight recommendations of the DMR report.

---

<sup>1</sup> Calif. Department of Fish and Wildlife, Accessed July 1, 2023, <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=209209&inline>

<sup>2</sup> With its focus on cultural heritage resources, maritime heritage is a separate, complimentary conservation tradition to the MPA network's focus on natural heritage resources. A dual program of natural and cultural resource conservation is an expressed goal of the Marine Managed Areas Improvement Act (MMAIA; e.g., Cal. Pub. Res. Code §§ 36620, 36700, 36720 (d), (e)). The DMR report recommendation #24 is a first attempt to develop maritime heritage conservation.

DMR report recommendation #24, marine cultural heritage, is draft listed as a long-term (5-10 years) priority.<sup>3</sup> This is not surprising. Maritime heritage was a late-developing idea in the previous decadal cycle, involving conversations between a small number of policy actors, requiring new work across several sister agencies, and representing a set of ideas which only partially fit within the MPA network's focus on natural heritage conservation. Still, we express disappointment that maritime heritage, authorized more than 20 years ago, still awaits attention and action. We also express concern that anyone finding themselves at the back of a line would experience. Simply, will there be enough—time, resources, interest—as we advance through this decadal cycle? We need your commitment there will be. Finally, we note that all three of the draft long-term recommendations, including recommendation #24, are new initiatives. New work allows managers to expand the thinking and imagination of the MPA project. This is a good in its own right: a reminder that adaptive management requires considering new opportunities to improve effectiveness and efficiency. We understand maritime heritage's position within the draft list but nevertheless think it should be taken up sooner.

Developing maritime heritage conservation will require the collaborative effort of up to four groups of policy actors. First, individuals and organizations will prepare and submit maritime heritage nominations.<sup>4</sup> Second, the California State Park and Recreation Commission and the Department of Parks and Recreation will designate and manage new maritime heritage areas, respectively.<sup>5</sup> Third, sister agencies such as the Commission and the California Ocean Protection Council will collaborate on proposed designations within the MPA network. Fourth, the MPA Statewide Leadership Team will review and approve new nominations.<sup>6</sup> With some direction-setting by CFGC in the first part of this decadal cycle (see below), external groups can work and be prepared when the CFGC window opens in the second part of the cycle.

Given this background on maritime heritage conservation and its prioritization within the draft list of ranked recommendations, we make the following requests to be undertaken in the first part of the decadal cycle.

---

<sup>3</sup> Calif. Department of Fish and Wildlife, Accessed July 1, 2023, <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=213111&inline>

<sup>4</sup> Cal. Pub. Res. Code §§ 36870, 36900

<sup>5</sup> Cal. Pub. Res. Code §§ 36725 (b), (f)

<sup>6</sup> Cal. Pub. Res. Code § 36900, but see *Coastside Fishing Club v. CFGC* (215 Cal.App.4th 397, 155 Cal.Rptr.3d 426, 2013), “Even if we were to decide that section 36800 required Coordinating Committee [MPA Statewide Leadership Team] review for the proposed NCC regulations, we would uphold the regulations notwithstanding the Commission's failure to comply with section 36800 because we conclude the statutory requirement of Coordinating Committee review is directory rather than mandatory.”

- 1) Commit that the DMR report's recommendations will be undertaken according to the 10-year timeline and not by completion of preceding recommendations. This ensures CFGC will develop maritime heritage (and the other, long-term recommendations) in this decadal cycle independent of completion/progress/delay with other activities.
- 2) Communicate with the California State Park and Recreation Commission, California Department of State Parks, California Ocean Protection Council, and the MPA Statewide Leadership Team that: (1) maritime heritage conservation is part of the Commission's MPA 10-year workplan, (2) maritime heritage conservation will be a collaborative effort among these groups as well as external participants, and (3) these groups should update their workplans accordingly both in the early- and later-stages of the decadal cycle.
- 3) Clarify what an MPA change means. Both maritime heritage and an independent, emerging interest in State Water Quality Protection Areas (SWQPA)<sup>7</sup> represent possible future designations within existing MPAs. We observe a lack of clarity from various agency staff regarding if maritime heritage/SWQPA nominations should group together with other proposals modifying MPA boundaries. Essentially: "Do all designations within an existing MPA constitute a change to the MPA itself?" We don't think so. For maritime heritage (and SWQPA) designations the MPA boundaries, original MPA classification, and its regulations are conserved. Certainly, the area's enforcement, interpretation, research programs, and other activities may change. These, however, are management activities, and not changes to the MPA. Please make this clarification in the first half of the decadal cycle, providing direction to all groups preparing nominations.
- 4) Clarify the Commission's conditions for concurrence. Concurrence, the process by which the Commission reviews, and requires approval, for new nominations is required only in the case of the California Park and Recreation Commission designating a State Marine Reserve, State Marine Park, or State Marine Conservation Area.<sup>8</sup> Other classifications, including State Marine Cultural Preservation Areas or the State Water Quality Protection Areas, are the purview of the designating entities and do not require concurrence. We find a lack of clarity from agency staff on this question, too: "Is concurrence required for any designation within an existing MPA?" We recommend

---

<sup>7</sup> Cal. Pub. Res. Code § 36700 (f); California Ocean Protection Council, Accessed July 1, 2023. <https://www.youtube.com/watch?v=O6QnJsEYJ5w>

<sup>8</sup> Cal. Pub. Res. Code § 36725 (a)

collaboration, not concurrence. Collaboration between the Commission and sister agencies recognizes the centrality of the MPA network to marine conservation here in California while respecting the limits found within both the governing laws and in each agency's expertise. Concurrence, as a required approval step, should not be part of non-MPA nominations. Again, clarifying this policy in the first half of the decadal cycle provides direction to all groups preparing nominations.

We understand that adaptive management is both resource and time intensive. We also understand the ambitious nature of the DMR report workplan. A set of modest investments early in this decadal cycle responds to these challenges. The recommendations permit the Commission and other entities to work efficiently in the first five years before a window for collaboration opens in the second five years.

We are available to support the Commission and other agencies however we can. We look forward to our collaborative work to develop a tradition of maritime heritage within California's marine conservation project and within its MPA network. Thank you for your work and the opportunity to provide these comments.

Sincerely,

Michael Blum  
Director

**From:** Tom Tran <[REDACTED]>  
**Sent:** Wednesday, June 21, 2023 10:08 AM  
**To:** FGC  
**Subject:** Feedback Marine Protected Area Management Priorities

**WARNING:** This message is from an external source. Verify the sender and exercise caution when clicking links or opening attachments.

To Whom It May Concern:

Hello, as an avid fisherman and someone who works at a public aquarium that has public outreach programs about MPAs, I fully support the recommendations that are outlined in the Decadal Management Review. However, I believe that Enforcement and Compliance (#20 Increase enforcement capacity) should be lumped as the Mid-term priority while Research and Monitoring (#13, Explore use of innovative technology...) should be near term priorities.

Thank you for the opportunity to comment,  
Tom Tran  
[REDACTED]  
[REDACTED]

**From:** Tom Krauel <[REDACTED]>  
**Sent:** Wednesday, June 14, 2023 6:56 AM  
**To:** FGC  
**Subject:** Marine Protected Area comments

**WARNING:** This message is from an external source. Verify the sender and exercise caution when clicking links or opening attachments.

Nearly all your recommendations are for DEI and human interests. Please stand up for biodiversity and our wildlife, rather than succumbing to politics. There is more and more animosity towards California Fish and Wildlife...this is why. All hunters and fisherman want you to protect our wildlife and thus create more hunting and fishing opportunities. Your emphasis is not on that, and hence you will continue to see animosity built and worsening distrust in your organization. When you continue to create further distrust people will not believe in your laws. You are creating a vicious cycle and our wildlife is paying the price. Numbers one through ten should be wildlife/biodiversity issues...not human and political interests.

My comments are not designed to be abrasive. They are simply designed to help you to help our wildlife.

Tom Krauel  
[REDACTED]  
[REDACTED]  
[REDACTED]

**From:** Jack Likins <[REDACTED]>  
**Sent:** Saturday, June 17, 2023 1:25 PM  
**To:** FGC  
**Cc:** Shuman, Craig@Wildlife; Communications@EPA  
**Subject:** Decadal Management Review of California's Marine Protected Area Network and Management Program.

**WARNING:** This message is from an external source. Verify the sender and exercise caution when clicking links or opening attachments.

Dear Commissioners:

Based on my 60+ years of diving the California coast I have the following comment on the *Decadal Management Review of California's Marine Protected Area Network and Management Program*.

The effects of pollution caused by urban development are not given enough consideration nor a high enough priority in our goals to protect, preserve and restore the marine environment. As cities, especially along the coast, continue to grow so does urban street runoff, sewage, and general ocean pollution. Most storm drains run directly into the ocean taking accumulated pollution (oil, plastic, dirt and other debris). Other pollution comes from rivers and streams (including pesticides and fertilizers) which accumulate on land and eventually find their way into the ocean. These pollutants cause damage to the entire marine ecosystem, including MPAs. It is a futile effort to try to protect and

restore individual plants, animals, and fish without first controlling the main cause of our degrading marine ecosystem, **pollution**.

From my experience diving the California coast, the marine environment continues to deteriorate, including inside of MPAs where fishing and other human activities are better controlled. According to the Decadal Management Review, some MPAs show less decline than areas outside of MPAs, but overall, our ocean environment continues to decline.

To make the changes required to alleviate the effects of pollution, more public and legislative awareness is required. This is difficult because pollution mostly affects the unseen sea life beneath the ocean surface. Another problem preventing solutions is that sometimes competing governmental and ENGO organizations lobby to influence money spent to improve the terrestrial and marine environments. There is not enough inter-organizational coordination to find and implement the best solutions for the marine environment. Environmentalists have become so specialized, and governmental agencies so bureaucratic, that the groups do not well understand the science or the needs of each other. **I recommend that the state of California form a specific interagency group of scientists to study and coordinate work efforts and the needed reforms to mitigate the effects of polluted runoff into our ocean.**

Ocean pollution caused by runoff should not only be a major part of evaluating and protecting our marine environment, but a higher priority of the DMR than restoration and conservation efforts.

Jack Likins



CC Dr. Craig Shuman, California Department of Fish and Wildlife, Marine Region Manager.

CC Yana Garcia, Secretary, California Environmental Protection Agency

**From:** Dale and Marilyn Ghere <[REDACTED]>  
**Sent:** Friday, June 23, 2023 10:09 PM  
**To:** FGC; Shuman, Craig@Wildlife; Communications@EPA; Likins, Jack  
**Subject:** Fwd: Fw: Decadal Management Review of California's Marine Protected Area Network and Management Program.

**WARNING:** This message is from an external source. Verify the sender and exercise caution when clicking links or opening attachments.

Dear Commissioners,

This letter is an add on to the letter you received from Jack Likins. Jack sent me a copy of his letter because of my long time interest in the quality of ocean water.

Here are two letters I sent to Jack Likins concerning my thoughts on water quality issues along California's coastline.

## **Letter One**

### **The Lopitty- Lopitty Room**

Dale Ghere  
2007

### **Sources of Pollution**

The first source of pollutants I became aware of was from our own sewage department and the second was from local runoff in Laguna Beach, CA.

In 1935 Laguna Beach built a sewer plant in the area that is now used by the Maintenance Department [now, 2015, used as a parking lot]. Laguna used that plant until August of 1983. Laguna then switched to three lift stations, one of which is located in the City corporation yard, another which is located under the lifeguard headquarters at the north end of Main Beach and the third at the Calliope dip, to convey the sewage from Laguna Beach to the Coastal treatment plant, which is located in Aliso Canyon. What is left of the original structure in the Canyon is presently used as a work area. Of the two tanks that held the sewage the largest was removed in 1989. The air vent for the sewage tanks can still be seen on the hillside above the Maintenance Yard. It looks like a small lighthouse.

In 1960 waste from all of the homes flowed to the collection tanks and then it was stirred up with a large paddle device. I have always referred to it as the Lopitty-Lopitty Room because of the sound that was made as the sewage was broken up into smaller pieces by the paddles. The

material that settled to the bottom of the tank was called the sludge. That material was collected and trucked out to the canyon where it was spread on the ground and allowed to dry. After drying it was trucked to a landfill. City personnel hoped it would not rain between the time the sludge was dumped on the ground and when it was scraped back up and hauled to the dump. Rain would carry the sludge down to the creek and then directly to the opening at Main Beach.

The sewage that remained in suspension in the tanks was pumped through a pipe into the ocean at the south end of Rockpile Beach. That should generate a thoughtful picture for your imagination. The outfall angled slightly towards Bird Rock at the north end of Main Beach. The pipe terminated 3100 feet off of the beach at a depth of 85 feet, well below the local thermocline which is normally about 35 feet deep. It was easy for the lifeguards to know where the outfall ended because that was a regular stopping point for the half-day fishing boats that came out of Newport.

Laguna originally used secondary treatment to manage the waste before it was pumped into the ocean. As the town grew, the volume of sewage started overwhelming the ability of the facility. In 1953 it was decided that the plant would only do primary treatment before the waste was released into the ocean. The assumption made by the engineers who redesigned the system was that water below the thermocline would not mix with the surface water so it would be okay to dump primary sewage into the ocean and allow deep water coastal currents to dilute the waste as it moved down the coast. The engineers saw no need to treat the sewage with anything more than some chlorine because it was not going to be mixed with the local surface water.

This may have been a reasonable textbook answer for sewage disposal, but it had a poor practical application. The engineers evidently did not understand the concept of upwelling. Upwelling is a condition where the surface water and deep water is mixed together because of deep water periodically rising to the surface. When this happened in Laguna the results were disastrous. In this situation, primary waste was carried to the surface and prevailing onshore winds pushed the material towards the beach. In the worst case scenario the beach had to be closed because of what the lifeguards euphemistically referred to as “brown trout days”. The name came from what could be smelled as much as what could be seen.

There was a system for checking the quality of the beach water that included taking water samples and sending the samples to Santa Ana to be tested. If the quality of the ocean water was poor due to upwelling additional chlorine was added to the sewage in the Lopitty Room. This mixture of sewage and poisons was then pumped into the ocean. Collecting water samples, testing and adding chemicals had a degree of lag time inherent to the process. Meanwhile people were swimming in polluted water.

During the late 60’s I took a marine science class and met Ron Schnitger. One of the skills he taught while on the Fury II lab boat was how to set a trawl net. He told me he had made many trawls near the end of the sewage diffuser off Main Beach. It was evident to him that a hundred percent of the fish in the area of the sewage diffuser had some kind of cancer on its gills or skin.

To add to this problem Laguna had an ongoing battle trying to maintain broken sewer lines and lift stations that continually stopped functioning, both of which periodically allowed raw sewage to run onto the local beaches. Fortunately the frequency of sewage leaks has been reduced in recent years.

Fifty years ago there were many more gas stations in town than there are today. Oil spills and leaking fuel tanks caused a great many problems for coastal waters. One of the worst cases was generated at Pearl Street in 1990 when the beach had to be closed because petroleum products were seeping through the soil. The closure lasted from August of '90 to spring of '91. The gas station had not operated for many years when the seepage was discovered.

Local runoff has always been a problem in Laguna. In the 60's there were cattle on the Irvine property. When it rained, the fecal matter in the runoff added many problems to coastal waters. As the cattle were removed and more houses were built in town the stew of runoff changed, but it was still highly toxic. As I started to look more closely at coastal pollution problems that are associated with runoff it became apparent that Laguna residents are their own worst enemies. Everything that is put on the ground, dropped on the street, sprayed on plants or washed in yards eventually winds up running into the ocean with the first heavy rainfall. Signs, education, legislation, enforcement and first flush water collection devices for light rainfall have been put in place since the 60's, but runoff remains a major issue for Laguna. As inland areas develop, additional pollutants continually make their way to coastal waters. In 1960 there were no 5, 405 or 73 Freeways. There was no Mission Viejo or Laguna Niguel. Crown Valley Parkway was a dirt road used by farming vehicles. There was no Crystal Cove State Park. There was no Newport Coast development. The septic tanks from Crystal Cove cottages and El Morro trailers leached directly to the ocean. In the 1960's Corky Smith counted 45 private drain pipes that placed runoff on the beach. The area of his study was between Cress St. and Cleo St. There are still many private drains that place water on the beach today throughout Laguna. Runoff that flows into Laguna's coastal water is a different mixture of pollutants than it used to be, but it is still a major problem.

### **My heroes**

Early voices that spoke out for keeping the oceans free of pollutants that I had contact with are Bruce Hopping and Corky Smith. The concerns of these early leaders were later supported by groups such as the Surfrider's Association, Friends of the Newport Coast, Clean Water Now, Coast Keepers, Ocean Laguna Foundation and through the leadership of Wayne Baglin as a member of the City Council of Laguna Beach and the San Diego Regional Water Quality Control Board.

**On December 13, 2002 I penned this letter to the Laguna News-Post**

Dear Editor:

During the past year I have been writing about the days I have spent with my grandson. I have taken to recording some of my musings so he will be able to read them later. He is just two. My hope is that the words, photographs and paintings I put in his book will help him to remember the times we shared.

### **Just Move the Sign – Dec. 2002**

Today I took Matthew [my grandson] to the beach. He is nearly three years old. It was a beautiful day and the water was as pretty as I have ever seen it at Main Beach. The day was early and the sun had just cleared the ridge-line. The water was extremely clear and the sun shone through the face of each wave so I could see the sandy bottom. The color of the water was spectacular. As the sun rose the color changed, but I enjoyed looking at the water every moment we were there.

That was the good part. The bad part was the sign in the sand that said, “**Warning**, high bacterial counts”. I told Matthew that he could play in the sand with his trucks, but we would not run in the water because it could make us sick.

Matthew is the ever-present problem solver. He looked at me as I tried to explain to him why we couldn’t get in the water and then he walked down the beach and looked at the sign. He then remarked, “Can’t we just take the sign down”. I wish that solving the pollution problem in Laguna could be so simple.

What a paradox. We were experiencing one of the prettiest days of the year and the ocean was so polluted that it presented a danger to anyone swimming in it. Will the pollution problem in Laguna ever get resolved or are we doomed to see more contamination as the population increases?

---

### **Thanks to Bruce Hopping**

Over the past five decades there have been many newspaper articles written about pollution problems in Laguna. Here is one such article that eventually led to the construction of a new sewer system for Laguna Beach.

Excerpts from the Los Angeles Times, Sunday, Aug. 8, 1971, R, By Larry Pryor

For the first time in 40 years that he has lived in Laguna Beach, Brennan McClelland, a businessman and avid surfer [He was also a Laguna Beach lifeguard] is thinking of moving. “I’m losing interest in Laguna Beach,” he says. “When I get out of the water I feel greasy and I know why.”

“I doubt that any [sewer] plant on the West Coast is in worse shape,” said Joseph Sweany, the city’s director of public works, who readily admits to the plant’s decrepit condition.

He denies, however, that it is contributing to sewage solids on the beach.

County and state officials describe the plant as a nightmare, an antiquated, overburdened facility that should have been replaced years ago.

“It is a source of constant concern to us,” said Dennis O’Leary, executive officer of the San Diego [Regional] Water Quality [Control] Board, which has jurisdiction over the plant’s discharge.

The plant is an heirloom of the WPA period.

It was apparently built with surplus equipment and the firm that supplied the machinery has long since gone out of business.

“Every time we have a breakdown in this plant, it is a disaster,” said Sweany. “It takes six months to replace parts.”

Between 1958 and now [1971] there have been no funds spent on preventive maintenance, he said.

Sweany maintains there are no sewage solids at the end of the outfall, based on the observation of divers hired by the city.

Sweany tends to attribute reports of inshore sewage to pleasure boats, fishing craft and passing ships and confusion between sewage and red tide or plankton.

Dr. Roger Seapy, a marine ecologist at UC Irvine who has investigated the waters off of Laguna Beach since July 1970 disagrees.

In a study, prepared for the Kalo Kagathos Foundation [the foundation is funded by Bruce Hopping]; Seapy cited repeated instances of raw sewage on the surface directly over the end of the outfall.

“Its presence was indicated by odor, particulates, rubber fragments and particulate organic matter,” he said. The sewage patch was clearly identified by a bunch of herring gulls that were resting on the surface.

So far, the only people to substantiate Seapy’s findings are surfers, swimmers and beach habitues.

“As long as the wind blows, you don’t notice it as much, but when it’s glassy there’s a lot more sewage,” said Briggs (Corky) Morris-Smith, who has been swimming and surfing off Laguna since 1944.

“I started noticing it in the middle ‘50s,” he said. (Significantly it was at that time that the Laguna sewage plant was converted from a secondary treatment – a higher level of treatment – to primary treatment to gain increased capacity.)

Seapy applied to the city for a \$3,000 grant to continue his offshore research and get better data on the fate of the sewage but was turned down unanimously by the city council last month.

“We don’t know what we could do, even if he found something wrong,” said Sweany.

To look at the bright side of the problem for a moment, state and local officials agree the situation at Laguna Beach is so grave that something drastic will have to be done soon.

“The comedy of errors and lack of stewardship in the past has probably worked to the advantage of the city,” said Sweany. “When it comes to getting (federal and state) funds we’ll have a high priority rating.”

### **Much can be accomplished if you don’t care who gets the credit**

Because of the efforts of Bruce Hopping the old sewer plant was eventually replaced. This didn’t end the sewage problems in Laguna, it just shifted a problem from Main Beach to Aliso Beach. But that is another story for another day.

### **Footnote about the newspaper article.**

One of the divers hired by the city to check the diffuser area for solids was Dean Westgaard, a captain in the lifeguard department. Dean developed a severe case of hepatitis after the dive. When I went to see him in the hospital the nurse directed me to his room. I went to the designated room to see Dean and then returned to the nursing station to notify her that Dean was not there, it was someone else. She bolted down the hall and came back madder than an old hen with her tail feathers on fire. In no uncertain terms she let me know that it was Dean. I sat next to his bed for over an hour waiting for him to wake up. It was hard for me to believe that I was looking at the man who had taught me so much during the past decade. Fortunately Dean recovered from the hepatitis infection and continued to teach at Orange Coast College. Sweany left the hepatitis part out of his comments about the quality of the water that flowed out of the sewage pipe.

-----

**Today**

Much has been done, but much more is required to solve the present day problems that affect the quality of water in Laguna Beach. All you need to do is read the local papers to see there are still plenty of problems and few answers. Today Laguna has hired a Marine Protection Officer to specifically oversee some of the coastal problems. There are several groups in town that are active in water quality issues. All of these groups need volunteer help. I encourage you to get involved.

Thanks to the following people for making this article possible: Kai Bond, Bruce Hopping, Eric Jensen, Ron Schnitger, Alden Simmons, Corky Smith, Graham Wright and Rod Riehl.

-----

## Letter Two

Hi Jack, 6/23/2023

After reading the communications between you and Mike Beanen these are some of my first thoughts.

1. Water quality is the primary issue to consider. Everything else is just a distraction from that issue. No matter how much kelp, how many abs or how many white sea bass are put in the ocean by well meaning people things will not change if the content of water is what is inhibiting stability of populations.

If the primary issue is not water quality then why are so many organisms missing today that were common a few decades in the past. Let's just take the mollusks as an example. In the 1960s a small kid could walk a mile on the beach with his little metal sand bucket and fill it with many different kinds of seashells. The mollusks that produced those seashells were not removed from the water by take because no one collected live organisms that produced the shells for either consumption or sale. Over the decades they just slowly disappeared. Today a kid would have a hard time finding more than a handful of different kinds of shells. My first guess at the demise of the animals would be caused by poisons, the introduction of new predators or new diseases. It would take pages to list all of the different ways we have on introducing toxic chemicals into the ocean. There are three large water sources that flow into southern California today to meet our demands for living and industry. All of it eventually flows into the ocean carrying our waste with it. Few cities release water into the environment that is truly potable. Just because the health department says water is potable does not mean that it meets the requirements for all organisms in aquatic environments to remain alive and reproduce successfully.

2. The assumption from those in control of the money and regulations seem to always think that every person that is not a member of their group is out to cheat, rape, or want to destroy the environment. If you are not one of them then you have moved to the Dark Side. That is why they will never consider the taking of one species and not another or maintaining limits of anything allowed to be taken. **Enforcement is the controlling**

**issue here.** The regulators will not consider the idea that people will follow the rules so they must have an easy way to stop those who cheat. No fishing means that anyone who is fishing is cheating. If fishing is allowed then someone needs to check that people are not cheating. Those who do the regulating don't want to check people so it is easier to just say no taking of anything. It is just easier to say "NO FISHING". Catch and release is never a consideration because of the enforcement issues. In their opinion people cannot be trusted!

3. The trophy animals are so few in number in any population that taking limited numbers of them would never out pace the reproductive ability of a healthy environment. The true trophy specimens within any population are not the major reproducing animals in most populations. **When the environment is healthy, populations thrive.** Just take the snow goose as an example. All normal restrictions are reduced during the spring hunts and still the populations across America thrive. Why? Because the snow geese take full advantage of all the farmland in America and Canada.

4. I attended all of the local meetings when the MP issue was introduced to our area. After one of the meetings I cornered one of the main speakers and asked him when the restrictions would be lifted. The answer was, "NEVER". His point went something like this. *"If, at the end of ten years we see an improvement in aquatic populations then we will know we are doing the right thing. If we don't see improvement then we will know that it will take more time so we will continue the restrictions."* He had no consideration that the original assumptions might be incorrect and another approach would be required. They had already made up their minds that the MPA was the only way to restore ocean environments to earlier standards. Twenty years and still there is no recovery for many organisms. When was the last time you saw a bonito boil in the nearshore waters of Laguna Beach?

5. One day when I was guarding at St Ann's Beach a guy walked onto the beach, stood a few feet away from me and made this statement, "It's not as big as I expected it to be." I asked him if he was speaking to me. He said no. I then asked him what wasn't as big as he expected. He replied with, "The ocean. I expected it to look bigger." As it turned out he was from a part of Montana that is called Big Sky Country. He said he could see mountains that were 200 miles away. He thought the horizon that day was only about ten miles away. It was too cloudy to see Catalina so he was probably right. I told him to jump in the water and start swimming towards the horizon and he would learn how big the ocean is. He smiled and walked back up the stairs.

When we are talking about Laguna's MPA it is such a small part of the ocean that little can be done if the focus is on putting a few abs in the water and then expecting the population to all of a sudden begin to increase. The ocean water that is here today is gone tomorrow. If the problems we face is the quality of the water, then the water that is headed our way must be clean or it will not allow the organisms that are here to survive. To continue to think that we can repopulate the ocean with any organism while

not first addressing the water quality issues is just continuing the distraction of dealing with the primary issue everyone should be focused on ----- **Water quality**.

Putting a few bass in the ocean or planting some kelp is something we can wrap our head around. Trying to stop polluting the ocean is a much bigger and more difficult issue to address.

Dale

I sent the letter below in response to a request from California's Fish and Game Commission on their *Decadal Managment Review of California's Marine Protected areas and Management Program*.

Jack

From: Jack Likins <[REDACTED]>

Sent: Saturday, June 17, 2023 1:25 PM

To: Commission FishGameCommission <[fgc@fgc.ca.gov](mailto:fgc@fgc.ca.gov)>

Cc: Craig Shuman <[REDACTED]>; [cepacomm@calepa.ca.gov](mailto:cepacomm@calepa.ca.gov) <[cepacomm@calepa.ca.gov](mailto:cepacomm@calepa.ca.gov)>

Subject: Decadal Management Review of California's Marine Protected Area Network and Management Program.

Dear Commissioners:

Based on my 60+ years of diving the California coast I have the following comment on the *Decadal Management Review of California's Marine Protected Area Network and Management Program*.

The effects of pollution caused by urban development are not given enough consideration nor a high enough priority in our goals to protect, preserve and restore the marine environment. As cities, especially along the coast, continue to grow so does urban street runoff, sewage, and general ocean pollution. Most storm drains run directly into the ocean taking accumulated pollution (oil, plastic, dirt and

other debris). Other pollution comes from rivers and streams (including pesticides and fertilizers) which accumulate on land and eventually find their way into the ocean. These pollutants cause damage to the entire marine ecosystem, including MPAs. It is a futile effort to try to protect and restore individual plants, animals, and fish without first controlling the main cause of our degrading marine ecosystem, **pollution**.

From my experience diving the California coast, the marine environment continues to deteriorate, including inside of MPAs where fishing and other human activities are better controlled. According to the Decadal Management Review, some MPAs show less decline than areas outside of MPAs, but overall, our ocean environment continues to decline. To make the changes required to alleviate the effects of pollution, more public and legislative awareness is required. This is difficult because pollution mostly affects the unseen sea life beneath the ocean surface. Another problem preventing solutions is that sometimes competing governmental and ENGO organizations lobby to influence money spent to improve the terrestrial and marine environments. There is not enough inter-organizational coordination to find and implement the best solutions for the marine environment. Environmentalists have become so specialized, and governmental agencies so bureaucratic, that the groups do not well understand the science or the needs of each other. **I recommend that the state of California form a specific interagency group of scientists to study and coordinate work efforts and the**

**needed reforms to mitigate the effects of polluted runoff into our ocean.**

Ocean pollution caused by runoff should not only be a major part of evaluating and protecting our marine environment, but a higher priority of the DMR than restoration and conservation efforts.

Jack Likins

Laguna Beach and Gualala, California



CC Dr. Craig Shuman, California Department of Fish and Wildlife, Marine Region Manager.

CC Yana Garcia, Secretary, California Environmental Protection Agency

**From:** Jim Peugh <[REDACTED]>  
**Sent:** Wednesday, June 14, 2023 9:39 PM  
**To:** FGC  
**Subject:** Comment on MPA priority recommendations

**WARNING:** This message is from an external source. Verify the sender and exercise caution when clicking links or opening attachments.

Hello CA Fish and Game Commission,  
Many MPAs contain important intertidal mudflats and marsh areas. As sea levels rise these important and productive habitats will get smaller and gradually disappear along with their environmental values. Shoreline retreat may be used to slightly reduce those losses, but most of the relevant shorelines are highly developed so that solution will be very limited.

Intertidal habitats can be maintained by adding soil to wetlands and mudflats to keep up with Sea Level Rise. It will take a lot of research and experimentation to develop techniques to do this effectively in different circumstances and locations. Also regulations would need to be changed to require that suitable dredge spoil be saved to augment these areas.

A priority should be added to the MPA list something like: to develop, experiment with, and apply techniques to aggressively offset the losses of intertidal habitats that will otherwise result from Sea Level Rise.

If techniques are not developed and implemented soon we will lose the significant wildlife, fisheries, water quality, carbon sequestration, and general biodiversity benefits of these intertidal areas.

Jim Peugh  
San Diego

**From:** Mike beanan <conxtns@hotmail.com>  
**Sent:** Wednesday, July 5, 2023 4:19 PM  
**To:** FGC  
**Cc:** mike@lagunabluebelt.org; AskAR5@wildlife.ca.gov  
**Subject:** Marine Resources Committee  
**Attachments:** MPA Boundary Request 07022023.docx

**WARNING:** This message is from an external source. Verify the sender and exercise caution when clicking links or opening attachments.

July 5, 2023

Marine Resources Committee  
944209

P.O. Box  
Sacramento, CA 94244-2090

(916) 653-4899

fgc@fgc.ca.gov

Subject: Request for Boundary Revision for Laguna Beach Marine Protected Areas

Dear Commissioners Sklar and Murray,

On behalf of the Laguna Bluebelt Coalition, a non-profit organization dedicated to ocean health and conservation in Laguna Beach, please consider our request for a boundary revision for Laguna Beach's Marine Protected Areas (MPAs). We strongly support the proposed boundary revision for the Laguna Beach MPAs, taking into consideration a recent change in which the city of Laguna Beach has assumed jurisdiction from Orange County of all city beaches to the southern city limit. This boundary revision would not only enhance enforcement consistency but also promote community equity and ensure the long-term well-being of our marine environment.

Our primary concern is the preservation, equitable enforcement and restoration of our coastal ecosystem and the proposed boundary revision is crucial in achieving these goals. By aligning the marine protected area boundaries with the jurisdictional limits of Laguna Beach, enforcement efforts by lifeguards, police officers, and park rangers will be more coordinated and effective. This unity will significantly enhance the protection of California's fragile marine resources and habitats.

The proposed boundary revision will contribute to citywide community consistency to support community outreach and education as well as fostering shared responsibility and appreciation of MPAs among residents and visitors. By clarifying and aligning the boundaries, it will be easier for individuals to comprehend and comply with the regulations governing the marine protected areas. This enhanced clarity will cultivate a stronger sense of stewardship and empower the community to continue to actively participate in the preservation of our coastal environment.

The Laguna Bluebelt Coalition firmly believes the proposed boundary realignment is essential to ensure the long-term sustainability of our marine ecosystem. We kindly request the Marine Resources Committee of the California Fish and Wildlife Commission to carefully consider our comments and take the necessary actions to support Laguna Beach's citywide commitment to protect and preserve the coastal environment for current and future generations.

Thank you for your support of Laguna Beach's MPAs.

Respectfully submitted,

Mike Beanan  
Laguna Bluebelt Coalition  
9132

PO Box  
Laguna Beach, CA 92651

mike@lagunabluebelt.org

Proposed City Limit Southern Boundary Revision for SMCA No Take:

From approximately Lat 33.48485 N / Long 117.73444 W to  
Lat 33.47515 N / Long 117.75874 W

<https://lagunabeach.maps.arcgis.com/apps/webappviewer/index.html?id=75a3aa3236c7475bb5e81925d130a763>



July 5, 2023

Marine Resources Committee  
P.O. Box 944209  
Sacramento, CA 94244-2090

(916) 653-4899

[fgc@fgc.ca.gov](mailto:fgc@fgc.ca.gov)

Subject: Request for Boundary Revision for Laguna Beach Marine Protected Areas

Dear Commissioners Sklar and Murray,

On behalf of the Laguna Bluebelt Coalition, a non-profit organization dedicated to ocean health and conservation in Laguna Beach, please consider our request for a boundary revision for Laguna Beach's Marine Protected Areas (MPAs). We strongly support the proposed boundary revision for the Laguna Beach MPAs, taking into consideration a recent change in which the city of Laguna Beach has assumed jurisdiction from Orange County of all city beaches to the southern city limit. This boundary revision would not only enhance enforcement consistency but also promote community equity and ensure the long-term well-being of our marine environment.

Our primary concern is the preservation, equitable enforcement and restoration of our coastal ecosystem and the proposed boundary revision is crucial in achieving these goals. By aligning the marine protected area boundaries with the jurisdictional limits of Laguna Beach, enforcement efforts by lifeguards, police officers, and park rangers will be more coordinated and effective. This unity will significantly enhance the protection of California's fragile marine resources and habitats.

The proposed boundary revision will contribute to citywide community consistency to support community outreach and education as well as fostering shared responsibility and appreciation of MPAs among residents and visitors. By clarifying and aligning the boundaries, it will be easier for individuals to comprehend and comply with the regulations governing the marine protected areas. This enhanced clarity will cultivate a stronger sense of stewardship and empower the community to continue to actively participate in the preservation of our coastal environment.

The Laguna Bluebelt Coalition firmly believes the proposed boundary realignment is essential to ensure the long-term sustainability of our marine ecosystem. We kindly request the Marine Resources Committee of the California Fish and Wildlife Commission to carefully consider our comments and take

the necessary actions to support Laguna Beach's citywide commitment to protect and preserve the coastal environment for current and future generations.

Thank you for your support of Laguna Beach's MPAs.

Respectfully submitted,

Mike Beanan

Laguna Bluebelt Coalition  
9132  
Beach, CA 92651

PO Box  
Laguna

mike@lagunabluebelt.org

Proposed City Limit Southern Boundary Revision for SMCA No Take:

From approximately Lat 33.48485 N / Long 117.73444 W to Lat 33.47515 N / Long 117.75874 W

<https://lagunabeach.maps.arcgis.com/apps/webappviewer/index.html?id=75a3aa3236c7475bb5e81925d130a763>

**From:** Judy <judy@threearchbaycsd.org>  
**Sent:** Thursday, July 6, 2023 12:00 PM  
**To:** FGC  
**Cc:** AskAR5@wildlife.ca.gov; fshrago@lagunabeachcity.net; Mike beanan; jinger@lagunabluebelt.org; Charlotte Masarik; ray@coastkeeper.org  
**Subject:** South Laguna's TAB CSD Support for LB City-wide Marine Protected Areas - through Mussel Cove  
**Attachments:** TAB CSD Signed Letter 5-1-2023.pdf

**WARNING:** This message is from an external source. Verify the sender and exercise caution when clicking links or opening attachments.

Marine Resources Committee,

In preparation for your July 20<sup>th</sup> meeting, we respectfully request inclusion of the Three Arch Bay Community Services District request for a full City-wide no-take MPA (see attached letter). The Three Arch Bay Community Services District manages wet and dry weather water flows and security for Three Arch Bay, at the Southern end of the City of Laguna Beach.

While much of Laguna Beach was designated a no-take MPA previously, South Laguna was only designated a State Marine Conservation Area. As a result, our rocky intertidal areas have become marine deserts - devoid of the natural marine life, where they once - only 20 years ago - were healthy and filled with fish and sea life. In contrast to the abundance of the Laguna Beach MPAs, *the South Laguna coast has been devastated by over fishing.*

Please accept our request, and understand that we provide full support for the care required for a no-take Marine Protected Area, in Three Arch Bay, and will continue to do so should you approve the MPA to the southern most point of the City of Laguna Beach, including Mussel Cove. The TAB CSD Board voted unanimously in support of this request.

I will also be reaching out to City staff in support of South Laguna's and the City efforts to expand and support a City-wide MPA.

Thank you very much!

Judy Yorke  
Director, Three Arch Bay Community Services District  
[HOME | Csd Public \(threearchbaycsd.org\)](https://threearchbaycsd.org)



THREE ARCH BAY  
COMMUNITY SERVICES DISTRICT  
5 BAY DRIVE, LAGUNA BEACH, CALIFORNIA 92651-6780  
(949) 499-4567 FAX: (949) 499-2352

May 1, 2023

**California Fish and Wildlife Commission**

P.O. Box 944209

Sacramento, CA 94244-2090

[fgc@fgc.ca.gov](mailto:fgc@fgc.ca.gov)

**RE: Letter of Support for Laguna Beach City-wide Marine Protected Areas including South Laguna, to the Southern Point of Mussel Cove, Orange County, California**

Dear Commissioners,

Since 2012, with the implementation of the California Marine Life Protection Act of 1999, Laguna Beach has successfully managed a network of Marine Protected Areas (MPAs) as a statewide model of collaboration, education and enforcement. To provide marine protection consistently throughout all of Laguna Beach, the Community Services District of Three Arch Bay supports an extension of marine protection via "no take" Marine Conservation Areas (SMCAs) to the point at the end of Mussel Cove, which is the southern border of Laguna Beach, in the community of Three Arch Bay (TAB).

Laguna Beach's rocky coastline has been scientifically determined to provide ideal tidepool and kelp forest habitats as a vital genetic linkage for marine life between the Palos Verde Peninsula and La Jolla Cove. The City of Laguna Beach continues to benefit economically and ecologically from Marine Protected Areas.

Three Arch Bay (TAB), which includes Mussel Cove, in South Laguna's SMCA, is characterized by steep bluffs and compact coves that create a unique coastal ecology with tide pools, deep rocks and kelp forests. Wave action and backwash energy from bluffs surrounded by offshore kelp forests offers a local mixing zone for marine mammal and sea life foraging.

While most of Laguna Beach restricts fishing, the southern end of Laguna Beach was only designated a State Marine Conservation Area, which allows continued recreational and commercial fishing. Unfortunately, the over-fishing during the past ten years by commercial and recreational fishermen, including commercial passenger fishing vessels (CPFVs), has devastated the kelp beds, fish population, and sea life across South Laguna. Expansion of Laguna Beach's MPAs is essential to mitigate decades of regional over-fishing particularly in South Laguna.

Thus, we request that you initiate and vote to provide an extended "no take" Marine Protected Area (SMR and SMCA) Citywide, across Laguna Beach, including South Laguna, to the Southern Point of Mussel Cove, Orange County, California. This would extend the existing marine protections throughout Laguna Beach, including the southernmost point of the city of Laguna Beach – Mussel Cove, also known as Three Arch Bay.

As a community, we are active stewards of our waterways and marine resources, ensuring quality management of our natural resources, and would appreciate the state's support of our efforts by extending the MPA to the Southern end of Laguna Beach.

Thank you,



Gary Rubel  
President  
Three Arch Bay Community Services District

Cc: City of Laguna Beach  
Board Members of the TAB CSD

**From:** RICHARD OGG <[REDACTED]>  
**Sent:** Friday, July 7, 2023 2:38 PM  
**To:** FGC <FGC@fgc.ca.gov>  
**Subject:** Proposed Change to MPA/SMR

**WARNING:** This message is from an external source. Verify the sender and exercise caution when clicking links or opening attachments.

Dear Commissioners,

I have no doubt the commission is well aware of the difficulties the commercial fishing industry faces. Climate change, species shift, reduction of opportunity, and area closures have tremendously impacted our ability to provide seafood resources and economic stability to our families and the public.

The drive by the fishing community to conserve and protect our ocean environment is quite evident in supporting the complete closure of the salmon season recreationally and commercially. The impact is significant to all parties, but the resource is what is on the minds of every fisherman. What can "WE" do to bring back opportunity and help the specie to prosper?

With all the restrictions, both in time and seasonal, we have been reduced to a dwindling number and see the continued loss of industry leaders. The graying of the fleet could leave no place to turn.

I would like to propose a little light in the darkness. The MPA/SMRs were established to protect the biomass within the area assigned and then allow the biodiversity to "spill over" around the outlying areas. Our coastal salmon are pelagic and do not stay in any location for any length of time. Their migration is continuous.

Salmon trolling is highly selective and is a midwater fishery with no bottom contact and virtually no by-catch. Trolling through the designed SMRs would genuinely have the same effect as traversing the area, as is allowed now. We, as fishermen, understand the need to protect and conserve biodiversity and the continued health of our ocean. We aim to help promote conservation in every way practicable for the industry. This is our livelihood that is at stake.

So with that being said, I would like to propose using adaptive management and ask you to consider the option of trolling for salmon through the SMRs. Possibly using the Bodega Head and Stewart Point SMRs as trial areas and then, if it is seen that the effect is as presumed, expand the opportunity.

Thank you so much for the opportunity to discuss this topic,

Dick Ogg (Vice President of the Bodega Bay Fisherman's Marketing Association)

F/V Karen Jeanne

[REDACTED]

[REDACTED]

**From:** Brad Mongeau <[REDACTED]>  
**Sent:** Thursday, June 15, 2023 1:50 PM  
**To:** FGC  
**Subject:** MPA Omission/Brad Mongeau

**WARNING:** This message is from an external source. Verify the sender and exercise caution when clicking links or opening attachments.

For what it's worth, i've logged over 150,000 NM in the Southern California bight since 1985, i do U/W photography as a hobby. Starting in November 2018 i witnessed a Finfisher (live fish trapper) destroy every kelp canopy surrounding San Nicolas island. I informed one John Ugoretz as the destruction was happening and he acknowledged that there was no visible canopy along the south side of the island but attributed it to "current," and took no action to stop it. There have been kelp surveys done of the island subsequent to 2018 so please see the results for yourself. There is no longer any canopy off the west end by the Boilers. The otters have scattered...

In the mid 90's i knew the finfisher that destroyed the kelp forests around Santa Barbara Island--i literally WATCHED him munch his way thru the kelp over days and weeks. I watched the same thing happen to the west end of San Clemente Island--couldn't get within a mile of Castle Rock back then because of the kelp, gone for decades now.. I had no idea that what they were doing at the time would have such a devastating and lasting effect on the kelp forests. The phenomenon of UV penetration all the way to the bottom for any length of time could be a 2-3 hundred year event...

Unlike lobster trappers, the finfishers must put their traps directly in the kelp. Kelp fronds have an affinity to the traps and every time they retrieve one, the kelp clings to it and the footings are pulled off the bottom. Every finfisher carries a compliment of machetes to cut the kelp off his trap! That is EXACTLY what happened to every historical kelp forest throughout CA and beyond. Ask any old fisherman if they remember the great kelp paddy fishing in the mid 90's, THAT was the kelp from our islands after being pulled out by a finfisher. One more significant point, the lack of any sustainable population of shallow water rockfish virtually anywhere in CA drastically inhibits any restoration of the kelp.

In designating Begg Rock instead of any part of San Nicolas Island proper, you set into motion the destruction of the last, most pristine kelp forests left in the bight, maybe even the entire state! The tragic loss of those kelp forests is unforgivable in this day and age. Begg Rock did NOT need to be protected, it was obviously a totally bogus trade off!

I've tried to get this message across many times in the past and i have been ignored. Is that because you don't believe me? Don't want to believe me? Or you know i am right and don't want to admit to failing to stop this insidious fishery before the damage was done? I am just the messenger, they guy who spent more time offshore than any other recreational boater in history. I've spent 371 nights anchored around San Nicolas Island in my skiff since 1993 and i know that island better than anyone.--i know these waters better than any one you folks know. I know exactly what caused the demise to the Bonito and the Blue shark, etc. The finfishery is responsible for the destruction of every historical kelp forest in CA and until you folks take a serious look into that fishery, you will never make any progress in restoring the kelp or protecting the most vital and vulnerable habitats left in CA.

As always i welcome ANY AND ALL challenges to my assertion. But from my experience no one in authority possess enough intellectual curiosity to even make that challenge. Here is my phone number, i'm retired so have someone ring me up any time. (or not, probably not) (562) 429-7574.

The MPA's were the only way to have saved the last pristine kelp forests left anywhere and it grieves me that it didn't happen. Not designating ANY portion of San Nicolas Island is the most glaring omission to any array in California, if not the entire Eastern Pacific.

Dutch Harbor before and after:



Your Call:

Sincerely, Brad Mongeau

lovesthesea

**From:** James Garner <[REDACTED]>  
**Sent:** Wednesday, June 14, 2023 6:51 AM  
**To:** FGC  
**Subject:** Decadal Management Review of California's Marine Protected Area Network and Management Program.

[REDACTED]

WARNING: This message is from an external source. Verify the sender and exercise caution when clicking links or opening attachments.

Greetings,

Please do not expand the Marine Protected area in Southern California.

Thank you for your time.

**From:** Keith Rootsart <keith@g2kr.com>  
**Sent:** Friday, July 7, 2023 11:18 AM  
**To:** FGC  
**Cc:** Ashcraft, Susan@FGC  
**Subject:** MRC DMR questions  
**Attachments:** Question 4.pdf

FGC,

We are glad the Department is willing to prioritize all 28 of the recommendations! We are just no longer sure what they are!

In reviewing the revisions to Table 6.1 it is not clear if stakeholder comments are incorporated as the descriptions of the priorities was shortened with each subsequent iteration. In the shortened iteration, stakeholders can't find a through-line to see if a desired action is included in the recommended priorities. Also, there are not new priorities generated from the stakeholder engagement at MPA day or the MRC meeting but perhaps comments were incorporated into the 28 priorities?

We're hoping in the final analysis, the descriptions of the priorities are expanded and clarified to explain what is and what is not included in recommended priorities and actions.

I'm sure other stakeholders would have similar questions. It would be great if this could be explained at the MRC meeting.

Thank you,

Keith Rootsart  
G2KR.com



**Giant Giant Kelp**  
Restoration Project

DMR engagement review and questions

Using recommendation 4 as an example

2022 Appendix A Stakeholder Recommendations		2022 Table 6.1	15-Mar-23 MPA Day	6/12/2023 Table 6.1	7/7/2023 Written Comments
<div>● Ensure that adaptive management changes to individual MPAs and the MPA Network are evidence based. ● Simplify designations by changing no-take SMCAs to SMRs after maintenance of existing infrastructure is permitted. ● Return MPA fishing opportunities, especially in legacy fishing areas that were previously open to fishing. ● Allow take of migratory and pelagic species in MPAs that currently do not allow it. ● Allow commercial urchin take in MPAs that allow commercial lobster take. ● Do not allow boat operations within 100 yards of a remnant kelp forest within MPAs. ● Requests to change specific MPAs (not including formal petitions; see Appendix G): ○ Relocate Piedras Blancas MPA north, just south of Cape San Martin to protect nursery grounds. ○ Increase the size of Matlahuayl State Marine Reserve to include Point La Jolla and the Boomer Beach area where the sea lion colony is located. Appendix A: Comprehensive Recommendations for the Review ○ Expand Point Vicente MPAs or adopt new MPAs to encompass the Palos Verdes shoreline particularly around Rocky Point, Lunada Bay, Honeymoon Cove, Christmas Tree Cove, Portuguese Bend, and Sacred Cove. ○ Remove the SMCA designations from the Orange County MPAs unless science can be conducted within them. ○ Remove Laguna Beach MPAs or modify regulations to allow sustainable sportfishing. ○ Prohibit surf smelt take (no take) at Pyramid Point SMCA (but keep tribal exemption). ○ Convert Drakes Estero SMCA to an SMR due to the end of aquaculture activities and lack of easy access for harvest. If designation changes, consider merging with the adjoining Estero de Limantour SMR. ○ Convert Duxbury Reef S</div>	<div>1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28</div>	<div>4 Coordinate with CFGC to evaluate current and future proposed changes to Network design, individual MPAs, and current MPA Management Program priorities and policies in a manner consistent with the findings of this Review (see Appendix A for comprehensive recommendations list and Appendix G for outstanding petitions). b. Identify and utilize best science-based approaches to inform potential changes to the MPA Network in order to enhance Network performance. c. Coordinate with CDFW's legislative office to remove obsolete sections of the Fish and Game Code concerning Marine Life and Fish Refuges to better align with updated designations in the Marine Managed Areas Improvement Act (MMAIA).</div>	<div>4 Prohibit fishing in kelp forests</div>	<div><div><div>1 4 7 9 10 11 16 17 18 20 21 27</div><div>0-2 years</div></div><div><div>2 3 6 8 12 13 14 15 22 23 25 26 28</div><div>2-5 years</div></div><div><div>5 19 24</div><div>5-10 years</div></div></div>	<div>4 Apply what is learned from the first Decadal Management Review to support proposed changes to the MPA Network and Management Program.</div> <div>Questions  Are comprehensive stakeholder recommendations from Appendix A included?  New priorities were not added after MPA day. Are stakeholder comments from MPA day included?  Will stakeholder comments today be included?  The text is less specific with each iteration. What is the final text and proposed actions of recommendation 4?</div>



**From:** Asokan, Anupa <aasokan@nrdc.org>  
**Sent:** Friday, July 7, 2023 4:27 PM  
**To:** FGC  
**Subject:** Public comment for July 20 MRC meeting  
**Attachments:** FGC MRC - July 20, 2023 - public comment for item 5.pdf

**WARNING:** This message is from an external source. Verify the sender and exercise caution when clicking links or opening attachments.

I'm submitting the attached letter on behalf of over 60 individuals across California for consideration under Agenda Item 5 at the July 20 Marine Resources Committee meeting.

This comment is in support of Recommendation 04 from CDFW's "Draft prioritized recommendations from California's Marine Protected Area Decadal Management Review."

Thank you,

**ANUPA ASOKAN** [SHE/HER]  
*Senior Oceans Advocate*  
*Nature Program*

**NATURAL RESOURCES DEFENSE COUNCIL**

1314 SECOND STREET  
SANTA MONICA, CA 90401  
C 352-804-8744  
[AASOKAN@NRDC.ORG](mailto:AASOKAN@NRDC.ORG)  
[WWW.NRDC.ORG](http://WWW.NRDC.ORG)

July 7, 2023

California Fish and Game Commission  
715 P Street, 16th Floor  
Sacramento, CA 95814

**Re: California Fish and Game Commission, Marine Resources Committee Meeting,  
Agenda Item 5: Marine Protected Areas Decadal Management Review**

Dear President Sklar, Vice President Zavaleta, and Commissioners Hostler-Carmesin, Murray, and Williams,

We, the undersigned community of California ocean-goers, appreciate the opportunity to inform the Decadal Management Review (DMR) of our state's Marine Protected Area (MPA) Network. It is because of California's commitment to understanding the impacts of our MPA network that we have strong evidence it is working to protect marine life. To build on these successes and to guarantee them for future generations of ocean-lovers, we ask that you continue this commitment by keeping our MPAs strongly protected, and expand the network to equitably maximize benefits in the future.

**Protect California MPAs, Now and Into the Future**

California has established itself as a leader in marine environmental protection, and those of us who dive, walk the beach, kayak, watch marine life, and more, all enjoy the benefits of MPAs. The science backs up what we have seen ourselves: MPAs are bringing positive benefits to both marine life and people. Within protected spaces, ecosystems are more vibrant, healthier, and full of life. Yet, full ecosystem recovery can take decades, so we ask that these spaces stay strongly protected and monitored well into the future, so that their full potential may be realized.

**More Protection Equals More Benefits**

MPAs are one of the strongest tools we have to stem the tide of biodiversity loss and protect our ocean, and we wish to see more of California's iconic coast protected in this way to meet the state's climate and biodiversity targets. This is especially necessary as California faces the evolving threats of climate change, industry, and changing ocean conditions. Thankfully, we are now equipped with more data, knowledge and lessons learned to inform such an expansion. As ocean-goers with a vested interest, we ask that the Commission include a diversity of voices and perspectives to determine the path forward. We believe more inclusive input ensures California's MPAs can equitably benefit us all.

We are encouraged by and thankful for the incredible amount of work done by the state and its partners to design and adapt an MPA network to such scale. With continued commitment and diverse input on the future of this network, California can continue to lead the world in MPA management and ecosystem protection for all - well into the future.

Sincerely,

Dane Whicker, SCUBA Diver.  
Monterey Bay is my favorite spot on the coast!

Samuel Murray, Surfer, Beach Lover.  
Leo Carillo is my favorite spot on the coast!

David Behar , Beach goer.  
Laguna beach is my favorite spot on the coast!

Claire Salinda, Surfer.  
Santa Monica Beach and El Porto is my favorite spot on the coast!

Joanna Burga , Beach access.  
Encinitas is my favorite spot on the coast!

Angela Sun, Surfer and diver!  
La Jolla cove and Malibu are my favorite spots on the coast!

Drea Libby, Surfer, philosopher, observer.  
Montara State Beach is my favorite spot on the coast!

Alize, Beach-goer.  
Leo Carrillo is my favorite spot on the coast!

Jackie Kronick, Surfer.  
PV Cove is my favorite spot on the coast!

Danny Fournier, surfer.  
Sunset beach is my favorite spot on the coast!

Kimberly laBonte, Runner.  
Will Rogers is my favorite spot on the coast!

Jeri, Surfer.  
Will Rogers is my favorite spot on the coast!

Rachel Levy, water-lover.  
Channel Islands and Staircase Beach in Malibu/Ventura are my favorite spots on the coast!

Servane Forsans, Diver.  
Santa Monica is my favorite spot on the coast!

Janine Negrin, Relaxer.

Venice beach is my favorite spot on the coast!

Camille, Surfer, Scuba Diver, Ocean Child.

San Clemente and Malibu are my favorite spots on the coast!

Sophia Gonzalez, Beach goer.

Santa Monica beach is my favorite spot on the coast!

Adrian Gonzalez, Avid Beach-goer.

Santa Monica Beach is my favorite spot on the coast!

Emma, swimmer, surfer, diver.

Hermosa Beach is my favorite spot on the coast!

Jennifer Martinez, Beach lover.

Monterey Bay is my favorite spot on the coast!

Jan, Daughter.

Venice breakwater is my favorite spot on the coast!

Jackie Remick , Beach goer.

Santa cruz is my favorite spot on the coast!

Madeleine, Surfer.

Venice Pier is my favorite spot on the coast!

Kait Arnold, Swimmer, lifeguard.

Santa Monica, Malibu & Venice are my favorite spots on the coast!

Sara Hubbell, Beach-goer.

Windansea is my favorite spot on the coast!

Nicholas Jennings, Diver, Beach-goer.

Santa Monica Beach is my favorite spot on the coast!

Karla Garibay Garcia, Diver.

The Channel Islands are my favorite spots on the coast!

Craig Stuart, Surfer.

Big Sur is my favorite spot on the coast!

Nicole Parish, Beach walker, mom to surfer.

Malibu pier is my favorite spot on the coast!

Annie Wang, Hiker, newbie surfer, overall appreciator!  
Point Reyes National Seashore is my favorite spot on the coast!

Katie Wilsker, Diver.  
Big Sur is my favorite spot on the coast!

Zach, Educator.  
North of Malibu is my favorite spot on the coast!

Iris Yan  
Point Reyes National Seashore is my favorite spot on the coast!

Amelia Fortgang, Coastal Resident & Youth Climate Activist.  
San Francisco Bay is my favorite spot on the coast!

Kai Tran, Beach-goer, hiker.  
Central Coast, SLO County is my favorite spot on the coast!

Penn Prinsley

Kashish Nizami, Lover.  
La Jolla Shores is my favorite spot on the coast!

Jair, Fisher, beach-goer.  
Cabrillo Beach is my favorite spot on the coast!

Kyle, Spearfisherman.  
Monterey Bay is my favorite spot on the coast!

Nishant Hegde, surfer.  
Santa Monica Beach is my favorite spot on the coast!

Tyler Bernardin, Surfer.  
San Onofre is my favorite spot on the coast!

Adam Frandson, Surfer.  
La Jolla Shores is my favorite spot on the coast!

Anupa, Ocean-lover.  
Long Point State Marine Reserve is my favorite spot on the coast!

Katiana Johnson, Diver, beach go-er, surfer.  
Point Dume, La Jolla, and Palos Verdes are my favorite spots on the coast!

Ian Kroll, Enthusiast.  
Catalina Island is my favorite spot on the coast!

Joe Simek, Volleyball player.  
Ocean Park, Santa Monica is my favorite spot on the coast!

Karen, View gazer.  
Big Sur is my favorite spot on the coast!

Jessica Engel, Beach-goer.  
Neptunes Net is my favorite spot on the coast!

Cruz, Beach goer.  
Venice Beach is my favorite spot on the coast!

Isaac Mocarski, Surfer.  
County Line is my favorite spot on the coast!

John Kelley, Surfer.  
County Line is my favorite spot on the coast!

Seth Lawrence, Diver, fisher, surfer, beach-goer.  
Rocky Point is my favorite spot on the coast!

Christina Kroll, Adventurer.  
Malibu is my favorite spot on the coast!

Amir Biroonak, Beach Goer.  
Santa Monica Beach is my favorite spot on the coast!

Lazaro Serrano, Diver.  
Catalina is my favorite spot on the coast!

Kevin Ginty, Surfer and diver.

Olia Bolotina, Surfer.  
My favorite spot on the coast is all of it!

Becky Feldman, Surfer, swimmer, tidepooler.  
Point Dume, Morro Bay, and Cayucos are my favorite spots on the coast!

Tiffany Palazzini, Surfer, beach-goer, walker.  
Venice, Santa Monica and San Onofre are my favorite spots on the coast!

Jodie Dorner, Beach-goer.

Santa Monica Beach is my favorite spot on the coast!

Amber, Beach goer.

Big Sur is my favorite spot on the coast!

Marisa Ramicone, Beach-goer.

Manhattan Beach is my favorite spot on the coast!

Trevor Anderson, Surfing beach-goer or a beach-going surfer.

Malibu and Manhattan Beach are my favorite spots on the coast!

**From:** mark.fina <mark.fina@californiawetfish.org>  
**Sent:** Thursday, July 6, 2023 2:17 PM  
**To:** FGC  
**Subject:** Comments on MPA Decadal Review  
**Attachments:** CWPA - CFGC MPA Mgmt Priorities - 0723.pdf

**WARNING:** This message is from an external source. Verify the sender and exercise caution when clicking links or opening attachments.

Please find attached comments of CWPA concerning the decadal review of the California MPA Network.

Let me know if you need any additional information from me.

Thanks for considering our comments.

Best regards,

Mark

Mark Fina  
California Wetfish Producers Association  
[mark.fina@californiawetfish.org](mailto:mark.fina@californiawetfish.org)



## CALIFORNIA WETFISH PRODUCERS ASSOCIATION

PO Box 1951 • Buellton, CA 93427 • Office: (805) 693-5430 • Mobile: (805) 350-3231 • Fax: (805) 686-9312 • [www.californiawetfish.org](http://www.californiawetfish.org)

July 7, 2023

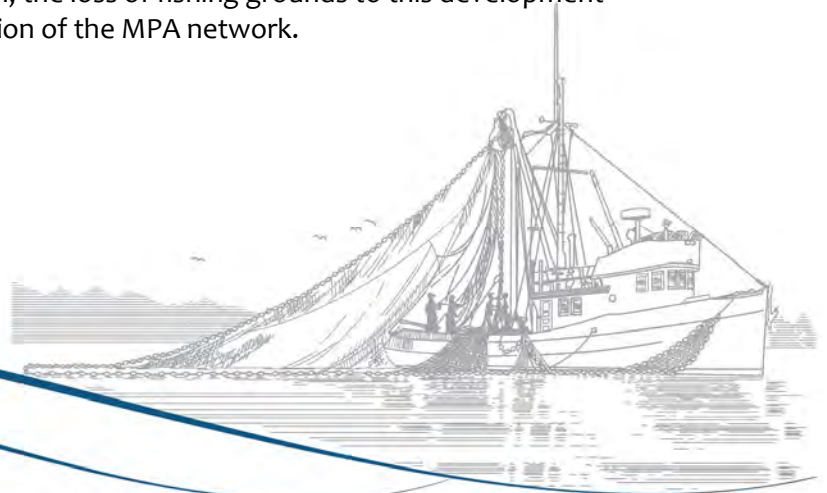
Marine Resources Committee  
California Fish and Game Commission  
715 P Street, 16th floor  
Sacramento, CA 95814

Re: Comments on the Decadal Management Review of California's Marine Protected Area Network

Dear Members of the Committee:

Thank you for the opportunity to comment on the Decadal Management Review of California's Marine Protected Area (MPA) Network. The following comments are those of the California Wetfish Producers Association (CWPA), a trade association representing the majority of fishing and processing interests in California's coastal pelagic species fisheries. Our members target market squid, sardine, anchovy, and mackerel. We support the recommendations of the review generally, offering a few specific comments on some recommendations that are of greater direct importance to our industry.

We strongly support the emphasis on monitoring expressed in the recommendations. California's coast is expected to undergo changes of unknown substance and intensity in the near future as a result of human activities. While the changing climate is foremost on our minds, the large scale industrial development of offshore wind power will also have effects throughout both its development and operational phases. Impacts will be both direct – such as displacement of fishing fleets – and indirect – such as changes in the marine environment from sound, electrical current, and effects on upwelling. Adapting the MPA network to achieve its intended purposes will require understanding these influences. In addition, the loss of fishing grounds to this development should be considered in any future expansion of the MPA network.



Representing California's Historic Fishery

Comment of California Wetfish Producer's Association

June 2023 – Ocean Protection Council's Decadal Management Review off California's Marine Protected Area Network

The species targeted by CWPA members have stocks that are highly dependent on environmental conditions. Market squid – often the State's largest fishery – is a short-lived, highly resilient species that spawns coastwide. The State manages this highly-regulated fishery with limits on entry, as well as weekend and area closures that enhance spawning opportunities and ensure the continued success of the commercial squid industry and its benefits to our state and local economies.

The effectiveness of this management has led the Monterey Bay Seafood Watch program to rate California market squid as a “best choice” for consumers and its sustainability efforts. The fishery moves up and down the California coast as environmental conditions drive local stock expansions and contractions. Providing flexibility to the fleet to move with changes in distribution of squid is critical to the fishery's success and has also served species that prey on market squid by ensuring that the fishery is most active in areas of relatively large abundance.

The emphasis on maintaining an MPA network that supports this access and use will be critical to ensuring the long-term viability of this vital California fishery. Elements of the recommendations focused on maintaining resilience and sustainability of the blue economy are all important to achieving this goal and we applaud those efforts.

CWPA members want to ensure that our industry can continue to flourish, provide a sustainable food source, support jobs, and bring the economic benefits that California's long-standing squid fishery has for the past 100 years.

Thank you again for your efforts to develop a beneficial and workable MPA Network.

Respectfully,

A handwritten signature in black ink, appearing to be 'M Fina', written over the printed name.

Mark Fina  
Executive Director

**From:** steve scheiblaue <4alliancefisheries@gmail.com>  
**Sent:** Friday, July 7, 2023 9:44 AM  
**To:** FGC  
**Subject:** comment on MPA priorities  
**Attachments:** CAmpaReviewACSF-SDFWG.pdf

**WARNING:** This message is from an external source. Verify the sender and exercise caution when clicking links or opening attachments.

Please find attached a comment on MPA priorities which have come out of the Decadenal Review, from the Alliance of Communities for Sustainable Fisheries and the San Diego Fishermen's Working Group.



July 7, 2023

Eric Sklar, President  
CA Fish and Game Commission  
Sent electronically

Dear President Sklar and Commissioners,

Thank you for providing the opportunity to comment on priority recommendations for the state's Decadal MPA Management Review.

The Alliance of Communities for Sustainable Fisheries (ACSF) is a 22-year-old 501(c)(3) not-for-profit organization, founded for the purposes of educating the public on fisheries issues, connecting fishing men and women ("fishermen") with their communities, and representing fishing interests in state and federal processes. The ACSF is a regional organization, with commercial fishing leaders, representing Monterey, Moss Landing, Santa Cruz, Morro Bay, Pillar Point, and Port San Luis, on our Board of Directors. Port communities, several recreational fishing organizations, and the California Wetfish Producers Association (squid, sardines, etc), also have representatives on our Board. Thus, the ACSF represents a large cross-section of fishing and community interests for the Central Coast of California.

Founded in 2012, the San Diego Fishermen's Working Group (SDFWG) is a 501-c-3 non-profit organization with a Board of Directors comprised of all the major fishery gear types of the greater San Diego region. The SDFWG represents the interests of commercial fishermen in local, state, and federal processes.

ACSF and SDFWG members were deeply involved in the MLPA Initiative process, as well as contributing comments and observations about MPA performance in the CA MPA review.

The term "fisherman" is herein used to include our fishing women and men.

Several conclusions found in the DFW's MPA review document are worth noting as the state considers recommendations for the adaptive management of its system of MPAs:

"Biodiversity responses of ecological communities varied across habitats and bioregions. • Although biodiversity of select marine species was higher inside MPAs in some habitats and bioregions (Appendix B.2-B.4), **statewide and regional trends across habitats showed no difference in biodiversity inside compared to outside MPAs** (Caselle and Nickols et al. 2022)."

"MPAs did not appear to help mitigate against the initial effects of the marine heatwave, yet some ecological communities within MPAs appeared to be more resilient and showed signs of recovery after the heatwave."

"MPAs that allow some level of take and have nearby infrastructure, such as easily accessible parking lots, attract more human uses."

Note this last point infers that increased MPA use is related to convenient parking.

We also draw attention to the paper by Dan Ovando, et al, in *Conservation Biology (Assessing the Population-level Conservation Effects of Marine Protected Areas*, Daniel Ovando, Jennifer E. Caselle, Christopher Costello, Olivier Deschenes, Steven D. Gaines, Ray Hilborn, Owen Liu.) This paper concludes that **the MLPA/state MPA's did not produce more fish, increase biodiversity, or increase human use.**

Given these conclusions, we wonder why adaptive management strategies did not include reducing the number of state MPAs? If this outcome is included in "Near-term Priorities, "Governance, Regulatory and Review Framework—Apply what is learned in the first Decadal Management Review to support proposed changes in to the MPA Network and Management Program", then reducing the number of MPAs would be a rational conclusion. Certainly, increasing the number or size of MPAs would be contrary to the Decadal report's findings.

Thank you for considering comments from the Alliance of Communities for Sustainable Fisheries and the San Diego Fishermen's Working Group.

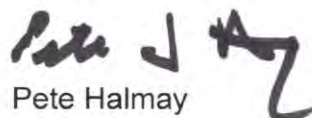


Alan Alward

Co-Chair

ACSF

[4alliancefisheries@gmail.com](mailto:4alliancefisheries@gmail.com)



Pete Halmay

President

SDFWG

[Peterhalmay@gmail.com](mailto:Peterhalmay@gmail.com)

## California Fish and Game Commission

### Comment Letters Received for the July 20, 2023 Marine Resources Committee Meeting that Support the Department's Draft Prioritization of Specific Recommendations from Table 6.1 of *California's Marine Protected Areas Decadal Management Review*

July 13, 2023

Recommendation from Table 6.1	Comment Supporting Prioritized Recommendation (Comment Number)
01. Improve state agencies' tribal engagement and relationship building efforts.	10
02. Create a clear pathway to tribal management.	6
04. Apply what is learned from the first decadal management review to support proposed changes to the marine protected area (MPA) network and MPA Management Program.	5, 8, 10, 11, 12, 13, 14, 15, 16, 18, 19
05. Establish targets for meeting the goals of the Marine Life Protection Act (MLPA) and how the MPA Management Program and network will evolve as targets are met.	11
07. Expand targeted outreach and education materials and events to under-represented user groups.	6, 10, 15, 19
09. Continue to coordinate and collaborate with the California Ocean Protection Council (OPC) and other agencies on California's ocean and coastal priorities to enhance coastal biodiversity, climate resiliency, human access and use, and a sustainable blue economy.	10
10. Improve partnership coordination across the four pillars of the MPA Management Program.	6, 15, 19
11. Update the MPA Monitoring Action Plan framework to improve and sustain a cost-effective long-term monitoring program, including guidelines to ensure monitoring consistency and sustainable funding.	5, 10, 18
12. Invest in improving understanding of the human dimensions of MPAs and develop a human dimension working group and research agenda.	8
13. Explore the use of innovative technologies such as remote sensing, drones, and eDNA, to enhance and streamline traditional monitoring projects.	8

14.	Develop a comprehensive community science strategy for MPAs and better utilize community science to supplement core monitoring programs.	6, 8, 12
15.	Evaluate outreach needs, assess effectiveness of resources, identify, and pursue the most impactful and cost-efficient outreach tools for increasing MPA awareness and compliance.	6, 16
16.	Conduct more targeted outreach to specific audiences to connect stakeholders with coastal resources and to encourage stewardship and compliance with regulations.	16, 19
18.	Utilize OPC's <i>Restoration and Mitigation Policy</i> to develop a framework to evaluate and approve appropriate restoration and mitigation actions within MPAs and marine managed areas.	5, 6, 18
19.	Create and implement a cohesive and actionable MPA enforcement plan.	9, 17
20.	Increase enforcement capacity.	9, 15, 17
21.	Enhance MPA citation record keeping and data management.	6, 9, 12
22.	Increase information gathering regarding MPA violation prosecutions and judicial outcomes.	9, 16, 17
23.	Expand and target monitoring and research efforts to examine the design attributes of the MPA network more effectively	6
24.	Develop and implement climate change research and monitoring priorities and metrics for California's MPA network.	6, 11
27.	Improve understanding of MPA network effects on fisheries and fish stock sustainability and further integrate MPA monitoring data into fisheries management.	6
28.	Further integrate influencing factors into ecological and human study designs and interpretations of MPA performance.	16

# MPA Enforcement Report

July 2023

Assistant Chief Eric Kord  
Marine Enforcement District



# MPA Enforcement Stats 2022 Totals

2022

- Patrol Hours – 15,143 Hrs.
- Contacts – 25,845
- Warnings Given – 889
- Citations issued- 612
- MPA Citations Issued – 602
- Total MPA violations – 825
- Title 14 section 632 violations – 422
- ***Change to RMS in tracking all MPA citations and violation***

# MPA Enforcement Stats 2022 and 2021 Totals in Comparison

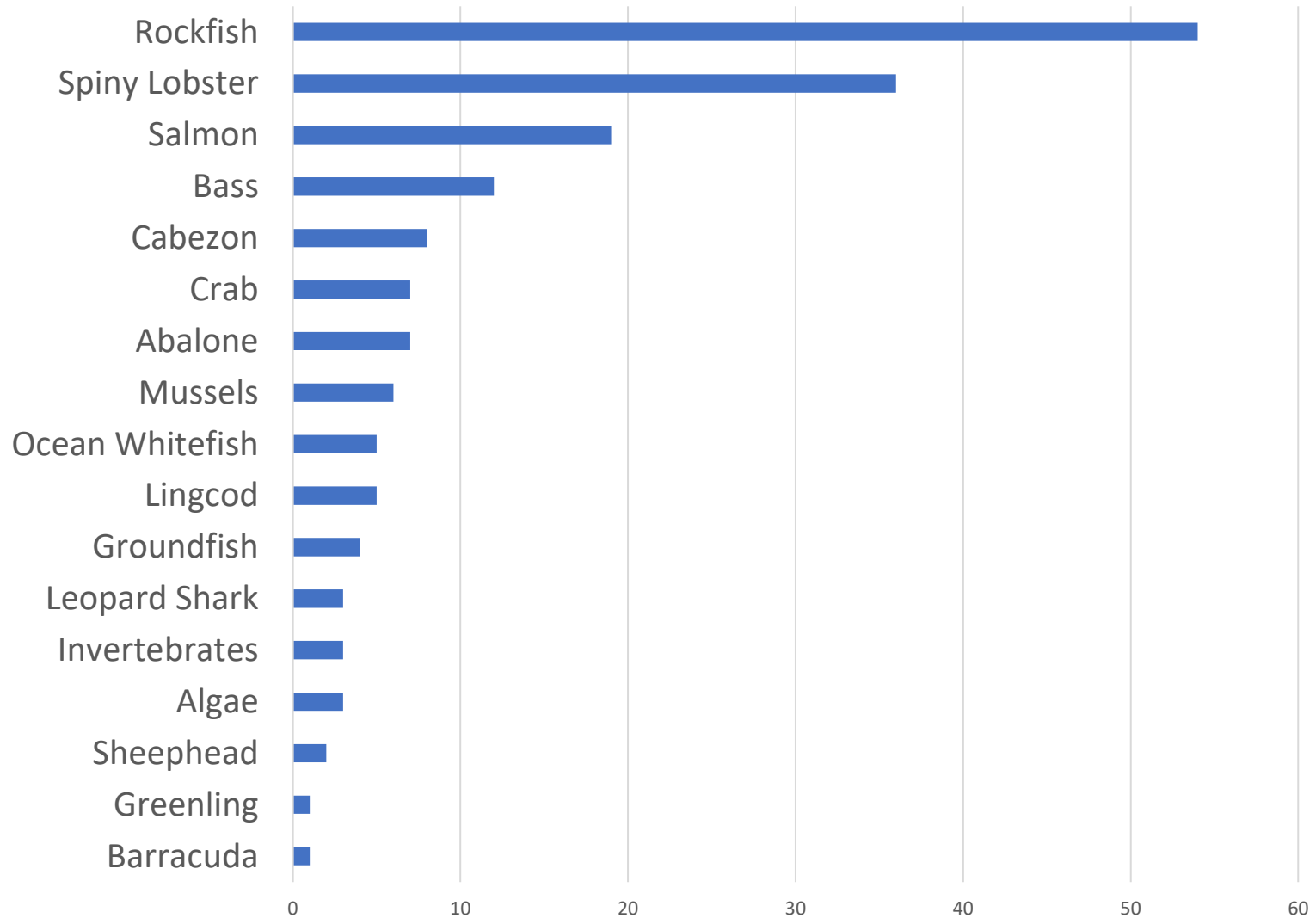
## 2022 (post RMS change)

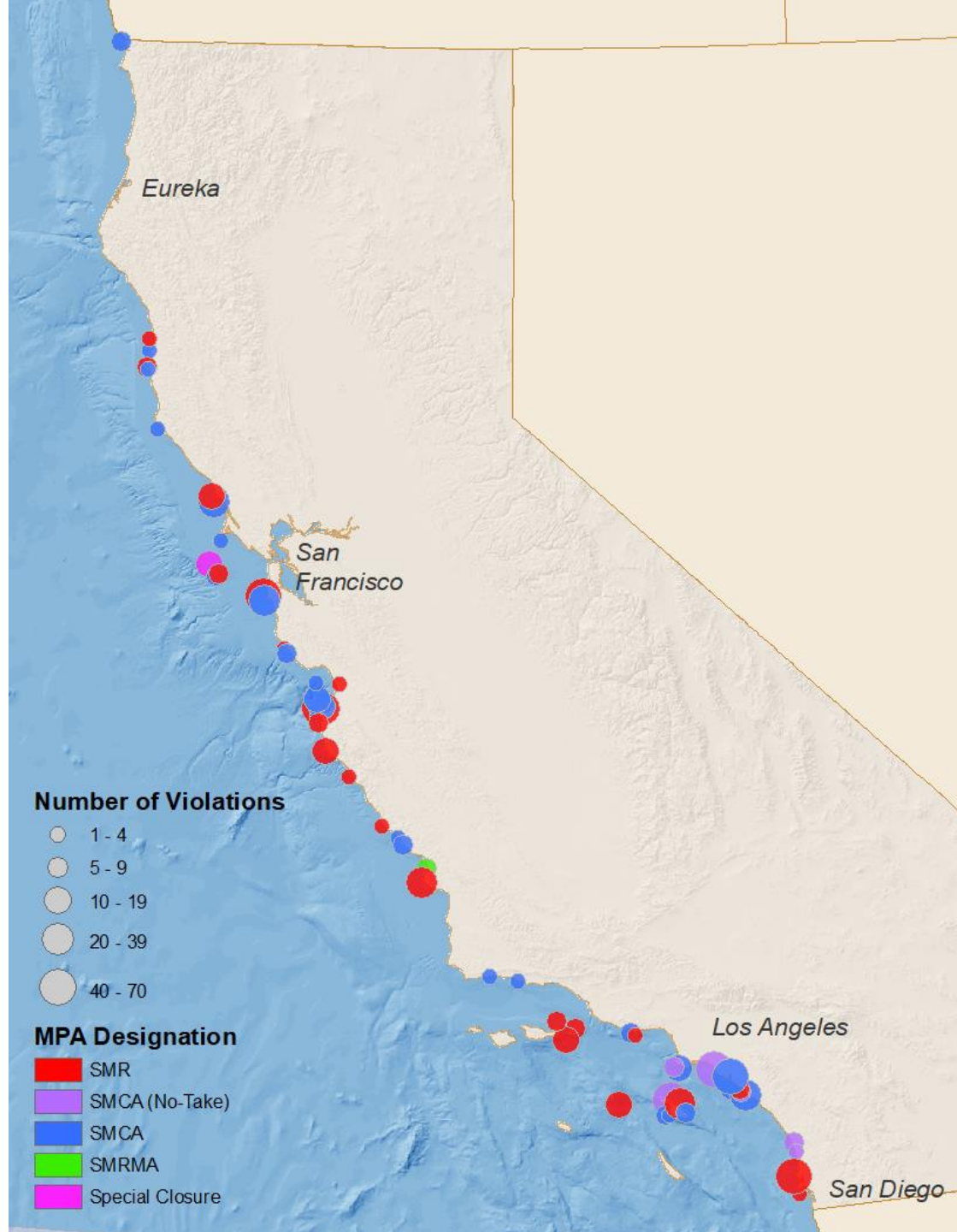
- Patrol Hours – 15,143 Hrs.
- Contacts – 25,845
- Warnings Given – 889
- Citations issued- **612**
- MPA Citations Issued – **602**
- Total MPA violations – **825**
- Title 14 section 632 violations – **422**

## 2021 (pre RMS change)

- Patrol Hours – 16,363 Hrs.
- Contacts – 32,441
- Warnings Given – 1,366
- Citations Issued – **665**
- MPA Title 14 632 violations- **271**

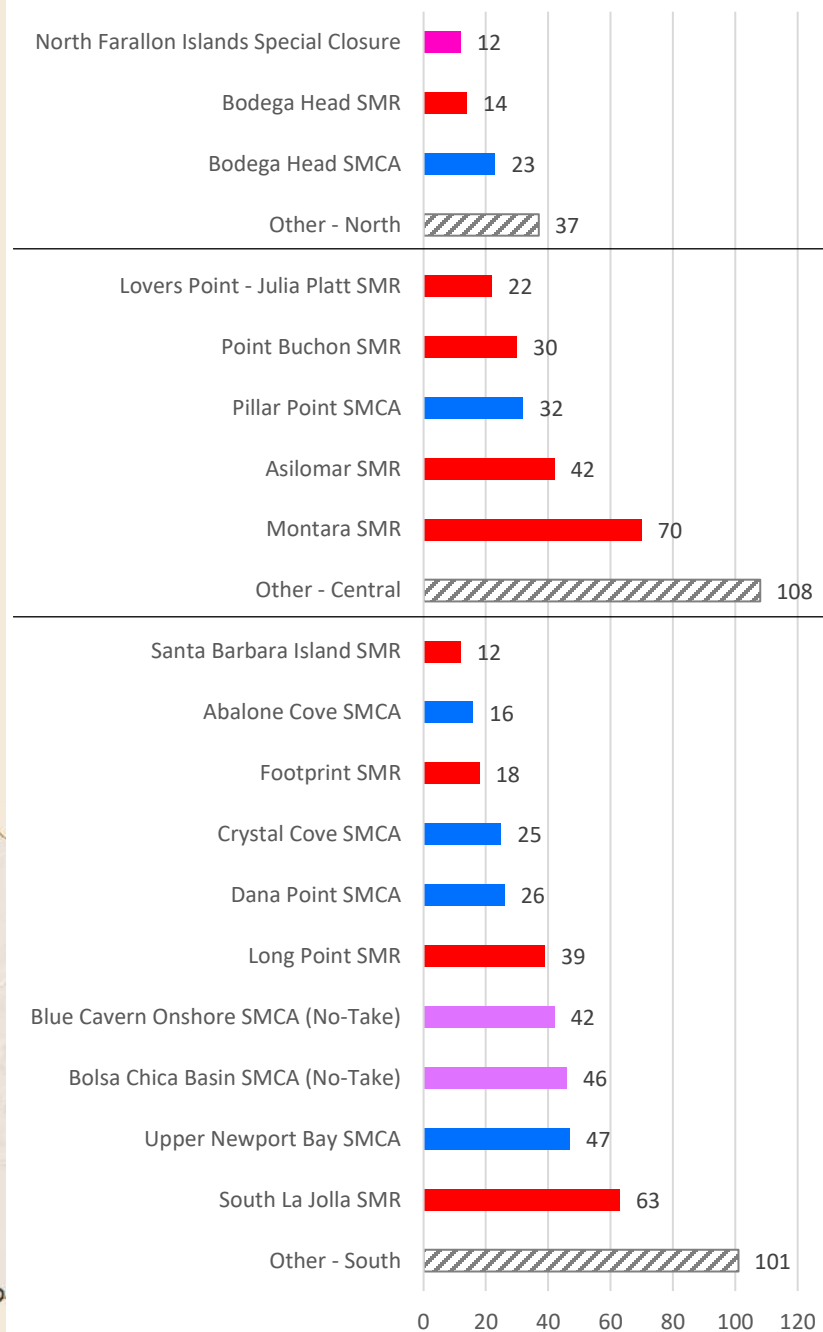
# Violations by Species and Species Groupings in MPAs



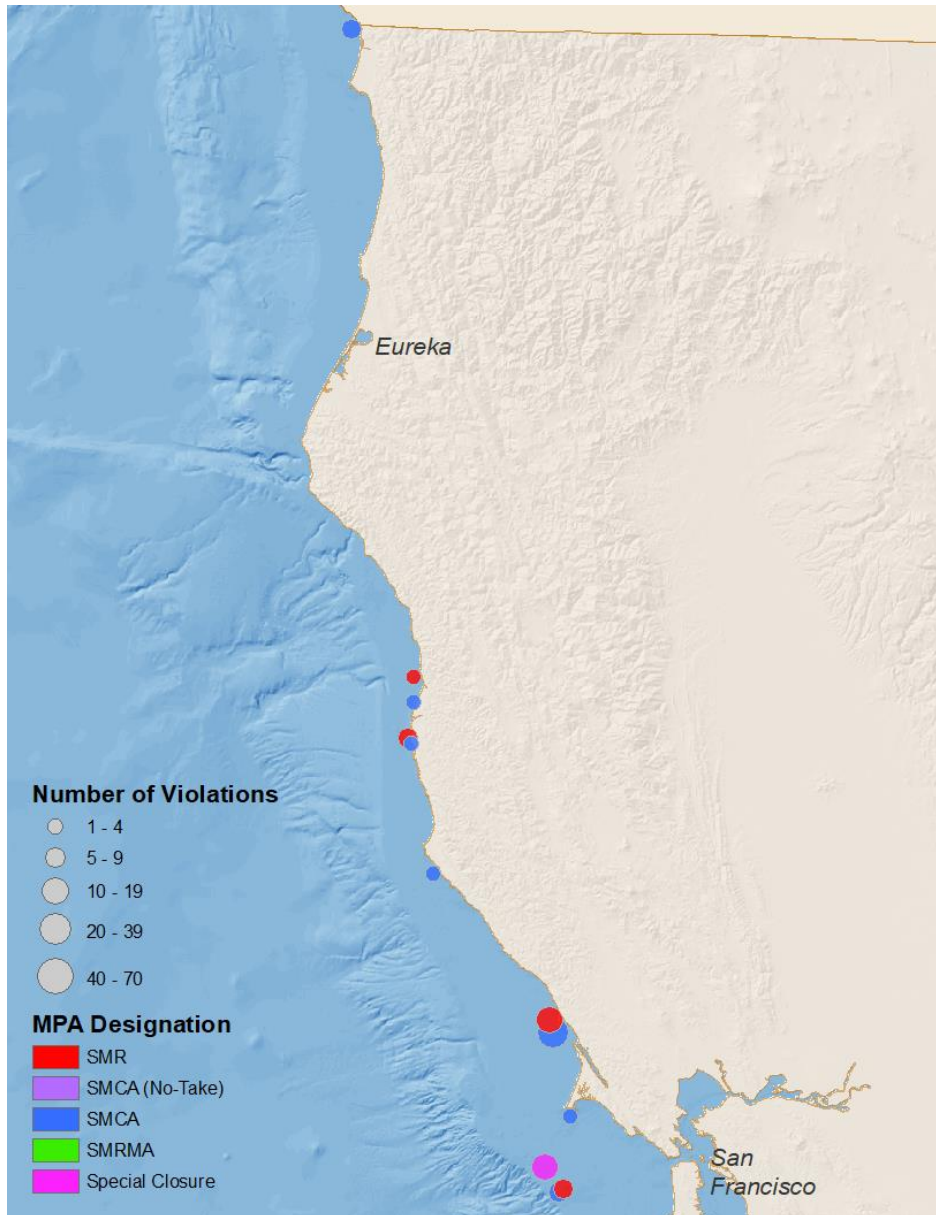




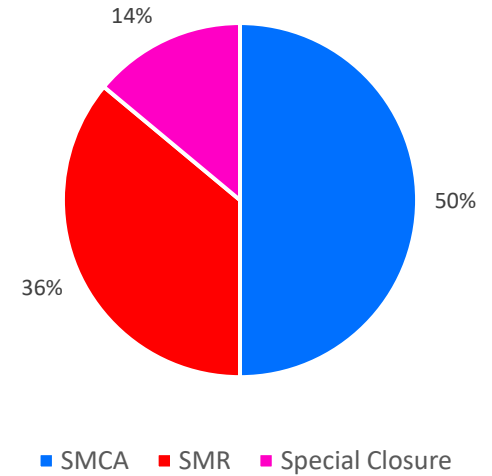
## Most violations by MPA per bioregion



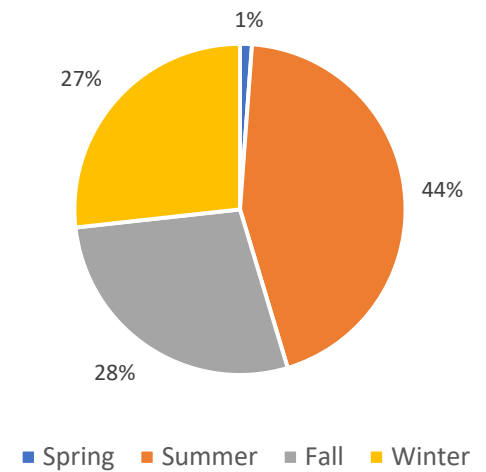
# North Coast Bioregion



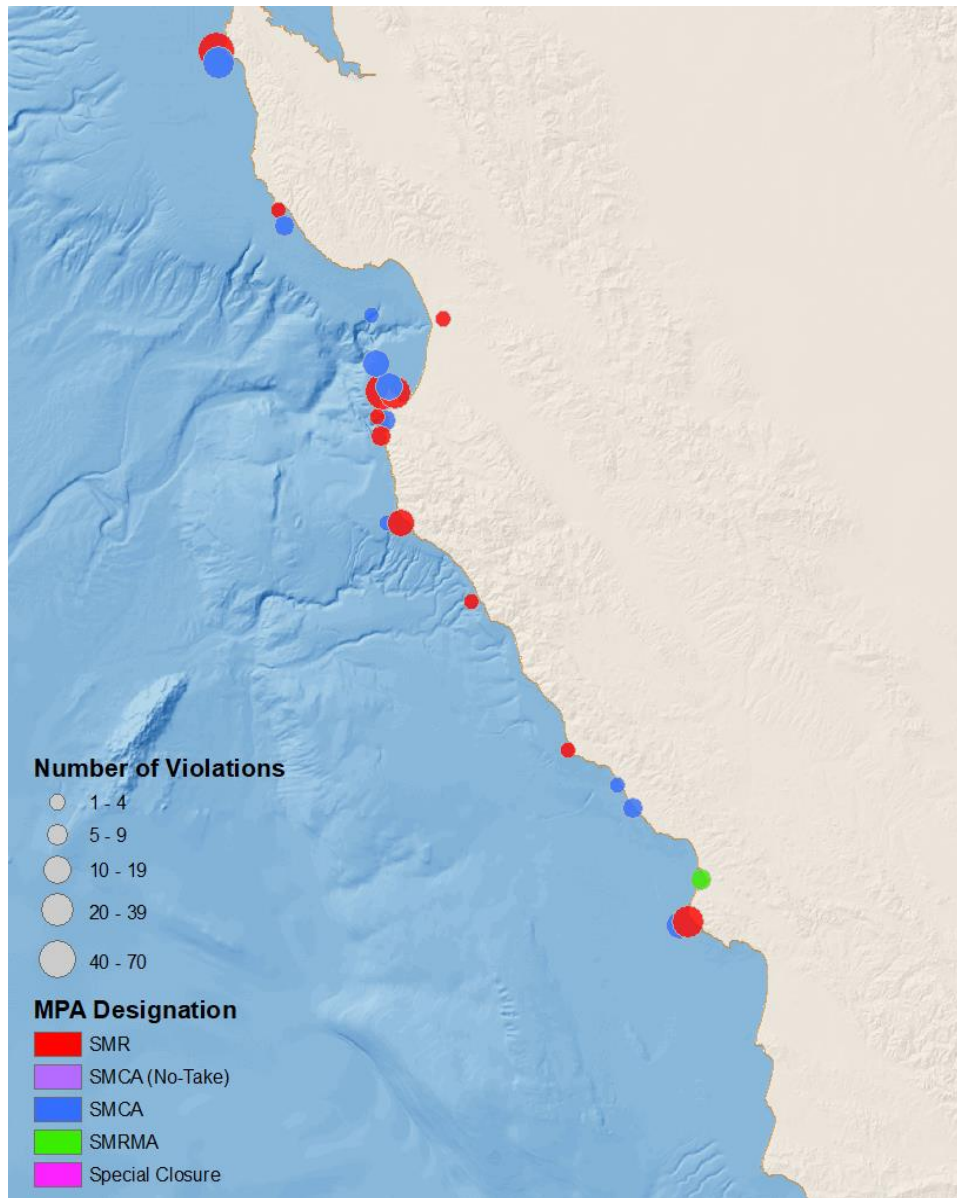
## North – Designation Violations



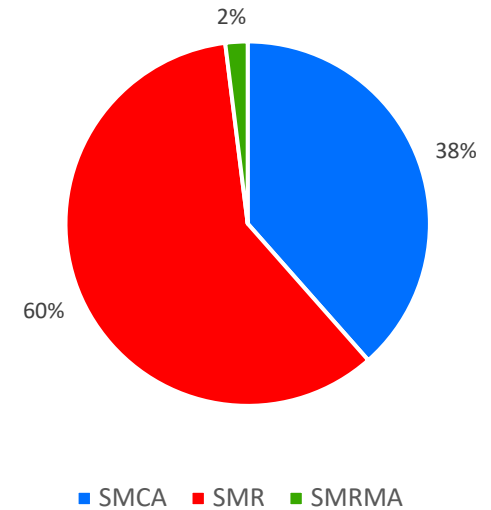
## North – Seasonal Violations



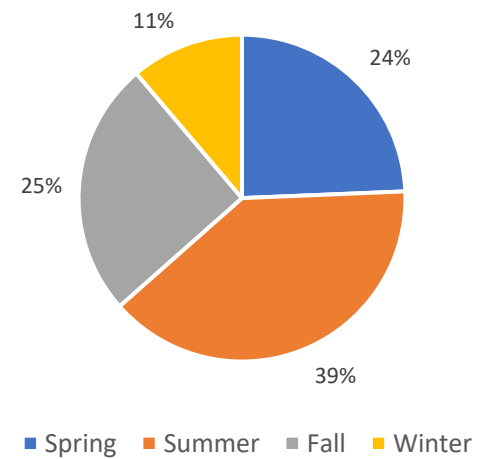
# Central Coast Bioregion



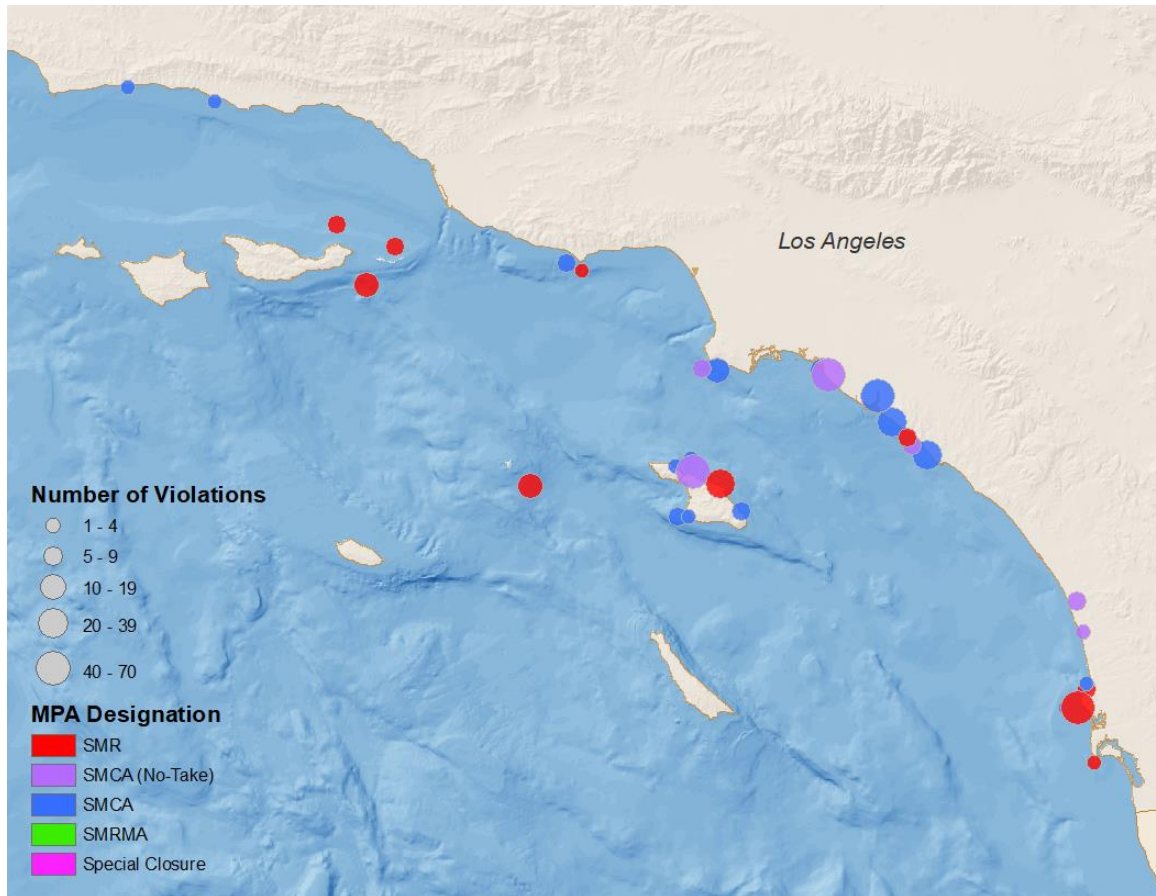
Central – Designation Violations



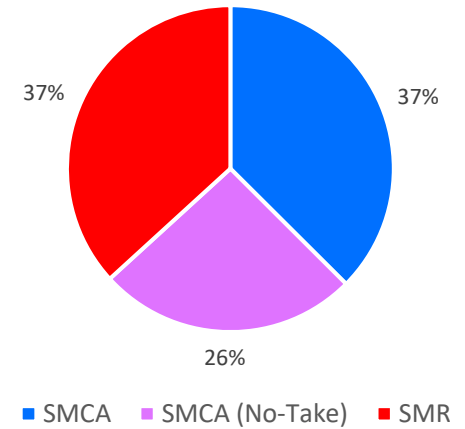
Central – Seasonal Violations



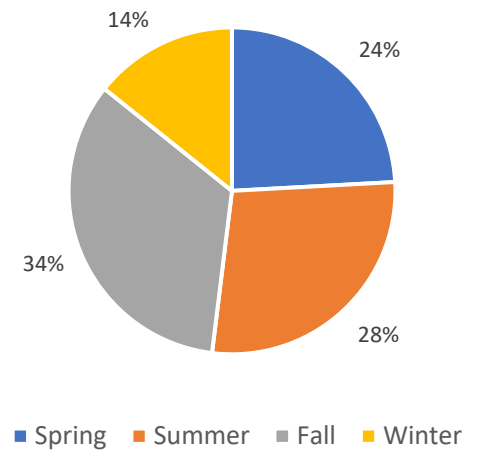
# South Coast Bioregion



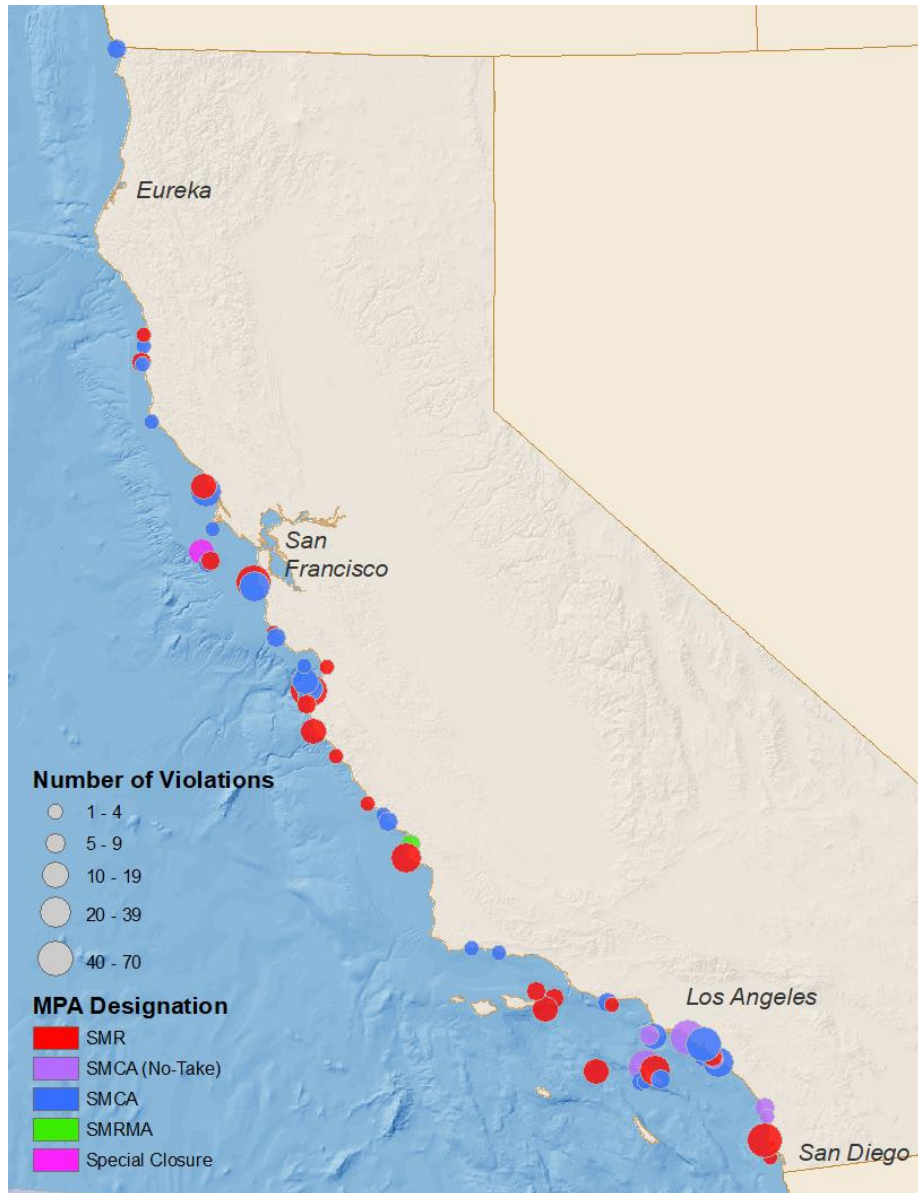
## South – Designation Violations



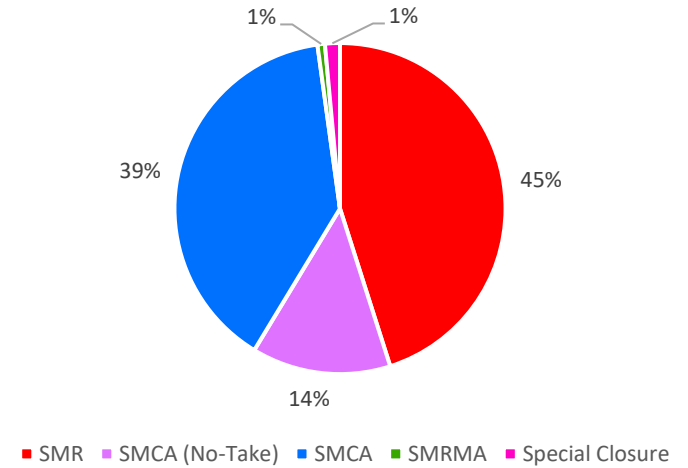
## South – Seasonal Violations



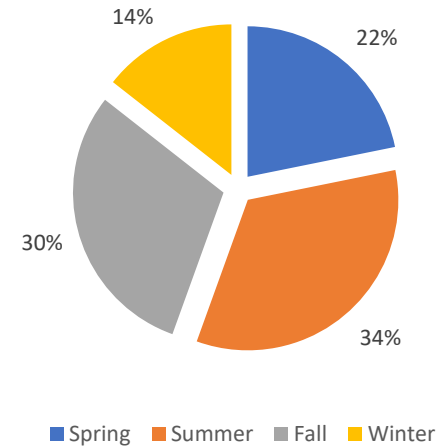
# Statewide Summary, 2022



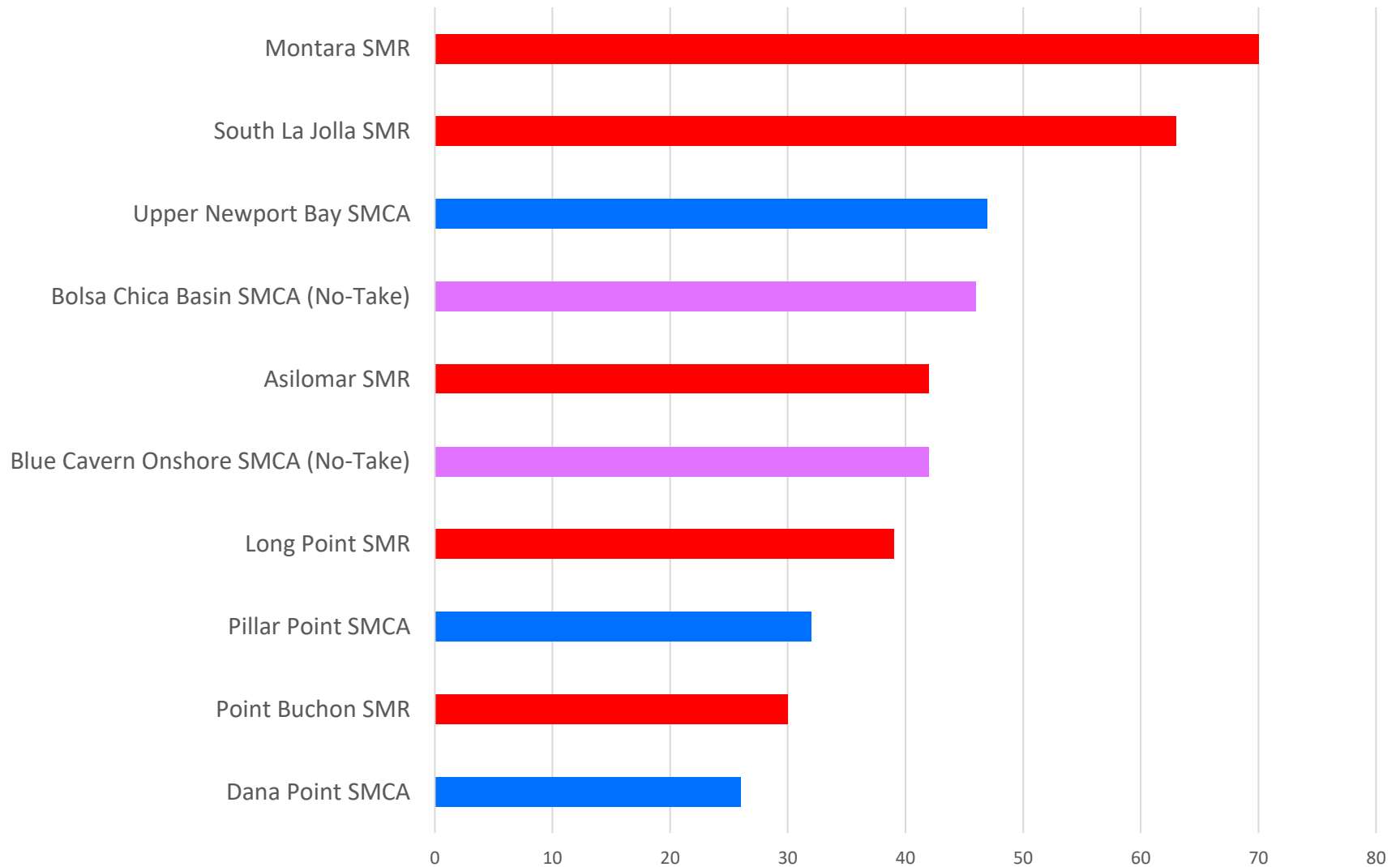
## Statewide – Designation Violations



## Statewide – Seasonal Violations

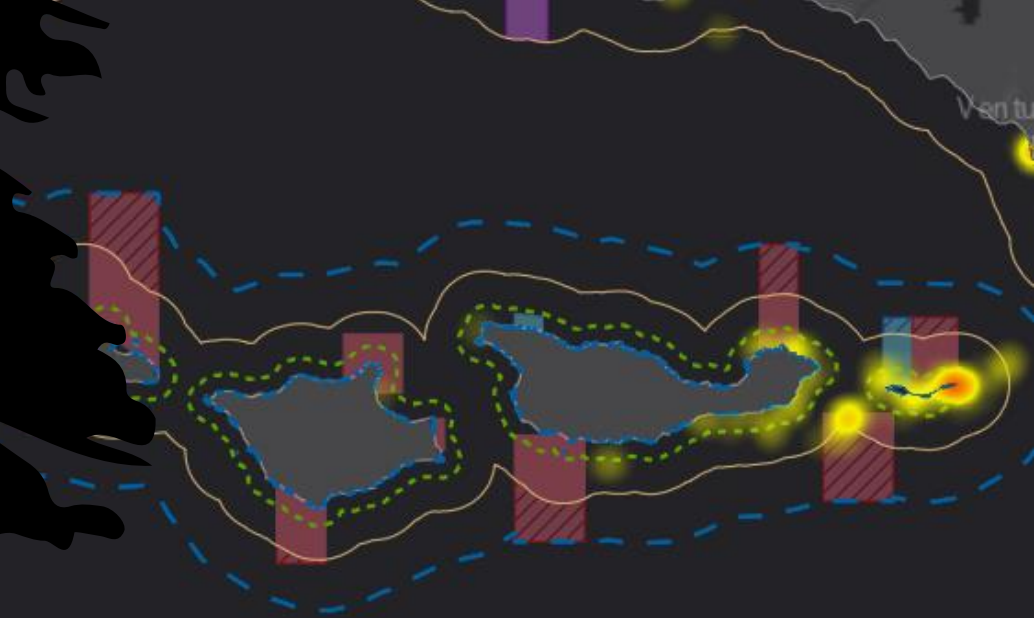


# Top 10 MPAs for Violations in 2022



# Improvements to RMS for 2023

- For 2023, RMS has been modified to track all ocean related violations in addition to MPA violations and violations.
- Will be able to look at percentage of MPA violations in relation to all ocean violations
- LED is committed to using technology for predictive policing. This may include increased use or expansion of other technologies.





Questions?



# Marine Fisheries Data Explorer (MFDE)

*20 July 2023*

*Presented to:*

**Marine Resources Committee**

**Petaluma, CA**

*Presented by:*

**Todd Neahr**

**Environmental Program Manager**



# Marine Species Portal

- Marine Life Management Act (MLMA)
  - Fishery Management Plans
  - Status of the Fisheries Reports
- MLMA Master Plan, June 2018
  - Shift to Enhanced Status Reports
- Unveiled August 2020
  - 37 ESRs plus 105 species profiles
- Requests for Phase 3
  - Interactive visuals
  - Complimentary tabular data
  - Public query tool

The screenshot displays the California Marine Species Portal website. The header includes the CDFW logo, 'CDFW Home', and navigation links for 'Portal Home', 'Overview', and 'Resources'. A search bar is located at the top left. The main content area is titled 'Marine Species Portal' and provides a brief description of the portal's purpose. Below this, there are filters for 'ESR/No ESR' (with checkboxes for 'ESR' and 'No ESR'), 'Category' (with checkboxes for 'Algae', 'Finfish', and 'Invertebrate'), 'Group' (with checkboxes for 'Baitfish', 'Flatfish', 'Invertebrates', 'Kelp/Algae', 'Rockfish', 'Salmon', 'Sharks/Rays', 'Tunas', and 'Other'), and 'Region' (with checkboxes for 'North Coast' and 'Central Coast'). The main display area shows a grid of species profiles, each featuring an illustration of the species, its name, scientific name, and common names. The species shown include Albacore Tuna, Barred Sand Bass, Barred Surfperch and Redtail Surfperch, Bat Ray, Bigeye Tuna, Black Croaker, Black Perch, Black Rockfish, and Black-and-Yellow Rockfish.

**Marine Species Portal**

The California Marine Species Portal provides searchable access to basic species information. [Enhanced Status Reports \(ESRs\)](#) are included for select state-managed fisheries.

**ESR/No ESR**

☐ ESR

☐ No ESR

**Category**

☐ Algae

☐ Finfish

☐ Invertebrate

**Group**

☐ Baitfish

☐ Flatfish

☐ Invertebrates

☐ Kelp/Algae

☐ Rockfish

☐ Salmon

☐ Sharks/Rays

☐ Tunas

☐ Other

**Region**

☐ North Coast

☐ Central Coast

**Albacore Tuna**  
*Thunnus alalunga*  
Other common names: longfin, albie, pigfish, Pacific albacore, German, North Pacific albacore, tombo ahi, binnaha, ahpalaha

**Barred Sand Bass**  
*Paralabrax nebulifer*  
Other common names: sand bass, sandy, rock bass, grumpy

**Barred Surfperch and Redtail Surfperch**  
*Amphistichus argenteus* and *Amphistichus rhodotus*  
Other common names: Bar perch, redtail

**Bat Ray**  
*Myliobatis californica*  
Other common names: sting ray, eagle ray, batfish, stingaree, bat sting ray, mud marlin

**Bigeye Tuna**  
*Thunnus obesus*  
Other common names: gorilla, tuna, patudo

**Black Croaker**  
*Cheilotrema saturnum*  
Other common names: China croaker, Chinese croaker, Chinafin croaker, red roncador, corvinata negra, black perch, black bass

**Black Perch**  
*Embiotoca jacksoni*  
Other common names: buttermouth perch, black

**Black Rockfish**  
*Sebastes melanops*  
Other common names: black snapper, black bass,

**Black-and-Yellow Rockfish**  
*Sebastes chrysomelas*  
Other common names: zurndicky



# MFDE Background

- Refresh the Enhanced Status Reports
- Commercial Fisheries Landings
  - 45,000 Receipts/Year → 1 Million+ Cells of Data
  - 1980 to Present
- Contracted Effort
- Summarized Outputs to Protect Confidentiality
- Foundation: Microsoft Power BI, DataTables.net
- Anticipated Growth



# MFDE Disclaimer

## Welcome to the Marine Fisheries Data Explorer

Data Disclaimer: CDFW collects data from various sources for fisheries management purposes, and data may be modified at any time to improve accuracy and as new data are acquired. CDFW may provide data upon request under a formal agreement. Data are provided as-is and in good faith, but CDFW does not endorse any particular analytical methods, interpretations, or conclusions based upon the data it provides. Unless otherwise stated, use of CDFW's data does not constitute CDFW's professional advice or formal recommendation of any given analysis. CDFW recommends users consult with CDFW prior to data use regarding known limitations of certain data sets.

**The MFDE is not intended to be used for management purposes, and CDFW requests to be contacted if state, federal, or tribal partners need data for management reasons.**

**Interpretations of species with seasons spanning calendar years should be treated with caution for the final year in the data series as only a portion of the months and seasonal data will be available until the next year's data has been reviewed by scientists. Users are strongly encouraged to consult the [California Marine Species Portal](#) and the State and Federal Fishery Management Plans found on [Marine's Data, Management and Research](#) page.**



# MFDE Home Page



California Department of  
**Fish and Wildlife**

[Home](#)

[Fishing](#)

[Hunting](#)

[Licensing](#)

[Conservation](#)

[Learning](#)

[Home](#) > [Conservation](#) > [Marine](#) > [Data, Management, Research](#) > **MFDE**

## Marine Fisheries Data Explorer

### Visualize

[Landings by Value and Participation](#)

[Landings by Block](#)

### Summarize

[Top Species in Pounds and Value](#)

[Average Price by Year or Month](#)

[Percent Landings by Port Area or Port](#)

[California Commercial Landings](#)

### Customize

[CUSTOM QUERIES](#)

## Marine Fisheries Data Explorer

[MFDE Home](#)

[MFDE User Guide](#)



# MFDE User Guide

[Home](#) > [Conservation](#) > [Marine](#) > [Data, Management, Research](#) > [MFDE](#) > [User Guide](#)

## Marine Fisheries Data Explorer User Guide

### On this page

- [Background](#)
- [Data Disclaimer](#)
- [Confidential Data and the Rule of Three](#)
- [Definitions](#)
- [Visualization Summaries](#)
- [Navigation Tips](#)
- [Contact Us](#)

### Background

The California Department of Fish and Wildlife (CDFW) has collected commercial fishery landings data since 1916. Data from the nearly 50,000 landing receipts submitted annually is critical to sustainably managing the state's commercial fisheries. With the shift to mandatory electronic submission of landing receipts beginning July 1, 2019, data is now available to fisheries managers in near real time. The Marine Fisheries Data Explorer allows the public to explore reviewed and summarized California commercial landings data.

### Data Disclaimer

CDFW collects data from various sources for fisheries management purposes, and data may be modified at any time to improve accuracy and as new data is acquired. CDFW may provide data upon request under a formal agreement. Data is provided as-is and in good faith, but CDFW does not endorse any particular analytical methods, interpretations, or conclusions based upon the data it provides. Unless otherwise stated, use of CDFW's data does not constitute CDFW's professional advice or formal recommendation of any given analysis. CDFW recommends users consult with CDFW prior to data use regarding known limitations of certain data sets.



# Marine Fisheries Data Explorer Home Page

The screenshot shows the homepage of the Marine Fisheries Data Explorer (MFDE) on the California Department of Fish and Wildlife website. The page has a dark blue header with the CA.GOV logo, a search bar, and links for Login and Contact Us. Below the header is a white navigation bar with the California Department of Fish and Wildlife logo and links for Home, Fishing, Hunting, Licensing, Conservation, and Learning. The main content area has a breadcrumb trail: Home > Conservation > Marine > Data, Management, Research > MFDE. The title "Marine Fisheries Data Explorer" is prominently displayed. Below the title are three main sections: Visualize, Summarize, and Customize. The Visualize section includes links for "Landings by Value and Participation" and "Landings by Block". The Summarize section includes links for "Top Species in Pounds and Value", "Average Price by Year or Month", "Percent Landings by Port Area or Port", and "California Commercial Landings". The Customize section features a "CUSTOM QUERIES" button.

CA.GOV Login Contact Us ENHANCED BY Google

California Department of Fish and Wildlife

Home Fishing Hunting Licensing Conservation Learning

Home > Conservation > Marine > Data, Management, Research > MFDE

## Marine Fisheries Data Explorer

### Visualize

Landings by Value and Participation

Landings by Block

### Summarize

Top Species in Pounds and Value

Average Price by Year or Month

Percent Landings by Port Area or Port

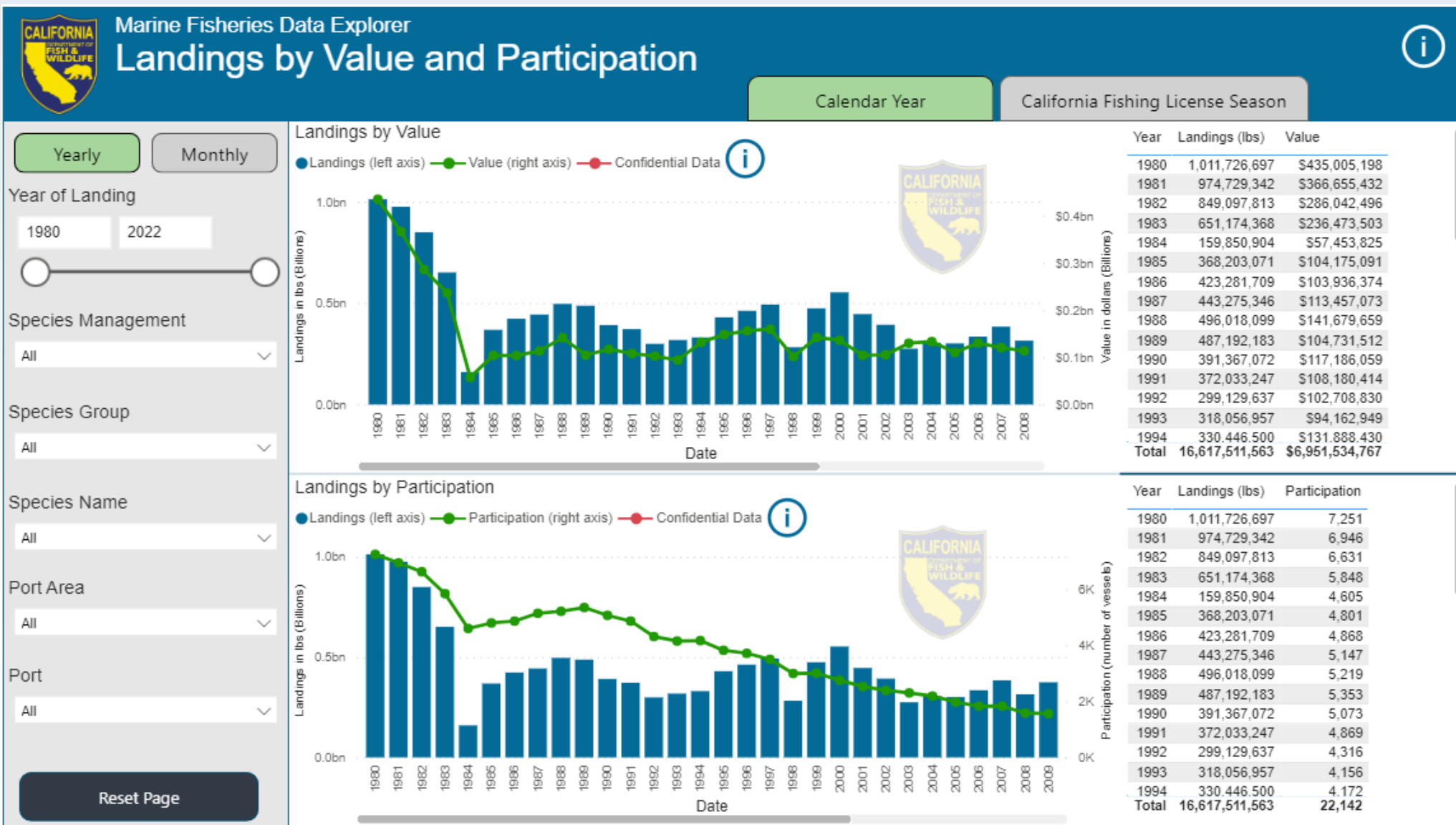
California Commercial Landings

### Customize

CUSTOM QUERIES

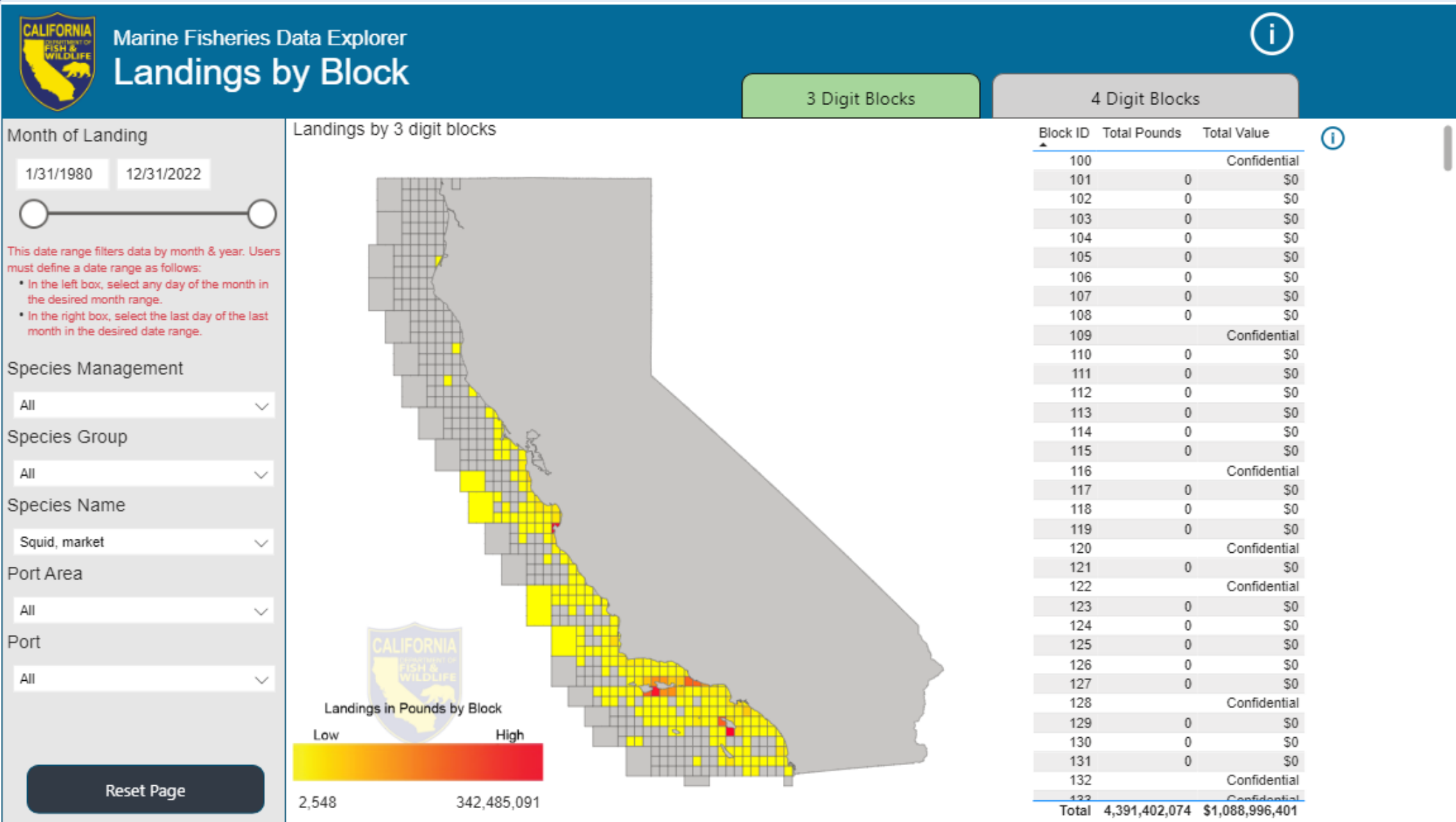


# MFDE: Landings by Value and Participation



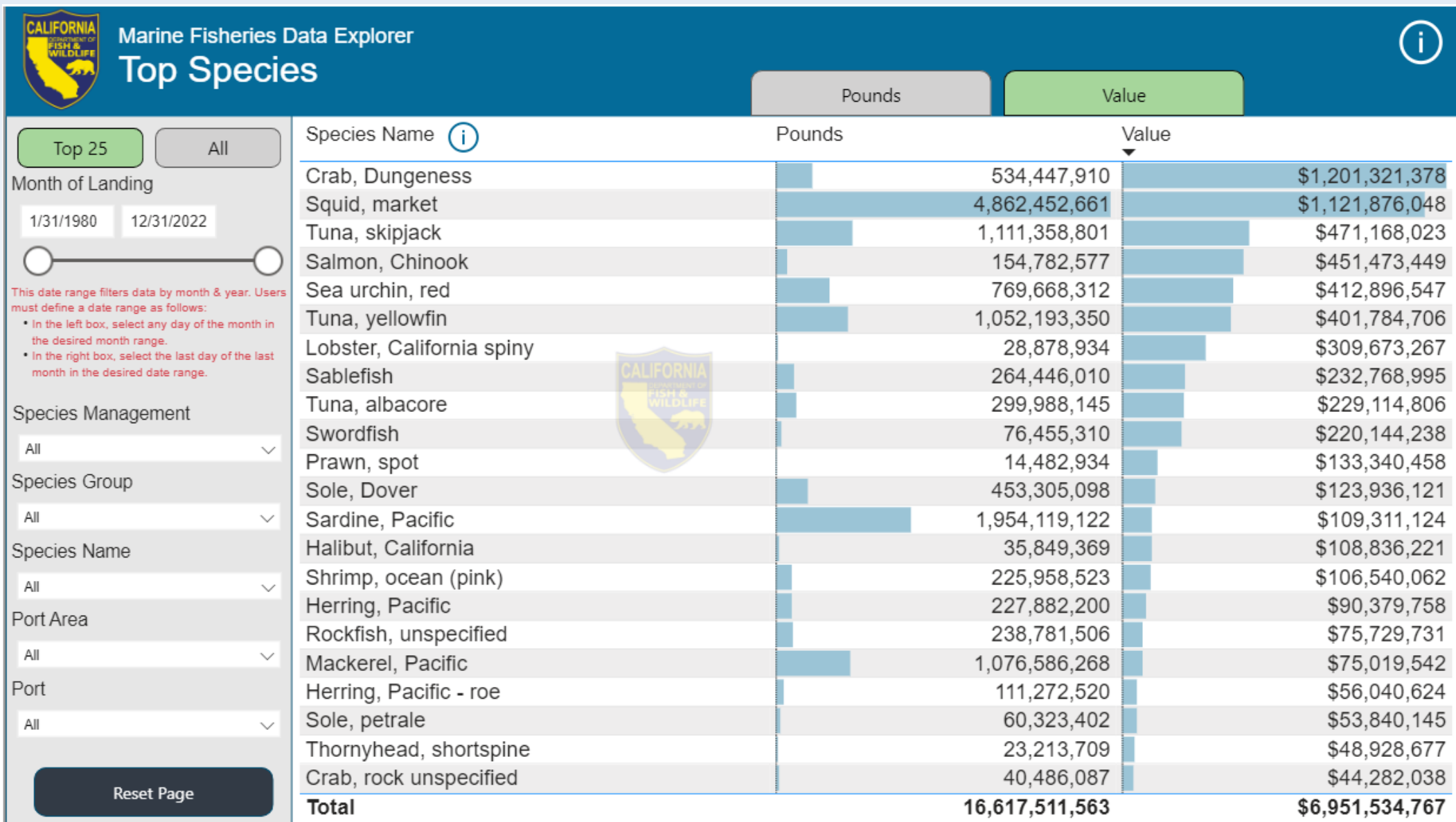


# MFDE: Landings by Block





# MFDE: Top Species in Pounds or Value





# MFDE: Average Price per Pound



## Marine Fisheries Data Explorer Average Price

Average Price

Average Price By Gear

Average Price By Condition

Yearly

Monthly

Year of Landing

1994

2022

Species Management

All

Species Group

All

Species Name

Lobster, California spiny

Port Area

All

Port

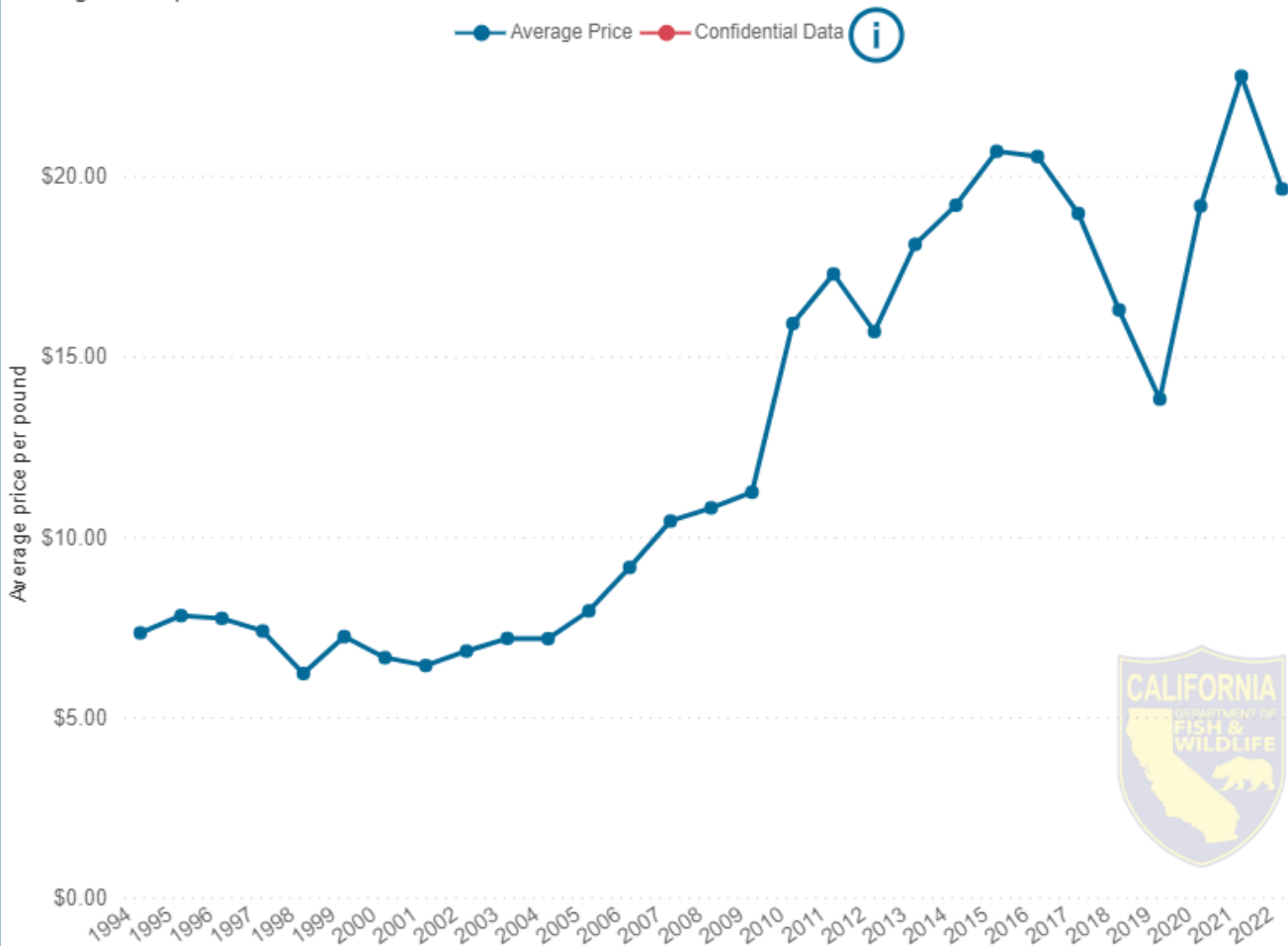
All

Gear Type

All

Reset Page

Average Price per Pound

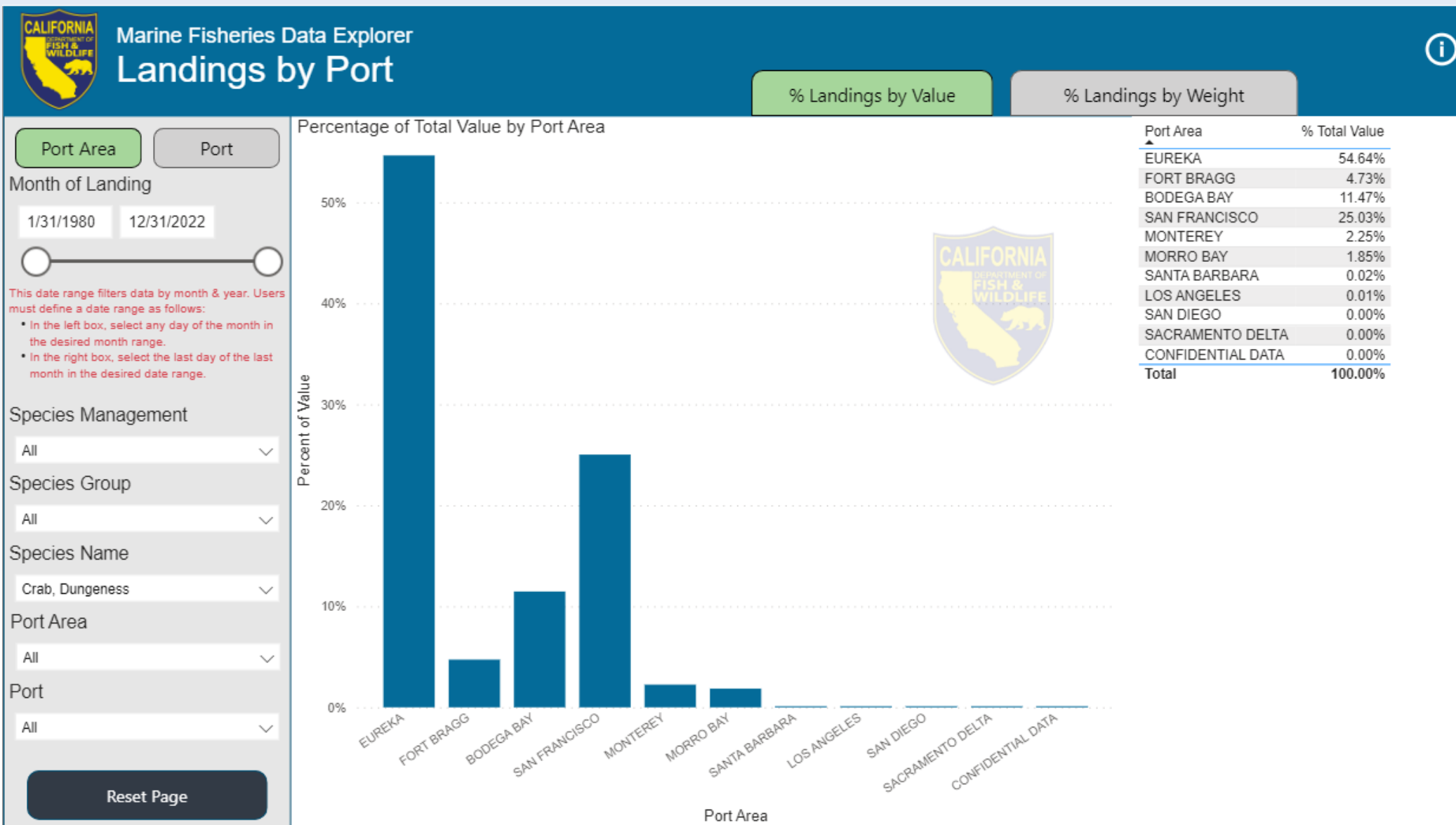


Year	Average Price
1994	7.34
1995	7.81
1996	7.74
1997	7.39
1998	6.21
1999	7.23
2000	6.65
2001	6.43
2002	6.83
2003	7.18
2004	7.18
2005	7.95
2006	9.15
2007	10.44
2008	10.80
2009	11.24
2010	15.91
2011	17.28
2012	15.69
2013	18.11
2014	19.19
2015	20.69
2016	20.54
2017	18.96
2018	16.29
2019	13.82
2020	19.17
2021	22.77
2022	19.64
Total	12.86





# MFDE: Percent Landings by Port Area or Port





# MFDE: California Commercial Landings Tables

## Step 1: Select Report Year

YEAR:

2022



## Step 2: Pick your Report

Origin and Pounds of Commercial Fish Landings into California

Monthly Landings in Pounds in the Eureka Area

Monthly Landings in Pounds in the Monterey Area

Monthly Landings in Pounds in the Los Angeles Area

Monthly Landings in Pounds in the Sacramento Delta Area

Monthly Landings in Pounds in the Inland Waters Area

Monthly Landings in Pounds in the San Diego Area

Pounds and Value of Landings of Commercial Fish into Inland and Unknown Ports

Pounds and Value of Landings by Port, San Francisco Area

Pounds and Value of Landings by Port, Santa Barbara Area

Monthly Landings in Pounds into California

Monthly Landings in Pounds in the San Francisco Area

Monthly Landings in Pounds in the Santa Barbara Area

Monthly Landings in Pounds in the Bodega Bay Area

Monthly Landings in Pounds in the Fort Bragg Area

Monthly Landings in Pounds in the Morro Bay Area

Pounds and Value of Landings of Commercial Fish into California by Area

Pounds and Value of Landings by Port, Eureka Area

Pounds and Value of Landings by Port, Monterey Area

Pounds and Value of Landings by Port, Los Angeles Area



# MFDE: Custom Queries

Complete steps 1 and 2 and then click "Generate Data" to view results.

## Step 1: Select fields to show

☐ Select All

- |                               |                                    |   |  |                                       |                                    |
|-------------------------------|------------------------------------|---|--|---------------------------------------|------------------------------------|
| <input type="checkbox"/> Year | <input type="checkbox"/> Month     | <input type="checkbox"/> Species Management Use | <input type="checkbox"/> Species Group | <input type="checkbox"/> Species Name | <input type="checkbox"/> Port Area |
| <input type="checkbox"/> Port | <input type="checkbox"/> Gear Type | <input type="checkbox"/> Use                    | <input type="checkbox"/> Condition     | <input type="checkbox"/> Block Code   |                                    |

## Step 2: Add filters to narrow down data

Start Date:

End Date:

Species Management:

Nearshore Fishery Management Plan S... x | v

Species Group:

Roundfish x | v

Species Name:

Sheephead, California x | v

Port Area:

All Port Areas x | v

Port:

All Ports x | v

Gear Type:

All Gear Types x | v

Use:

All Uses x | v

Condition:

All Conditions x | v

Block Code

☒ List

☐ Range

Select... | v

GENERATE DATA

RETURN TO HOME

RESET

Data Results



# MFDE Next Steps

- Anticipated Growth
  - More frequent refreshes
  - Additional Enhanced Status Report Visuals
  - Including other Data Streams

# Thank You

- Application Email: **MFDE@wildlife.ca.gov**
  - <https://wildlife.ca.gov/mfde>
- <https://wildlife.ca.gov/Conservation/Marine/Data-Management-Research/MFDE>

# Marine Fisheries Data Explorer User Guide

<https://wildlife.ca.gov/MFDE/User-Guide>

## Background

The California Department of Fish and Wildlife (CDFW) has collected commercial fishery landings data since 1916. Data from the nearly 50,000 landing receipts submitted annually is critical to sustainably managing the state's commercial fisheries. With the shift to mandatory electronic submission of landing receipts beginning July 1, 2019, data is now available to fisheries managers in near real time. The Marine Fisheries Data Explorer allows the public to explore reviewed and summarized California commercial landings data.

## Data Disclaimer

CDFW collects data from various sources for fisheries management purposes, and data may be modified at any time to improve accuracy and as new data is acquired. CDFW may provide data upon request under a formal agreement. Data is provided as-is and in good faith, but CDFW does not endorse any particular analytical methods, interpretations, or conclusions based upon the data it provides. Unless otherwise stated, use of CDFW's data does not constitute CDFW's professional advice or formal recommendation of any given analysis. CDFW recommends users consult with CDFW prior to data use regarding known limitations of certain data sets.

**The MFDE is not intended to be used for management purposes, and CDFW requests to be contacted if state, federal, or tribal partners need data for management reasons. Users are strongly encouraged to consult the [California Marine Species Portal](#) (opens in new tab) and the State and Federal Fishery Management Plans found on [Marine's Data, Management and Research page](#).**

## Confidential Data and the Rule of Three

Pursuant to California Fish and Game Code Section 8022, commercial landings data is considered confidential. Publicly available landings data must be presented as summaries and cannot disclose data representative of an individual or business.

To preserve confidentiality, the Marine Fisheries Data Explorer applies the "Rule of Three" which ensures that the only data provided in the summarized commercial landings was reported by at least three fishermen, three vessels, and three fish businesses. Landings data representative of fewer than three fishermen, vessels, or fish businesses is marked as "Confidential".

## Definitions

### Landing

To begin transfer of fish, offloading fish, or to offload fish from any vessel. Once transfer of fish begins, all fish aboard the vessel are counted as part of the landing.

### Landing Receipt

The method for documenting all species kept during a fishing trip under the authority of a commercial fish license, even catch for personal use. Landing receipts are submitted by commercial fish businesses and document the fishermen and vessels responsible for

bringing the catch to shore. The landing receipt provides information about the species purchased including a weight and price per pound, date of the landing, the port of the offload, the location at sea where the catch occurred, and the type of fishing gear used.

**Fish Business**

Any person who engages in any business for profit involving commercial fish. Commercial fish businesses required to report landings are fish receivers, fisherman retailers, and multifunction fish businesses.

**Vessel**

Commercial fishing vessel registered with CDFW and documented on the landing receipt.

**Fisherman**

Individual with commercial fishing license(s) issued by CDFW and documented on the landing receipt.

**Commercial Fishing Season**

Commercial fishing licenses and registrations are valid from April 1 through March 31 of the following year.

**Species**

Common name for the fish, invertebrate, plant, etc. (e.g. Kellet's Whelk).

**Species Group**

Group of like species used for summaries and regulatory or management purposes (e.g. Other Snails).

**Species Management**

Like species which are grouped due to similar management strategies (e.g. Marine State Managed Invertebrates).

**Port**

Port where the catch was first landed (brought to shore).

**Port Area**

Regional multi-port complex used for summaries.

**Block Codes**

Reported location on the landing receipt where the majority of the catch occurred. Within California state and federal waters, there are 526 three-digit blocks which are 10 minutes by 10 minutes in size, 21 three-digit blocks which are larger than 10 minutes by 10 minutes and up to 30 minutes by 30 minutes in size, and ten four-digit generalized catch areas which broadly describe latitudinal catch, from shore out to the exclusive economic zone (EEZ).

**Gear**

The commercial fishing technique used to catch the identified species.

**Condition**

State of the fish, invertebrate, plant, etc. when received by the fish business or sold to the consumer.

**Visualization Summaries**

**Landings by Value** – graphical representation of landings and associated values for all species from 1980 to the most recent complete calendar year. Data is presented on an annual or monthly scale, and may be filtered by species or port.

**Landings by Participation** - graphical representation of landings and number of unique vessels (or fishermen for some fisheries) for all species from 1980 to the most recent complete

calendar year. Data is presented either annually or on a monthly scale, and may be filtered by species or port.

**Block Summary** – landings data mapped by 3-digit and 4-digit blocks off California. Data is presented annually, and may be filtered by species or port.

**Top Species** – returns top 25 species or all species sorted by pounds or value in order from highest to lowest. Data is presented annually and may be filtered by species or port.

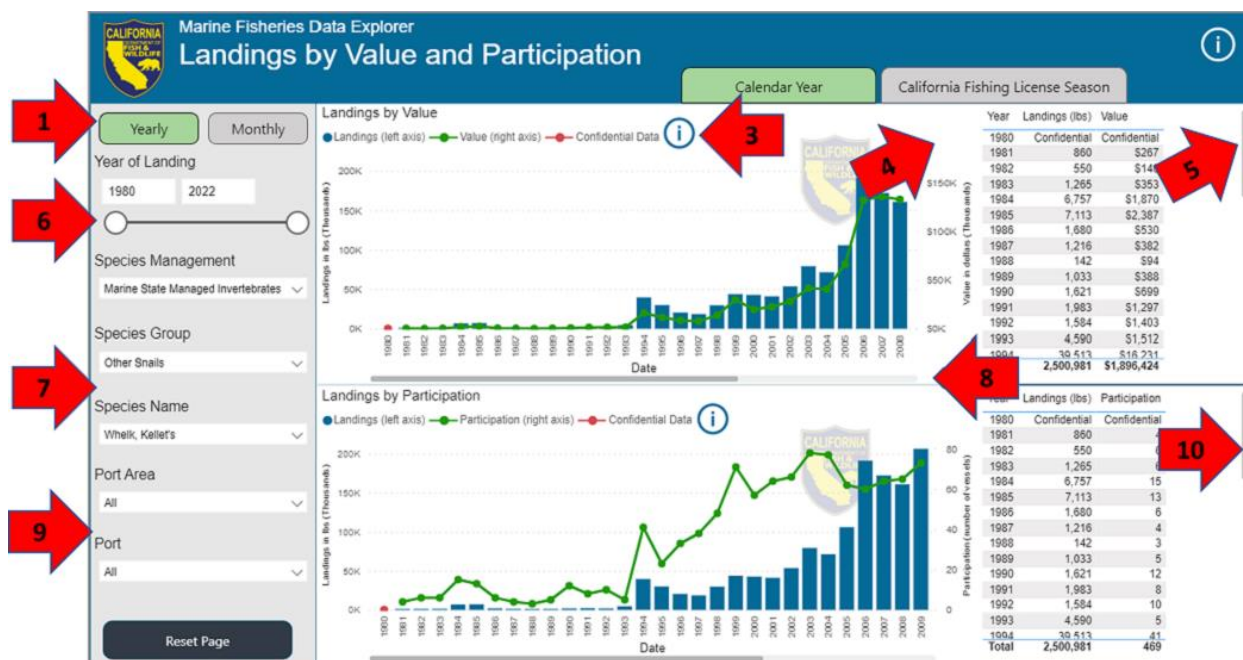
**Average Price** – presents the average price per pound paid at the time of landing. Data is available on an annual or monthly scale, and may be filtered by species, port, and gear type. Average price is also available for all gears or conditions reported for the selected species.

**Landings by Port** – presents the percentage of total value or total weight by port area or port. User can specify a range of years which may be filtered by species or port.

**California Commercial Landings (CCL) tables** - produced annually and published online between 2000 and 2019. The MFDE will now be the home for the CCL tables. Because CDFW has employed the Rule of Three, the CCL tables in the MFDE may not match those previously provided online. Users will be able to produce CCL tables in the MFDE from 1980 on.

- Origin and Pounds Report (previously CCL Table 7) – species landings in pounds, aggregated by California waters, north of the state, south of the state, and unknown/other waters.
- Monthly Landings in Pounds (previously CCL Tables 8-14) – species landings in pounds, aggregated statewide or by port area.
- Annual Pounds and Value by Port Area (previously CCL Tables 15 and 15a) – species landings in pounds and value presented for all port areas.
- Pounds and Value by Port (previously CCL Tables 16-21) – species landings in pounds and value aggregated for all ports within a port area.
- Commercial Passenger Fishing Vessel (CPFV) Statewide – presents 41 select species for the designated year and prior year, with data aggregated by all waters, and Mexico. Data is confidential if fewer than three CPFVs are represented.
- CPFV Portside – presents 30 select species for a designated year with data aggregated into Northern and Southern CA and in clusters of ports with CPFV activity.

## Navigation Tips



1. Depending on the visual, toggle between different levels of summarization. (i.e. Annual and Monthly Summarization or Port Area and Port)
2. Depending on the visual, toggle between the multiple different views.
3. Tool Tip Icon logos appear on multiple visuals. Hover over icon for message to user.
4. Focus Mode to zoom in on just the visualization. Hover over the selected area for icon to appear.
5. More Options which includes the Data Export feature. Hover over area for ellipsis to appear.
6. Date range slicer. For the **Landings by Block**, **Top Species** and **Landings by Port** visuals, users must select the last day of the target month in order to return all landings data.
7. Selections for species common name, group of like-species, or larger complexes of species under similar management strategies.
8. Date scroll bar to view additional years in a large query.
9. Additional slicer features included on all visualizations
10. Table row scroll bar to view additional years in the query.

**Overview of Proposed Process to Develop a Statewide Red Abalone Recovery Plan**  
**California Department of Fish and Wildlife**

**Report to the Marine Resources Committee Meeting**  
**of the California Fish and Game Commission**  
**July 20, 2023**

**Overview:** The California Department of Fish and Wildlife (CDFW) has developed a proposed process to create a statewide recovery plan for red abalone (*Haliotis rufescens*). The Red Abalone Recovery Plan (RARP) will use a science-based approach to support recovery of the population to sustainable harvestable levels. The RARP will facilitate a robust, adaptive, climate-ready approach to improve the red abalone population in the face of changing ocean conditions.

**Process:** To develop the RARP, CDFW staff proposes a process which includes engaging with tribal interests, establishing technical and stakeholder teams, and collaborating with agency partners (e.g., Fish and Game Commission, National Marine Fisheries Service, Ocean Protection Council, etc.) to solicit input on technical and policy guidance throughout recovery plan development.. CDFW will lead the engagement process by:

- A) Work with California Native American Tribes to develop pathways and opportunities to **promote Tribal engagement** throughout the RARP development process. Pathways and opportunities will be explored and identified initially through solicitation for feedback by reaching out to California Tribes and Tribal Communities. Tribal engagement may include early consultation, listening sessions, opportunities to provide input on draft documents. Regular updates on the development process will be provided at the Fish and Game Commission's Tribal Committee meetings.
- B) Assembling a **Technical Team** consisting of abalone restoration experts from a broad array of disciplines and geographic areas, tasked with providing scientific and technical guidance on all aspects of the RARP.
- C) Assembling a **Stakeholder Team** to solicit stakeholder perspectives on the development of the RARP. The Stakeholder Team will include recreational and commercial fishing representatives, conservation interests, and other interested individuals with expertise in abalone recovery. Members of the Stakeholder Team will be selected through a solicitation process.

**Timeline:** CDFW proposes the following RARP development timeline:

- 2023: Solicit nominations for tribal, technical and stakeholder groups
- 2024-26: Conduct tribal, scientific and stakeholder engagement
- 2024: Begin drafting RARP
- 2026: Finalize RARP, public review, submission to Fish and Game Commission
- 2027: Recovery plan implementation

**Squid Fishery Advisory Committee  
California Department of Fish and Wildlife**

**Report to the Marine Resources Committee  
of the California Fish and Game Commission  
July 20, 2023 Meeting**

The CDFW Squid Fishery Advisory Committee (SFAC) consists of a cross section of stakeholders tasked with reviewing market squid fishery management and advising CDFW on potential management changes. The market squid fishery is routinely the largest in the State, both in revenue and landings, and includes one of California's earliest Fishery Management Plans. The SFAC completed its third meeting on May 16<sup>th</sup> to discuss changes in fishing effort dynamics and collaborate with researchers to build a forecast model to test the performance of fishery management controls under climate change. The SFAC's next meeting is scheduled for July 12<sup>th</sup> where discussions will shift to review of the market squid fishery logbook program and strategies to modernize data collection methods. The SFAC is expected to have its final meeting in spring of 2024. The Department currently anticipates bringing final recommendations to the Commission during the summer of 2024 in order to determine next steps. The roster and meeting schedule is included in supporting documents.

<b>CDFW Squid Fishery Advisory Committee Roster</b>	
<b>Name</b>	<b>Affiliation</b>
Mark Fina	Trade Association
Ken Towsley	Dealer/Processor
Joe Cappuccio	Dealer/Processor
Anthony Vuoso	Dealer/Processor
Ryan Augello	Dealer/Processor
Corbin Hanson	Commercial Squid Fishing - Seine
John Barry	Commercial Squid Fishing - Seine
Porter McHenry	Commercial Squid Fishing - Seine
Tom Noto	Commercial Squid Fishing - Seine
David Crabbe	Commercial Squid Fishing - Light/Brail
Joe Villareal	Commercial Squid Fishing - Light/Brail
Brian Susi-Blair	Commercial Squid Fishing - Light/Brail
Richie Ashley	Commercial/Recreational - Bait
Ken Bates	Commercial Fishing - Access
Dan Yoakum	Commercial Fishing - Access
Caitlin Allen Akselrud	Government Agency
Russell Galipeau	Non-Consumptive
Greg Helms	Non-Governmental Organization
Anna Weinstein	Non-Governmental Organization

# Squid Fishery Advisory Committee (SFAC) Meeting Schedule 2023-2024

4/18/23

Monterey Bay – Effort/EDM

5/16/23

Virtual – Effort/EDM

7/12/23

Virtual – Monitoring

8/15/23

Los Angeles – Monitoring

10/6/23

Virtual – Gear

11/15/23

Virtual – Gear

1/25/24

San Francisco Bay Area – Access

**The SFAC will conclude with a one-to-two-day meeting in Southern California in early 2024.**

# California Fish and Game Commission Marine Resources Committee (MRC) Work Plan

*Updated July 5, 2023*

TOPICS	CATEGORY	Mar 2023	Jul 2023	Nov 2023
<b>Planning Documents &amp; Fishery Management Plans (FMPs)</b>				
MLMA Master Plan for fisheries – implementation updates	Plan Implementation			
Red abalone recovery plan (north coast)	Management Plan		*	
California halibut fishery management review	Management Review			
California halibut bycatch evaluation for fishery management review	Management Review	X/R	X/R	X
Market squid fishery management and FMP review	Management/ FMP Review		*	
Kelp recovery and management plan (KRMP) development	Management Plan	X		
Marine protected area network 2022 decadal management review	Management Review	X/R	X/R	X
<b>Regulations</b>				
California halibut trawl grounds review	Commercial Take			*
Kelp and algae commercial harvest – sea palm ( <i>Postelsia</i> )	Commercial Take			
Pacific herring: Use of lampara nets for commercial take in Humboldt Bay		X/R		
<b>Marine Aquaculture</b>				
Statewide Aquaculture Action Plan	Planning Document	*		*
Aquaculture state water bottom leases: Existing lease requests & new applications	Current Leases / Planning	*		*
<i>Public interest determination criteria</i> for new state water bottom aquaculture lease applications	FGC Policy – New Leases	X/R	X/R	
Aquaculture lease best management practices plans (Hold, TBD)	Regulatory			
<b>Informational Topics / Emerging Management Issues</b>				
Kelp restoration and recovery tracking	Kelp	X		
Invasive non-native kelp and algae species	Kelp / Invasive Species			
<b>Special Projects</b>				
California's Coastal Fishing Communities Project	MRC Special Project			*
Coastal fishing communities policy	FGC Policy	X/R		
Box crab experimental fishing permit (EFP) research project	EFP			

**Key:** X = Discussion scheduled X/R = Recommendation may be developed and may move to Commission

\* = Written or verbal agency update