

## STAFF SUMMARY FOR AUGUST 7-8, 2019

**20. PACIFIC HERRING FISHERY MANAGEMENT PLAN (FMP)****Today's Item**Information Action 

Discuss the draft Pacific Herring FMP and California Environmental Quality Act (CEQA) documentation.

**Summary of Previous/Future Actions**

- |   |                                  |
|---|----------------------------------|
| • DFW updates on FMP progress             | 2016-2017; MRC meetings          |
| • DFW update and MRC recommendation       | Jul 17, 2018; MRC, San Clemente  |
| • FGC endorses MRC recommendation         | Aug 22-23, 2018; Fortuna         |
| • Update on FMP progress                  | Mar 20, 2019; MRC, Sacramento    |
| • Received draft FMP                      | Jun 12-13, 2019; Redding         |
| • <b>Today discuss draft FMP</b>          | <b>Aug 7-8, 2019; Sacramento</b> |
| • Potentially adopt CEQA document and FMP | Oct 9-10, 2019; Valley Center    |

**Background**

The Marine Life Management Act (MLMA) requires that fishery management plans (FMPs) form the primary basis for managing California's marine fisheries (Section 7072 et seq., Fish and Game Code). Pursuant to the mandates of MLMA, DFW has been developing the California Pacific Herring FMP (Herring FMP) since 2016 with a collaborative working group of herring fleet leaders, staff from conservation non-governmental organizations, and DFW. Exhibit 1 provides additional background information.

Written comments on the FMP may be submitted at any time up to adoption (scheduled Oct 2019). FGC may either adopt the FMP or, if it determines changes are warranted, may reject the FMP for DFW to revise and resubmit for further public review before adoption. Additionally, FGC may give direction to revise the FMP based on public comment; however, any revision that substantively changes the FMP must be recirculated for comment, which will also delay adoption of implementing regulations.

The draft Herring FMP was received at the Jun FGC meeting (available online at [www.wildlife.ca.gov/Fishing/Commercial/Herring/FMP](http://www.wildlife.ca.gov/Fishing/Commercial/Herring/FMP)), commencing a 45-day public comment period through Aug 1. However, a comment letter alerted staff that one of the FMP appendices was missing from the Jun draft (Exhibit 5). The missing appendix, titled *Appendix R: Harvest Control Rule Framework Development and Guidance for Amending the Decision Tree*, has now been transmitted by DFW and is included in the binder for today's meeting (exhibits 2 and 3). While no change to the existing adoption schedule is anticipated, a notice will be mailed to all FMP commenters, and Appendix R will be made available with the full FMP.

The Herring FMP fulfills FGC's obligation to comply with CEQA in considering and adopting an FMP and associated implementing regulations.

## STAFF SUMMARY FOR AUGUST 7-8, 2019

**Significant Public Comments**

1. A recreational fisherman has requested in the FMP to allow an increase in the proposed daily limit for recreational take to 300 lbs., noting the high nutrient and low contamination levels of herring, as well as their short window of availability during their spawning season, and the low level of financial investment for the public to be able to participate relative to other fisheries (Exhibit 4).
2. Six environmental non-governmental organizations (Oceana, Audubon California, Ocean Conservancy, Pew Charitable Trusts, Earth Justice and Natural Resources Defense Council) jointly express support for the draft Herring FMP and recognize it as a major step forward for fishery management in California. Also included are a series of recommendations for the FMP to improve clarity, document format, language consistency, a non-weighted representation of FMP goals, and FMP funding clarity, as well as a request to add Appendix R, which was missing from the Jun document. They request that FGC incorporate their recommendations and adopt the final version in Oct 2019 as currently scheduled (Exhibit 5).

**Recommendation**

**FGC staff:** Direct staff to provide a copy of the FMP to the California State Legislature's Joint Committee on Fisheries and Aquaculture for review prior to adoption, in fulfillment of Fish and Game Code 7078(d). If FGC wishes to consider any of the substantive changes proposed in public comments, request that DFW analyze the proposed changes of interest to inform a decision at the Oct 2019 FGC meeting.

**DFW:** Add Appendix R to the draft herring FMP received in Jun 2019 and adopt the FMP in Oct 2019.

**Exhibits**

1. [Staff summary for Agenda Item 25, Jun 12-13, 2019 FGC meeting \(for background only\)](#)
2. [DFW transmittal memo, received Jul 26, 2019](#)
3. [Appendix R, California Pacific Herring Fishery Management Plan](#)
4. [Email from Edward Zeng, received Jun 18, 2019](#)
5. [Letter from Oceana, et al., received Jul 25, 2019](#)

**Motion/Direction**

Moved by \_\_\_\_\_ and seconded by \_\_\_\_\_ that the Commission supports adding Appendix R that was omitted in the Jun transmittal process into the file of the fishery management plan for California Pacific herring and requests that DFW integrate feedback from public comments received during the public comment period into the proposed fishery management plan.

## STAFF SUMMARY FOR JUNE 12-13, 2019

**25. PACIFIC HERRING FISHERY MANAGEMENT PLAN (FMP)****Today's Item**Information Action 

Receive and discuss the draft Pacific herring FMP and California Environmental Quality Act (CEQA) documentation.

**Summary of Previous/Future Actions**

- |   |                                 |
|---|---------------------------------|
| • DFW updates on FMP progress             | 2016-2017; MRC meetings         |
| • DFW update and MRC recommendation       | Jul 17, 2018; MRC, San Clemente |
| • FGC endorses MRC recommendation         | Aug 22-23, 2018; Fortuna        |
| • Update on FMP progress                  | Mar 20, 2019; MRC, Sacramento   |
| • <b>Today receive draft FMP</b>          | <b>Jun 12-13, 2019; Redding</b> |
| • Discuss draft FMP                       | Aug 7-8, 2019; Sacramento       |
| • Potentially adopt CEQA document and FMP | Oct 9-10, 2019; San Diego       |

**Background**

The Marine Life Management Act (MLMA) requires that fishery management plans (FMPs) form the primary basis for managing California's marine fisheries (Section 7072 et seq., Fish and Game Code). Pursuant to the mandates of MLMA, DFW has been developing the California Pacific herring FMP (Herring FMP) since 2016 with a collaborative working group of herring fleet leaders, staff from conservation non-governmental organizations, and DFW. In Aug 2018, FGC approved an MRC recommendation to support the DFW-proposed schedule for receipt of the Herring FMP and proposed implementing regulations, following independent scientific peer review.

In Dec 2018, DFW notified FGC that a change in the FMP and rulemaking timetable was necessary to allow DFW time to address specific recommendations from the FMP peer review, and in Feb 2019, DFW proposed Jun 2019 for the start of the new timeline. In granting this request, FGC asked that an update on the draft Herring FMP content and the commercial fishery be provided at the Mar 2019 MRC meeting prior to receipt in Jun.

MLMA requires that FGC hold at least two public hearings prior to FMP adoption. However, at the request of DFW, a three-meeting process for the Herring FMP is being undertaken to allow adequate time for public review. Written comments may be submitted at any time up to adoption. FGC may either adopt the FMP or, if it determines changes are warranted, may reject the FMP for DFW to revise and resubmit for further public review before adoption.

The draft Herring FMP and DFW transmittal memo are provided in exhibits 1 and 2. The Herring FMP and proposed implementing regulations (under Agenda Item 26, this meeting) have been prepared by DFW based on input from the collaborative working group and independent, external peer review, and have also benefited from input from FGC, MRC, California tribes, and stakeholders.

**STAFF SUMMARY FOR JUNE 12-13, 2019**

The Herring FMP fulfills FGC's obligation to comply with CEQA in considering and adopting an FMP and associated implementing regulations; if approved, a 45-day public comment period will commence with the Jun FGC meeting and close Jul 29 (Exhibit 3).

At today's meeting, DFW will provide an overview of the draft Herring FMP (Exhibit 4).

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

**FGC staff:** Receive the draft FMP and direct staff to publish notice of FGC intent to adopt the FMP and commence the public comment period.

**DFW:** Receive FMP at Jun 12-13, 2019 FGC meeting and open a 45-day public comment period through Jul 29 for CEQA review.

**Exhibits**

1. DFW transmittal memo, received May 22, 2019
2. Draft *California Pacific Herring Fishery Management Plan*, dated May 15, 2019
3. DFW transmittal memo, Notice of Completion and Notice of Availability for Public Comment, received May 24, 2019
4. DFW presentation

**Motion/Direction (N/A)**

Moved by \_\_\_\_\_ and seconded by \_\_\_\_\_ that the Commission directs staff to publish notice of its intent to adopt a fishery management plan for California Pacific herring.

## Memorandum

Date: July 26, 2019

To: Melissa Miller-Henson  
Acting Executive Director  
Fish and Game Commission

From: Craig Shuman, D. Env.  
Regional Manager



Subject: **Addition of “Appendix R. Harvest Control Rule Framework Development and Guidance for Amending the Decision Tree” into the Draft Pacific Herring Fishery Management Plan**

The California Department of Fish and Wildlife (Department) is requesting the Fish and Game Commission (Commission) add Appendix R for inclusion in the Draft California Pacific Herring Fishery Management Plan (Herring FMP). A verbal notice will be given at the August 8, 2019 Commission meeting notifying the public of the addition.

Pursuant to Government Code Section 11347.1, a notice will be mailed to all people who have commented on the Herring FMP. Appendix R will be made available for public viewing with the rest of the document at <https://www.wildlife.ca.gov/Fishing/Commercial/Herring/FMP>.

If you have any questions regarding this item, please contact Kirsten Ramey, Environmental Program Manager, at (707) 445-5365 or by email at [Kirsten.Ramey@Wildlife.ca.gov](mailto:Kirsten.Ramey@Wildlife.ca.gov)

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## Appendix R. Harvest Control Rule Framework Development and Guidance for Amending the Decision Tree

### Introduction

During the process to develop a Fishery Management Plan (FMP) for Pacific Herring, *Clupea pallasii*, (Herring), the Steering Committee (SC) agreed that the preferred Harvest Control Rule (HCR) (Figure R-1, also see Appendix M) would be used to set a preliminary quota each year based on the estimated biomass of Herring in San Francisco Bay. The SC also proposed a framework wherein a preliminary quota could be modified each year based on a suite of environmental and ecosystem indicators, with quota increases recommended when ecosystem conditions are good (Figure R-2; green), moderate quota reductions recommended when ecosystem conditions warrant precaution (Figure R-2; yellow), and larger reductions warranted during extreme conditions (Figure R-2; red).

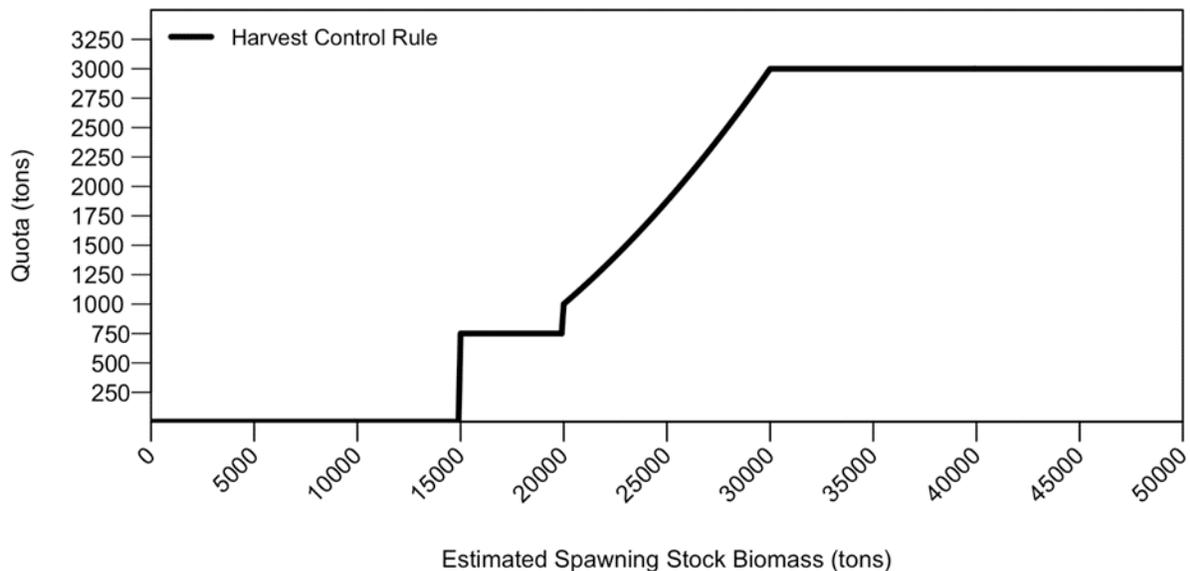


Figure R-1. Preferred Harvest Control Rule.

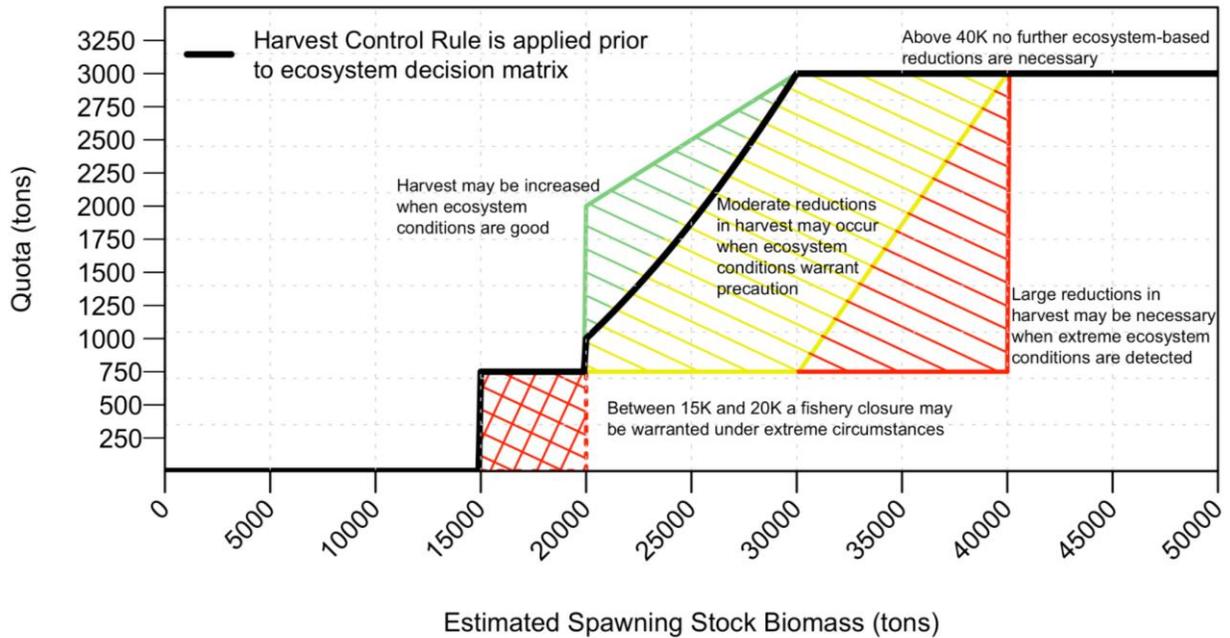


Figure R-2. Initial Harvest Control Rule framework, as proposed by the SC.

The proposed framework utilized a matrix of ecosystem indicators to assist the California Department of Fish and Wildlife (Department) in assessing and, if necessary, adjusting harvest to avoid undue ecosystem impacts based on the information available at the time of quota setting and Department scientists' discretion. This matrix included indicators on the productivity of Herring, the indices of relative variability of forage species in the region, and the population-level health of predators that have been shown to eat Herring. The matrix also provided guidance on how each indicator should be interpreted and recommendations for possible management responses in the event of an increase or decrease for each indicator. However, this matrix provided only qualitative guidance, and left any decisions regarding a change to the quota and how much change was warranted up to the discretion of the Department.

This framework was not selected because it was not supported by the best available science and included overarching conclusions that were not supported by references or data. In addition, an independent peer review of the science used to support the FMP was conducted, and the peer review committee had concerns about the use of qualitative guidance; the lack of strong scientific links between indicators, ecological response, and quota adjustment; and the large range of discretion for potential quota adjustments (Appendix O). Their primary concern was that, in the absence of well-defined indicators and thresholds, as well as predetermined rules for how quotas should be adjusted, there was the potential for subjective application of the guidance, which could lead to disagreement between stakeholders and managers about quota decisions each year. The peer review committee also expressed

reservations about the use of indicators which had not been tested to determine whether future quota adjustments based on this framework were likely to be aligned with management objectives.

Given these reservations, the peer review committee made several suggestions for incorporating ecosystem considerations into the Herring FMP. The peer review committee concluded that the preferred HCR is conservative enough to account for ecosystem fluctuations and recommended the Department set quotas only using the HCR and describe the status of the ecosystem indicators in a summary report to provide context, as is done in federal fisheries management. This recommendation recognized that incorporating ecosystem indicators is very challenging and there is limited evidence linking the ecosystem indicators employed with any specific ecological responses (Appendix O). Alternatively, should the Department choose to move forward with ecosystem indicator-based adjustment to HCR-derived quotas, the peer review committee recommended developing statistically- or expert-based thresholds explicitly linking indicator levels to management actions. This would ideally involve the development of quantitative and/or semi-quantitative thresholds that are tested against historical scenarios to ensure that any quota adjustment is appropriate (Appendix O).

One of the goals in developing the Herring FMP was to incorporate ecosystem considerations into Herring management. In order to develop a transparent, reproducible process for determining when ecological conditions were unusual and additional quota adjustment may be warranted, the Department worked with the Project Management Team to develop the decision tree process described in Section 7.7. In reviewing the available data and studies, Department staff concluded that while there is broad evidence supporting the role of Herring as forage in the central California Current Ecosystem, there is limited evidence for direct links between either the availability of Herring as forage, or the relative variability of various forage indicators, and the health of specific predator populations. As a result, it is not clear that a specific change in quota is likely to have a measurable impact on the health of predator populations except during times of extremely low forage availability. Conversely, additional reductions in quota will have a negative economic impact on the fleet. The preferred HCR sets quotas that are conservative (Appendix M) and the Herring FMP provides many layers of precaution to ensure that Herring can fulfill their ecological role (Section 7.8). For these reasons, the magnitude of ecosystem-based adjustments to the quota were limited to 1% increases or decreases in harvest rate (Figure R-3; see also Section 7.7).

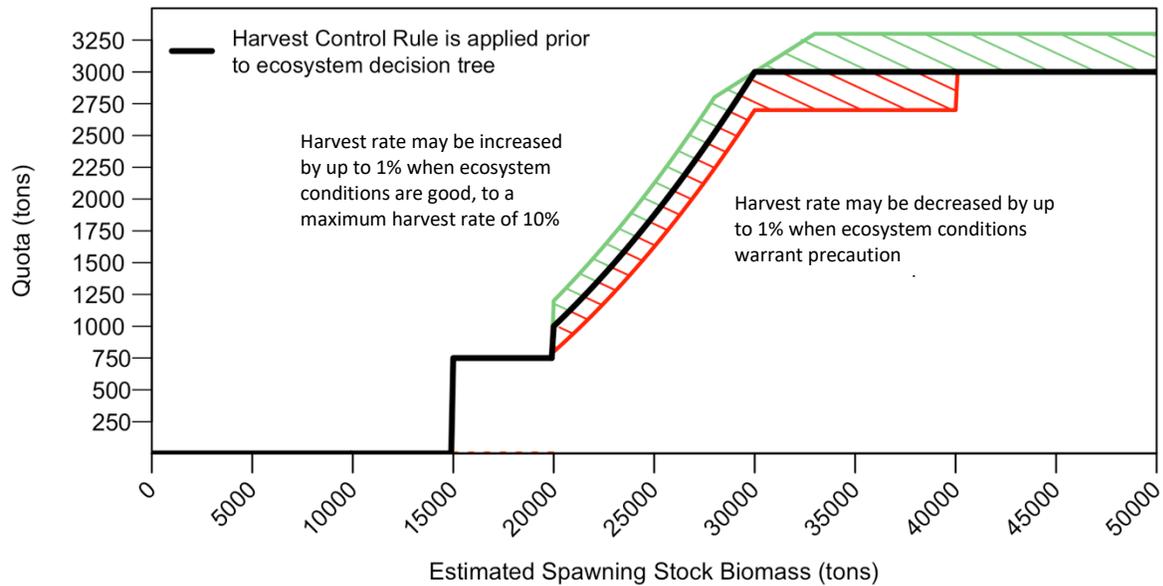


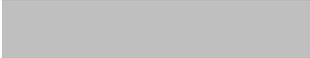
Figure R-3. Final Harvest Control Rule Framework.

Ecosystem-based fisheries management is a growing and continually evolving field. If additional information demonstrating evidence for direct connections between the health of predator populations and the availability of forage species becomes available, the Department may incorporate this information into the decision tree in order to set quotas based on the best available science without amending the FMP (Section 7.7.3 and Section 9.2). This is in line with the California Fish and Game Commission's forage species policy, which seeks to recognize the importance of forage fish to the ecosystem and establishes goals intended to provide adequate protection to these species. Specifically, the Department may incorporate new indicators into the decision tree, as well as alter or remove existing indicators or thresholds, without amendment to the Herring FMP (Section 9.2). The Department may also alter the magnitude of quota adjustment, provided these alterations do not exceed the bounds on harvest rate adjustment indicated in the final HCR framework (Figure R-3). Any potential future alteration to the magnitude of ecosystem-based quota adjustments beyond these bounds will require amendment of the Herring FMP.

Including additional and/or removing indicators should be considered in concert with existing indicators, because all indicators work together to provide a holistic picture of ecosystem conditions. Ideally, the inclusion of any additional indicators should be tested using MSE in order to understand their anticipated performance. The quantitative performance indicators (Appendix M and Section 7.1) should be used to evaluate the impact of the proposed indicators on the Herring stock and the economic viability of the fishery, though other ecosystem-specific performance metrics may also be developed. If it is not possible to conduct a MSE due to resource or capacity constraints, at minimum

a retrospective analysis should be conducted to examine how often quotas would have been adjusted in past years under proposed management scenarios, and whether these adjustments align with management objectives.

# Herring daily bag limit increase request

Edward 

Tue 06/18/2019 12:08 PM

To: FGC <FGC@fgc.ca.gov>;

Dear California Fishery Management,

I am writing to request the increase of recreational daily bag limit of herring fishing.

The draft <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=170124&inline> proposed a daily limit of 100 pounds. The herring spawn time windows are quite short, and often just a few hours. As a recreational fishing hobbyist with a full time job and a family to care for, we have missed the herring spawn many times due to busy work schedule. Often times, we have made many trips and come back empty handed.

Herring is one of the least contaminated fish with extremely low mercury and other harmful elements, while it is high in nutrient such as omega 3. It is very valuable to our family, especially for our young children. It is also inexpensive to catch while we don't need to invest heavily in fishing gears or boats to catch.

Based on the report <https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=159747&inline>, herrings are detected in tens of thousands tons, while commercial catch has been just less than 4% in 2017-2018 season (page 3 of report 611/15313 = 3.9%). The recreational catches should be in much lesser amount.

For the reasons stated above, I am requesting that the daily bag limit to be suggested a minimum of 300 pounds.

I much appreciate your consideration in advance.

Best Regards,  
Edward Zeng  
San Ramon, CA



Ocean Conservancy®



July 25, 2019

Mr. Eric Sklar, President  
California Fish and Game Commission  
1416 Ninth Street, Suite 1320  
Sacramento, CA 95814  
[fgc@fgc.ca.gov](mailto:fgc@fgc.ca.gov)

**RE: Support for and comments on Herring Fishery Management Plan**

Dear President Sklar and Commissioners:

Our organizations write to express our support for the draft Pacific Herring Fishery Management Plan (FMP). In this letter, we provide specific comments and recommendations for the Commission's consideration to ensure the FMP meets the requirements of the Marine Life Management Act (MLMA) and includes the important information in Appendix R that was accidentally omitted. Herring are an important forage species in California's marine ecosystem, and provide sustainable fishing opportunities. The FMP is groundbreaking as it is the first FMP developed consistent with the Commission's policy on Forage Species<sup>1</sup>, includes several elements of a "climate-ready" fishery, and provides a model framework for ecosystem-based fishery management under California's MLMA. The FMP is a product of extensive collaborative efforts among conservation organizations, fishermen, scientists, and the California Department of Fish and Wildlife (Department), funded through a public-private partnership. The Herring FMP paves the way for a new era of FMPs under the recently revised MLMA Master Plan for Fisheries and ensures sustainable herring fisheries while providing an adequate food source for fish and wildlife into the future.

We commend the tremendous work by Department staff, the Project Management Team, Steering Committee, California Ocean Science Trust peer reviewers, and scientific contractors that all made substantial contributions to the FMP, as well as Commission and Department leadership that prioritized its completion. We also thank the entities that supported the FMP development through grants and in-kind contributions, including the San Francisco Herring Association, Gordon and Betty Moore Foundation, California Ocean Protection Council, and National Fish and Wildlife Foundation.

From eggs to adults, herring are a significant food source for larger marine fish, mammals and seabirds. Examples of animals reliant on herring for food include: salmon, seals, California sea lions, killer whales, humpback whales, steelhead trout, Pacific cod, several species of rockfish, Surf Scoter, Scaup, Black

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<sup>1</sup> Forage Species Policy, adopted unanimously by California Fish and Game Commission in November 2012, available at <https://fgc.ca.gov/About/Policies/Fisheries#Forage>

Brant, Brown Pelican, and Common Murre. High in omega 3 fatty acids, herring are also a healthy source of protein for people. They are arguably among the most sustainable, local seafood choices available to Californians.

The San Francisco Bay herring fishery is one of the only “urban fisheries” in the nation. For the past decade, herring catch limits for this fishery have been set at precautionary levels, which—combined with an existing network of closed areas, gear restrictions, and fishing seasons—provide for sustainable harvest, population recovery, and herring’s contribution to the broader San Francisco Bay ecosystem as prey. Codifying this management framework into a formally adopted fishery management plan will ensure sustainable and precautionary management of herring continues into future by:

- Limiting annual catch to a maximum of 10% of the estimated spawning biomass, not to exceed 3,300 tons;
- Closing commercial fishing when the population is below 15,000 tons;
- Adjusting annual catch limits based on the food needs of key predators (e.g., Chinook salmon, common murre, and harbor seals), ocean conditions, and the availability of similar alternative prey items, allowing for adaptive management as ecosystem science improves;
- Setting daily limits on recreational herring fishing with cast nets, allowing reasonable continued recreational use while discouraging illegal commercialization of herring caught with recreational gear;
- Maintaining existing gillnet restrictions, the prohibition on purse seine gear, and an extensive network of areas closed to fishing; and
- Improving the science to estimate spawning biomass through a new model incorporating climate indicators that can be used following several years of validation.

In addition, the FMP establishes a novel precautionary tier system based on the level of available information and fishery participation to guide future management of herring fishing areas inside and outside San Francisco Bay. Under this system, the FMP:

- Establishes minimal catch limits for historically fished areas outside San Francisco Bay (Tomales Bay, Humboldt Bay, and Crescent City Harbor), which have not been fished in over 12 years. The catch limits are less than 3% of the historic average population size for Tomales Bay and Humboldt Bay and 50% of the historic average catch for Crescent City Harbor.
- Requires new data collection if fishing resumes in an area that is currently unfished to ensure catch limits remain precautionary and inform future management updates.
- Establishes a Rapid Assessment Protocol (a quick version of a stock assessment) for areas outside San Francisco Bay so that fishery managers can ensure sustainability in the event that fishing resumes.
- Prohibits catch limit increases unless and until new biomass estimates and other essential fishery information are collected, consistent with the Commission’s Forage Species Policy.

For the above reasons, we support the adoption of the FMP. In addition to our general support, we offer the following comments, requests, and recommendations on the draft FMP currently out for public review:

1. One of the key appendices to the document, Appendix R, is currently missing from the FMP, which we understand was the result of an unintentional clerical error by the Department in the transmission of the FMP to the Commission. Based on an agreement by the Steering Committee,

this Appendix was intended to describe an increased range of catch limit adjustments resulting from ecosystem considerations that the Department may use as scientific information improves, without an FMP amendment. As stated on p. 9-4 of the FMP: "Additionally, as the science evolves the Department may adjust the magnitude of changes to the quota recommended by the decision tree up to the limits defined in Appendix R provided the supporting science is clearly documented." We request that Appendix R be included in the FMP and that the public be afforded the opportunity to review and provide comments on its contents prior to final adoption of the FMP.

2. We request the FMP include clear, objective criteria for determining whether a Tier 2 stock is overfished and clarify what the rebuilding provisions are for overfished Tier 2 stocks. The MLMA requires that FMPs must specify criteria for identifying when a stock is overfished, include measures to end or prevent overfishing, and provide a mechanism for rebuilding in the shortest time period possible (FGC §7086). While the draft FMP identifies criteria for determining whether the San Francisco Bay stock is overfished as well as rebuilding provisions (Section 7.8.1), it does not contain criteria for determining whether any of the stocks outside San Francisco Bay stocks would be considered overfished when they are in Tier 2. It also does not specify how the San Francisco Bay stock would be considered overfished if it is moved to Tier 2 status in the future. Specifically, the FMP states "...under a Tier 2 monitoring protocol, the quota shall be reduced to zero in years where either the employed Rapid Spawn Assessment indicates very poor spawning behavior, or spawn deposition survey-derived SSB estimates indicate an SSB too small to support fishing." However, the FMP does not provide objective criteria for what constitutes "very poor spawning behavior" or "an SSB too small to support fishing." For example, this could be remedied by clarifying how "low" or "very poor spawning behavior" is determined in the Rapid Spawn Assessments for Tier 2 stocks and stating in the FMP that this is the criteria for overfished. The FMP must comply with the basic requirements under the MLMA for managing fisheries.
3. The number and size of the Appendices substantially increase the size of the overall FMP document, which as presented, will complicate navigation of the FMP by the public. While each Appendix provides important information and is referenced in the body of the FMP, we suggest the Appendices be available as separate documents from the main body of the FMP, and that each Appendix contain consistent page numbering and formatting to improve navigation of the FMP.
4. Throughout the document, the term "quota" is used when referring to the annual catch limit. The term quota is problematic because in other contexts "quota" may refer to a minimum quantity or goal, rather than a maximum limit. To maintain consistency and clarity for the public, we request the FMP not use the term "quota" and instead use the term "catch limit."
5. In Section 2.13.2.3 (p. 2-26), the Department's maps of herring spawning areal extent and most-used spawning areas for Humboldt Bay should be included, in the manner San Francisco Bay's maps appear in that section. Also, these updated maps should be put into the Habitat section (pg. 319).
6. The Executive Summary (p. ii) and Section 7.7.2 state that complying with the Commission's Forage Species policy is a secondary goal. This prioritization undercuts the Commission's Forage Policy and implies that other goals are more important. We request that the FMP present all goals equally, including compliance with the Forage Species policy and incorporating ecosystem considerations into herring management.

7. The Executive Summary (p. iv) indicates that the multi-indicator predictive model is adopted by the FMP. However, Section 7.6.3 makes clear that the spawn deposition surveys are the default for estimating San Francisco Bay SSB until the predictive model has 3 or more years of successful predictive power. The Executive Summary should be clarified consistent with this description in Section 7.6.3.
8. The FMP should clarify that Figure 7-2 represents the default harvest control rule, which is subject to ecosystem adjustments as indicated by the decision tree. Currently, Appendix F and Figure 7-2 are misleading because they do not reference potential adjustments to catch limits based on ecosystem considerations, therefore implying that these represent the final catch limit.
9. Given California's leading role in addressing the climate crisis, the Executive Summary should emphasize and highlight the several areas where climate change is addressed in the FMP, specifically the use of climate indicators in the predictive model, the use of management strategy evaluation to ensure the harvest control rule is robust to future climate change scenarios, and the use of climate indicators as ecosystem considerations.
10. Finally, we request that the Acknowledgments section recognize all cash funding sources for the FMP, specifically the Gordon and Betty Moore Foundation and the National Fish and Wildlife Foundation.

In conclusion, the draft Herring FMP represents a major step forward for California fishery management. Adoption of the FMP will support sustainable fisheries and ocean wildlife, advance ecosystem-based fishery management, implement the Commission's Forage Species Policy, establish a model process and management framework that can inform future FMPs, and successfully implement the MLMA. We request the Commission incorporate the above recommendations on the draft FMP into the final version and urge the Commission to adopt the final FMP at its October meeting as currently scheduled.

Thank you for considering these comments, and please contact us if you have any questions.

Sincerely,

Geoff Shester, Ph.D.  
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cc. Dr. Craig Shuman, Marine Regional Manager, California Department of Fish and Wildlife