

ECOSYSTEM WORKGROUP REPORT ON THE FISHERY ECOSYSTEM PLAN UPDATE

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1 Introduction

At its March 2019 meeting, the Council directed the Ecosystem Workgroup (EWG) to provide a report for the September 2019 meeting on updating the 2013 Fishery Ecosystem Plan (FEP), asking that the EWG:

- Update the Vision, Purpose, Goals, and Objectives described in the EWG’s March report for Agenda Item E.3.a, including the addition of ecosystem-level, outcome-oriented goals that focus on the ecosystem within the context of a changing climate.
- Consider public and advisory body comments on the FEP update and present alternative revisions to the Council for review and approval at the Council’s September 2019 meeting.

Addressing those tasks is our major focus in this report. The existing FEP contains language on purpose and objectives spread throughout Chapters 1 and 2 (see Appendix). Following the direction we received in March 2019, we are proposing moving the language expressing the Council’s vision, FEP purpose, goals, and objectives to a new Chapter 1. The updated FEP Chapter 2 would then be reserved for material on the schedule and process the Council uses to consider ecosystem issues. Therefore, we suggest revisions to both Chapters 1 and 2 in Section 3 of this report. For this September meeting, the EWG further recommends that the Council:

- Narrow, comment on, and modify, as needed, the range of potential FEP Visions, Purposes, Goals, and Objectives;
- Comment on draft Chapter 2;
- Send Chapters 1 and 2 out for public review and comment from October 2019 through February 2020.

For March 2020, the Council asked the EWG to review the FEP in detail and recommend comprehensive FEP update alternatives for Council review. The Council recommended basing the EWG’s March 2020 report on: Council decisions and recommendations from this September 2019 meeting on the FEP’s Vision Statement, Purpose Statement, Goals, and Objectives; information generated in the pursuit of the Climate and Communities Initiative; and information on the current or potential future uses of the FEP. This near-term schedule is summarized here in Figure 1:



Figure 1: Council near-term schedule for FEP update.

2 EWG Process for Drafting Alternative Revisions to FEP Visionary Language

For our March 2019 report, the EWG reviewed the visions, goals, objectives, and other aspirational prose of the North Pacific Fishery Management Council’s draft Bering Sea FEP, the Western Pacific Fishery Management Council’s FEPs, the South Atlantic Fishery Management Council’s FEP, the National Fish, Wildlife and Plants Climate Adaptation Strategy, and the planning statements for several national forests and national marine sanctuaries. In addition, we considered the goals, vision statements and other strategic planning elements used among the Councils more broadly, such as the Mid-Atlantic Fishery Management Council’s (MAFMC’s) Visioning Project and Strategic Plan and the South Atlantic Fishery Management Council’s Vision Blueprint for their Snapper-Grouper fishery.

After receiving direction from the Council in March, the EWG reviewed the comments the Council received from advisory bodies and the public and prepared a new draft alternative Vision Statement, and a new alternative set of Goals and Objectives. The EWG presented this new draft visionary language at a public webinar meeting on May 22, 2019, and received comments back from meeting attendees. For this September report, we added two additional draft alternative Vision Statements, and revised the alternative set of Goals and Objectives (See Section 3).

The Vision Statement is intended to express the Council’s vision for the ecosystem itself, taking into account human participation in and use of the ecosystem services of the natural world. The Purpose Statement addresses how the Council intends to use the FEP to guide future work. For each alternative Goal, the Objectives listed and numbered below that Goal are intended to provide more specific guidance on achieving the Goal.

Chapter 2 of the original 2013 FEP provides three Objectives, each of which has its own set of sub-Objectives. The 2013 FEP Objectives, provided in the Appendix, focus on: improving the information the Council uses in decision-making, better assessing the benefits of and tradeoffs in fisheries conservation and management, and ensuring that the Council process includes an administrative structure for addressing ecosystem issues across its fishery management plans

(FMPs). For our March 2019 report, we converted the 2013 Objectives to Goals and converted the sub-Objectives into Objectives, and we added a broad goal for managing species and habitats to protect ecosystem functions and provide sustainable fisheries over the long-term.

Following the March 2019 meeting and based on guidance and comments provided at that meeting, the EWG drafted new alternative Goals and Objectives to add some focus on key concepts in the Magnuson-Stevens Fishery Conservation and Management Act (MSA), while retaining some of the 2013 priorities for a fishery management council process informed by ecosystem science. Of the July 2019 alternative Goals and Objectives, Goal 1 is the most process-oriented and includes ideas the Council supported and used in implementing its 2013 FEP. To achieve July Goal 1 and Objectives 1a through 1c the Council would: continue to provide annual and regular opportunities for public discussion of ecosystem information; continually review the ecosystem indicators in the annual ecosystem status report and elsewhere to assess their utility in the Council process; bring an ecosystem-based management perspective to its work in regional, national, and international work; and identify knowledge gaps where new or continual research and monitoring may be needed.

Goal 2 from July 2019 is intended to give the Council some ideas and tools for considering the concept of ecosystem overfishing. Individual overfished and depleted species should continue to be rebuilt using the authority of the FMPs; however, asking whether ecosystem overfishing is occurring takes more factors into account than just adding up the harvest levels of all managed species. The United Nations' Food and Agriculture Organization specifically defines ecosystem overfishing as a situation that results from fishing, not from other human activities or environmental changes, “. . . the situation in which the long-term historical species balance (i.e. species composition, dominance, and their natural oscillations) have been significantly modified by fishing – e.g. the reductions of fish predators can lead to increases of small and short-lived species at lower trophic levels” (FAO 2009). However, as the California Current Ecosystem (CCE) shifts and changes over time, we will need an understanding of ecosystem overfishing that recognizes changes in the biophysical environment.

Beyond defining ecosystem overfishing, Murawski (2000) suggests that we monitor marine ecosystems for overfished conditions by asking ourselves questions like: whether biomasses of important species fall below thresholds where recruitment prospects are impaired or where local or biological extinction is possible; whether native species diversity within the system is stable or declining; whether harvest rates tend to be stable or variable over time; whether economic and social benefits derived from the ecosystem's fisheries are declining over time; and whether the harvest of prey species impairs the long-term viability of ecologically important predator species. Coll et al. (2008) provide some ideas for calculating whether ecosystem overfishing is occurring, using some of the monitoring parameters suggested by Murawski (2000) and ultimately identify the CCE as one of the ecosystems less likely to be subject to ecosystem overfishing than other large marine ecosystems worldwide.

Goal 2 and its objectives provide guidance for monitoring for ecosystem overfishing. To achieve July Goal 2 and Objectives 2a through 2e, the Council would: work with scientists to better understand the interacting effects of CCE trophic energy, ecological interactions, and the effects of shifting species' availability on fisheries income and vessel participation rates in West Coast fisheries; and, conserve and manage species' populations to achieve the greatest long-term benefits from marine fisheries. The EWG would particularly appreciate comment from the Scientific and Statistical Committee on whether July Goal 2 and Objectives 2a through 2e seem useful in the near

term for providing the Council with a framework for considering ecosystem overfishing. In the longer-term, the Council may want to explore quantitative limits for concepts like ecosystem overfishing or equilibrium maximum sustainable yield via a science-focused ecosystem initiative, such as through some modified version of potential initiative A.2.1 on the long-term effects of Council harvest policies on age- and size-distribution in managed stocks (PFMC 2013).

Goal 3 from July 2019 grows out of the Council's work on the Climate and Communities Initiative, from the MSA's National Standard 4 on non-discrimination between residents of different states and fair and equitable allocations, and from National Standard 8, which requires that fishery conservation and management measures "take into account the importance of fishery resources to fishing communities by utilizing economic and social data . . . in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities." Goal 3 and its objectives are inspired by the principles and ideas of the United Nations' Millennium Ecosystem Assessment, which seeks to enhance the contribution of ecosystems to human well-being without undermining those ecosystems' long-term productivity (MEA 2005).

To achieve July Goal 3 and Objectives 3a through 3e, the Council would: consider the effects of fishing and non-fishing activities on CCE's provisioning of ecosystem services and the connections of those ecosystem services to the well-being of West Coast fishing communities. Under these objectives, when the Council is asked to review the potential effects of non-fishing activities in the CCE, it would consider whether those activities improve upon or degrade the ability of the CCE to provide ecosystem services to fishing communities.

Goal 4 from July 2019 focuses on marine habitats and the effects of human activities on those habitats. This goal and its objectives incorporate ideas provided by the Habitat Committee in March 2019 to better connect the FEP to the Council's essential fish habitat (EFH) work and to incorporate climate change planning into the Council's EFH review processes. Goal 4 and its objectives ask that the Council consider the CCE's diverse habitat types when it is assessing existing or planning new fisheries closed areas. Goal 4 also supports projects to recover lost fishing gear, a priority for various governments and private entities participating in the Council process. July Goal 4 and Objectives 4a through 4c ask the Council to minimize the cumulative adverse effects of human activities on marine habitats to the extent practicable by: considering the effects of environmental shifts on habitat function over time; ensuring that, when the Council reviews and adjusts areas closed to fishing for habitat protection, it considers protecting a diverse array of marine habitat types; and supporting lost fishing gear recovery projects.

Goal 5 from July 2019 recognizes that the CCE includes protected species, some of which are under more restrictive management intended to recover populations to sustainable levels. Goal 5 and its objectives were informed in part by March 2019 requests from advisory bodies and the public that the FEP visionary language recognize predator-prey interactions in the CCE, and the potential effects of those interactions on the recovery of depleted populations. Goal 5 and its objectives recognize that the Council's bycatch minimization work takes place under the FMPs, but asks the Council to consider cumulative bycatch across the FMPs. July Goal 5 and Objectives 5a through 5c ask the Council to work across its FMPs to support goals for protected species' recovery by: understanding ecological interactions between fisheries and protected species; identifying where fisheries management can help conserve protected species essential to CCE trophic energy flows; and, minimizing bycatch of protected species across Council-managed fisheries.

Goal 6 from July 2019 addresses the effects of climate variability and change on ecosystem services. Goal 6 and its objectives call for the inclusion of climate considerations in stock assessments and forecasts, and for the development of management measures to adapt fisheries to climate variability and change, ocean acidification, marine heatwaves, and hypoxia. The Council can achieve July Goal 6 and Objectives 6a through 6c by: including climate vulnerability and change considerations into stock assessments; assessing the effects of climate variability and change on the ecosystem and recommending research needed to better understand the effects of potential shifts in species' abundance and distribution; developing management measures to improve fisheries stability and adaptability; and, planning for the effects of climate variability and change on ecosystem services and considering long-term adaptation strategies. We anticipate that the Council may be able to accomplish at least some of these objectives through the ongoing Climate and Communities Initiative.

Finally, the EWG notes that the Council has received comments on revising the FEP's Goals and Objectives that recommend that the Council pursue measurable goals linked to quantitative indicators. At its March 2019 meeting, the Council asked that we consider including public comment proposals for measurability, namely from the letter signed onto by Ocean Conservancy, Wild Oceans, National Resources Defense Council, and The Nature Conservancy. The Council's guidance for this topic used the phrase "outcome-oriented," which does not necessarily imply quantitative measurability, although some Council discussions have considered the possibility of measurable goals or objectives for the FEP. Although the EWG incorporated several ideas from public comment into the July 2019 draft Goals and Objectives, we did not recommend quantitative objectives. At this point and without further expert support, we do not believe that we have the expertise to recommend feasible goals that can be quantitatively measured, as was recommended in the March 2019 public comment proposals.

If the Council wants to explore quantitative limits for particular Goals or Objectives, we suggest that it do so with a science-focused ecosystem initiative (PFMC 2013). As an alternative process, the Council might consider the process used by the MAFMC with its Strategic Plan and Annual Implementation Plans (MAFMC 2018). Their process maps proposed Deliverables, an Action Development Checklist, and Science and Research Needs using the Annual Implementation Plans. The framework they use was designed, in part, to recognize that many activities "cannot be measured with traditional metrics" and out of a desire to have "a mechanism for measuring the Council's progress toward achieving the goals and objectives of the strategic plan" and for "integrating the Council's strategic goals into the development and evaluation of management alternatives." The Pacific Council might consider a system similar to the MAFMC's Strategic Plan system, using the FEP's Goals and Objectives as a starting point.

3 Draft Alternative FEP Vision Statements, Purpose Statement, Goals and Objectives

In this section, we provide a draft revised FEP Chapter 1 that includes three alternative Vision Statements, a Purpose Statement, and alternative Goals and Objectives. Chapter 1 of the 2013 FEP included both visionary language and more practical language on the Council process. Here, we recommend moving that process language to a new draft Chapter 2.

Chapter 1 Vision, Purpose, Goals and Objectives

The California Current Ecosystem (CCE) is a dynamic, diverse environment in the eastern North Pacific Ocean. Spanning nearly 3,000 km from southern British Columbia, Canada to Baja California, Mexico, the CCE encompasses the United States Exclusive Economic Zone (EEZ), the coastal land-sea interface, and adjacent terrestrial watersheds along the U.S. West Coast.

The Pacific Fishery Management Council (Council or PFMC) first adopted a Pacific Coast Fishery Ecosystem Plan (FEP) in 2013. In 2019, the Council began revising and updating its FEP, starting with a discussion of the FEP's visionary language. This draft Chapter 1 begins with statements of the Council's vision for the CCE, and includes the purpose statement for the FEP itself, and a set of Goals and Objectives for the CCE and for the Council's work in the ecosystem.

1.1 Vision for the California Current Ecosystem

Alternative A: The CCE is a biodiverse and climatically variable eastern boundary current system with species that connect the broader ecosystem across terrestrial, estuarine, and ocean environments. The Council is committed to managing economically stable and sustainable fisheries for their inherent value, for the benefit of current and future generations, and to support and preserve the abundance and diversity of the ecosystem's living marine resources. The Council's vision for the future is an ecosystem that: includes adequate habitat protections to support healthy populations of fish and other marine species; allows the dynamic relationships among species to maintain resiliency that will help buffer those species' populations against climate change and other potential long-term adverse effects on fishery resources and the marine environment; and, continues to provide ecosystem services to humans such that future generations will have a multiplicity of options available with respect to future uses of these resources.

Alternative B: The Council envisions a CCE that supports long-term sustainable fisheries. This vision necessitates sustaining species' populations and the dynamic relationships among them, and managing fisheries in the face of climate change and other potential adverse effects to fishery resources and the marine environment. With effective fisheries management, the CCE can provide ecosystem services for current and future generations that ensure jobs and incomes that contribute to the social wellbeing and culture of fishing communities.

Alternative C: The Council is committed to managing for long-term and sustainable CCE fisheries for the benefit of current and future generations of Americans, and to supporting and preserving the abundance and diversity of the ecosystem's living marine resources. The Council's vision for the ecosystem supports sustaining species' populations and the dynamic relationships among species, conserving habitats, and managing species and fisheries to build and maintain resilience to climate variability and change and other potential adverse effects on fishery resources and the marine environment. To achieve this vision, the Council needs the support of science programs that provide research on a broad range of topics and species, and which are stable over the long-term. With effective fisheries management, the CCE can provide ecosystem services for current and future generations that ensure jobs and incomes that contribute to the social wellbeing and culture of fishing communities.

Alternative D: The Council envisions a CCE that continues to provide ecosystem services to current and future generations—including livelihoods, recreational opportunities, and cultural practices that contribute to the wellbeing of fishing communities and the nation. To implement this

vision, the Council employs precautionary harvest policies that target healthy population levels, preserve biodiversity and ecological relationships between species, and ensure fair and equitable sharing of harvest benefits. The Council also develops management measures to conserve habitats and encourage practicable measures for avoiding the bycatch of protected and non-target marine life. Achieving this vision will require adaptive management and policies that are resilient to the coming changes, and increased variability and change in the climate and ocean environment. The vision cannot be achieved without continued commitment to scientific research and ongoing monitoring of the biological, ecological, physical, social, and economic characteristics of the ecosystem. Nor can it be achieved without the resources and support to implement adaptive changes in a timely fashion. The vision will always be strengthened by the Council's serving as an open and transparent forum for all who wish to civilly engage in the discussions of how the public resources of the California Current should be conserved and managed.

1.2 Purpose of the Fishery Ecosystem Plan

The purpose of the FEP is to enhance the Council's species-specific management programs with more ecosystem science, broader ecosystem considerations, and management policies that coordinate Council management across its Fishery Management Plans (FMPs) and the CCE. An FEP should provide a framework for considering policy choices and trade-offs as they affect FMP species and the broader CCE. The FEP should also coordinate information across FMPs for decision-making within the Council process and for consultations with other regional, national, or international entities on actions affecting the CCE or FMP species. Additionally, an FEP should identify and prioritize research needs and provide recommendations to address gaps in ecosystem knowledge and FMP policies, particularly with respect to the cumulative effects of fisheries management on marine ecosystems and fishing communities.

The FEP is meant to be an informational document, and is not meant to be prescriptive relative to Council fisheries management. Information in the FEP, results of the Integrated Ecosystem Assessment (IEA), and the Annual State of the California Ecosystem Report are available for consideration during the routine management processes for fisheries managed in each FMP. How exactly these items will affect fishery management decisions is at the discretion of the Council.

1.3 Goals and Objectives

The FEP's goals and objectives, below, are intended to address the Council's Vision for the CCE (Section 1.1) and Purpose for the FEP (Section 1.2). This FEP and related activities integrate fisheries management policies across all Council FMPs, while recognizing that the Council's authority is generally limited to managing fisheries and the effects of fisheries on the marine ecosystem, protected species, and to consultations on the effects of non-fishing activities on essential fish habitat (EFH). The Council's work often requires Council members to think about their larger goals for the ecosystem itself. Chapter 5 of this FEP, PFMC Policy Priorities for Ocean Resource Management, discusses the Council's CCE policy priorities as they apply to ocean resource management and policy processes external to the Council.

March 2019 Alternative Goals and Objectives (Goals 1, 2, and 4 are Objectives 1, 2, and 3 from the 2013 FEP; March 2019 Goal 3 was new as of that meeting.)

The following FEP goals and objectives build on the FEP's 2013 objectives and on the goals and objectives of the Council's four FMPs.

Goal 1: Improve and integrate information used in Council decision-making across the existing FMPs by:

Objective 1a: Providing opportunities for the Council and its advisory bodies to consider physical, biological, social, and economic information on CCE climate conditions, climate change, habitat conditions, and ecosystem interactions;

Objective 1b: Identifying measures and indicators, and informing reference points to monitor and understand trends and drivers in key ecosystem features;

Objective 1c: Identifying and addressing gaps in ecosystem knowledge, particularly with respect to the cumulative and longer-term effects of fishing on marine ecosystems;

Objective 1d: Examining the potential for a science and management framework that allows for managing fish stocks at spatial scales relevant to the structure of those stocks.

Goal 2: Build toward fuller assessment of the greatest long-term benefits from the conservation and management of marine fisheries, of optimum yield, and of the tradeoffs needed to achieve those benefits while maintaining the integrity of the CCE through:

Objective 2a: Assessing trophic energy flows and other ecological interactions within the CCE;

Objective 2b: Assessing the full range of cultural, social, and economic benefits that fish and other living marine organisms generate through their interactions in the ecosystem;

Objective 2c: Improving assessment of how fisheries affect and are affected by the present and potential future states of the marine ecosystem.

Goal 3: Manage species and habitats to protect ecosystem functions and to provide sustainable commercial, recreational, and cultural and subsistence fisheries to future generations by:

Objective 3a: Providing adequate buffers against the uncertainties of environmental and human-induced impacts to the marine environment by developing safeguards in fisheries management measures;

Objective 3b: Working beyond the Council process to reduce non-fisheries stressors to managed species and habitats;

Objective 3c: Increasing knowledge and information on the potential effects and responses of managed species and habitats to a changing climate.

Goal 4: Provide administrative structure and procedures for coordinating conservation and management measures for the living marine resources of the U.S. West Coast EEZ by:

Objective 4a: Guiding annual and regular reporting of status and trends to the Council;

Objective 4b: Providing a nexus to regional, national, and international ecosystem-based management endeavors, particularly to address the consequences of non-fishing activities on fisheries and fish habitat;

Objective 4c: Identifying ecological relationships within the CCE to provide support for cross-FMP work to conserve non-target species essential to the flow of trophic energy within the CCE.

July 2019 Alternative Goals and Objectives

Goal 1: The FEP should provide a framework and public forum to improve and integrate ecosystem information for use in Council decision-making.

Objective 1a: Provide annual and regular opportunities for the Council and its advisory bodies to consider physical, biological, social, and economic information on the CCE with an emphasis on environmental and climate conditions, climate change, habitat conditions, ecosystem interactions, and changing socio-economic drivers;

Objective 1b: Identify research and monitoring priorities to address knowledge gaps, including indicators and reference points to monitor trends and drivers in key ecosystem features;

Objective 1c: Provide a nexus to regional, national, and international ecosystem-based management endeavors.

Goal 2: Conserve and manage species' populations to achieve the greatest long-term benefits from marine fisheries and consider the tradeoffs needed to realize those benefits by taking into account the CCE's long-term historical fluctuations in species composition, predator-prey relations, and availability of harvestable surplus of targeted species.

Objective 2a: Continue to rebuild individual overfished stocks and minimize overfishing and bycatch in Council-managed species under the authority of the FMPs, taking into account the CCE's known fluctuations in environmental conditions and productivity;

Objective 2b: Map trophic energy flows and other ecological interactions within the CCE to better understand trophic relationships and the potential ecosystem effects of fishing, and to understand trends in marine mammal, seabird, and other protected species' populations;

Objective 2c: Assess and monitor species diversity and trophic levels of catch over appropriate timescales to understand the effects of climate variability and change on fisheries' harvest and variability;

Objective 2d: Assess variability in fisheries income and vessel participation rates for whether CCE fishing rates have affected long-term stability and well-being for fishing communities;

Objective 2e: Characterize the cultural, social, and economic benefits that fish and other marine organisms generate through their interactions in the ecosystem.

Goal 3: Promote fisheries management that ensures continued ecosystem services for the well-being of West Coast communities and the nation.

Objective 3a: Continue to provide for commercial, recreational, ceremonial, subsistence, and non-consumptive uses of the marine environment;

Objective 3b: Assess whether Council management programs and measures support ecosystem services essential to the ongoing engagement of fishing communities in West Coast fisheries;

Objective 3c: Continue to monitor the effects of non-fishing activities on the ecosystem and, to the extent possible, ensure that conservation benefits derived from closing areas to fishing are not undermined by negative effects of non-fishing activities;

Objective 3d: Support education efforts to promote understanding of: CCE biophysical processes, how the ecosystem affects human well-being, and of the potential risks and benefits to ecosystem services from climate variability and change;

Objective 3e: Promote fair and equitable allocation of resources in a manner such that no particular sector, group, or entity acquires an excessive share of the privileges.

Goal 4: Minimize the cumulative adverse effects of human activities on marine habitats to the extent practicable.

Objective 4a: Assess whether changes in ocean chemistry or other environmental factors affect managed species' functional habitat such that species' historical habitat becomes smaller or unusable;

Objective 4b: When developing or modifying habitat protection and other fisheries closed areas within the CCE, consider protections for diverse types of marine habitat, ensuring that closed areas are appropriate in size and location to the needs of managed species and fishing communities;

Objective 4c: Promote awareness of and encourage lost fishing gear recovery projects, the development of fishing gear recovery technology, and fishing gear recycling programs as a means of protecting habitat from derelict fishing gear and ghost fishing.

Goal 5: Manage fisheries to support goals for protected species' recovery.

Objective 5a: Assess the status of protected species' populations to understand trophic energy flows and other ecological interactions, including predator-prey interactions, especially as populations reach carrying capacity;

Objective 5b: Identify cross-FMP work that can conserve protected species essential to the flow of trophic energy within the CCE;

Objective 5c: While continuing to manage and minimize bycatch of protected species under the FMPs, ensure that cross-FMP bycatch of protected species is sufficiently minimized so that those species' populations may recover to sustainable levels.

Goal 6: Plan for the effects of climate variability and change on ecosystem services and consider long-term adaptation strategies.

Objective 6a: Improve monitoring capacity and include climate variability and change considerations into stock assessments and forecasts;

Objective 6b: Assess the effects of climate variability and change on the ecosystem's long-term stability and recommend research needed to understand the effects of potential shifts in species' abundance and distribution;

Objective 6c: Develop management measures to improve fisheries stability and adaptability to the effects of climate variability and change, ocean acidification, marine heatwaves, and hypoxia.

Chapter 2 Ecosystem Issues in the Council Process

This draft Chapter 2 provides the Council's long-term schedule for reviewing and updating the FEP, and its annual schedule for reviewing and considering ecosystem initiatives and the California Current Ecosystem Status Report. These schedules and processes ensure that the Council has regular opportunities to consider ecosystem issues, and allow the Council and its advisory bodies to better integrate ecosystem science into management processes and measures developed under the Council's four FMPs.

2.1 Schedule and Process for Developing and Amending the FEP and the Ecosystem Initiatives

From 2010 through early 2013, the Council and its advisory bodies drafted an FEP, collaborating with the public through various drafts and revisions. In April 2013, the Council adopted a final FEP, providing instructions for the document's last revisions and for the Council's future discussions of ecosystem science and cross-FMP policy issues. The 2013 FEP provided a schedule where the FEP itself would not be reviewed or updated until at least 2018, but also ensured that any policy changes in the intervening years would be documented in the FEP's Appendix. In 2018, the Council reviewed the FEP and decided to begin an update process, starting with a discussion of the FEP's visionary language in 2019.

This document, the main body of the FEP, will not be amended until the Council determines that an FEP review and revision process is necessary. At that time, the Council may consider appointing new ad hoc advisory bodies to review and recommend revisions to the FEP. The Council does not anticipate initiating an FEP review process until at least 20XX. In addition to the main body of the FEP, which consists of Chapters 1-XX, the Council may choose to add one or more appendices to the FEP without opening the main body of the FEP to revision.

Appendix A to the FEP is an Ecosystem Initiatives appendix that: 1) provides the Council with a process for considering ecosystem-based management initiatives to address issues of interest to the Council that may cross authorities of two or more of its FMPs; 2) briefly documents completed FEP initiatives; and 3) provides additional potential cross-FMP initiatives for review and consideration by the Council and the public.

Each year at the Council's March meeting, the Council and its advisory bodies will:

- review progress to date on any ecosystem initiatives the Council already has underway;
- review the list of potential ecosystem initiatives provided in Appendix A to the FEP and determine whether any of those initiatives merit Council attention in the coming year;
- if initiatives are chosen for Council efforts, request background materials from the appropriate entities;
- in March 2015 and in each subsequent odd-numbered year, assess whether there are new ecosystem initiative proposals that could be added to the appendix; and
- in March 20XX, assess whether to initiate a review and update of the FEP.

Each initiative in Appendix A includes suggestions for background information needed to support consideration of the initiative and suggestions for the expertise needed on an ad hoc team to develop the initiative. If the Council determines that it wishes to address a new ecosystem initiative, it would begin by requesting relevant background information from the appropriate agencies and other entities, which would then be made available to the Council and its advisory

bodies at a subsequent Council meeting, scheduled at the Council's discretion. Upon review of the background informational materials, the Council will decide whether to further pursue that initiative, and may then request nominations for appointments to an ad hoc team to be tasked with developing the initiative. Any materials developed through the ad hoc team process would, as usual with Council advisory body materials, be made available for review and comment by all of the Council's advisory bodies and the public during the Council's policy assessment and development process.

2.2 Ecosystem Initiatives, 2013-2019

The FEP's Appendix A provides examples of potential ecosystem-based fishery management initiatives, processes by which the Council can address issues and challenges that affect two or more Council FMPs or coordinate major Council policies across the FMPs. Appendix A is separate from the FEP and may be modified without the Council having to also modify the FEP or reconsider its contents. The Council has an annual process for reviewing the ecosystem initiatives and assessing whether changes are needed to Appendix A, or whether analyses are needed to provide background work for new ecosystem initiatives.

FEP Initiative 1 was designed to prohibit new directed commercial fishing in Federal waters on unmanaged, unfished forage fish species until the Council has had an adequate opportunity to both assess the scientific information relating to any proposed directed fishery and consider potential impacts to existing fisheries, fishing communities, and the greater marine ecosystem. The Council worked on FEP Initiative 1 from September 2013 through March 2015, ultimately adopting amendments to all four of its FMPs as Comprehensive Ecosystem-Based Amendment 1 (CEBA 1). The Council and National Marine Fisheries Service (NMFS) implemented FEP Initiative 1 through two sets of Federal regulations: updating and clarifying the fishing gears allowed to be used in the West Coast EEZ, and prohibiting directed fishing for, yet allowing incidental catch of: round herring (*Etrumeus teres*) and thread herring (*Opisthonema libertate* and *O. medirastre*), mesopelagic fishes of the families *Myctophidae*, *Bathylagidae*, *Paralepididae*, and *Gonostomatidae*, Pacific sand lance (*Ammodytes hexapterus*), Pacific saury (*Cololabis saira*), silversides (family *Atherinopsidae*), smelts of the family *Osmeridae*, pelagic squids (families: *Cranchiidae*, *Gonatidae*, *Histioteuthidae*, *Octopoteuthidae*, *Ommastrephidae* except Humboldt squid (*Dosidicus gigas*), *Onychoteuthidae*, and *Thysanoteuthidae*).

FEP Initiative 2 was a Council-wide review of the annual California Current Ecosystem Status Report of the National Oceanic & Atmospheric Administration Fisheries Northwest and Southwest Fisheries Science Centers (Centers). Under Initiative 2, the Council facilitated a year-long scoping process involving ecosystem scientists, fishery managers, and the public in a conversation about ecosystem science within the Council process. The Council began FEP Initiative 2 in September 2015 and completed it in September 2016. Through the initiative process, Council advisory bodies and the public considered: physical and oceanography indicators; biological indicators; human dimensions indicators; freshwater, estuarine and marine habitat indicators; and, risk assessments and applications of indicators to decision-making. Ultimately, this review process improved both the understanding Council process participants have of the ecosystem itself and of the applicability of the ecosystem status report's to Council work.

2.3 Ecosystem Status Reports

In support of its ecosystem-based management processes, the Council asked that NMFS, in coordination with other interested agencies, provide it with an annual state-of-the-ecosystem report at each of its March meetings, beginning in March 2014. The Council asked that the report:

- be bounded in terms of its size and page range to about 20 pages in length, and
- not wait for the “perfect” science to become available, should there be scientific information that does not come with definitive answers and numbers, but which may be useful for the Council to consider.

The Council received its first California Current Ecosystem Status Report in November 2012. Since March 2014, NMFS’s Northwest and Southwest Fisheries Science Centers have collaborated to deliver ecosystem status reports to the Council and its advisory bodies at each March meeting. From 2015 through 2016, the Council’s work on the second ecosystem initiative to provide a coordinated review of ecosystem indicators brought Council process participants together to ensure that the reports provide the information that is most interesting and useful to the Council process. The Scientific and Statistical Committee has been engaged in the annual report development process since its inception, providing scientific review of new indicators and a thorough vetting process for ecosystem scientists to share and test new ideas. Information in the report is intended to improve the Council and public’s general understanding of the status and functions of the CCE and is not tied to any specific management measures or targets for Council-managed species. When the Council receives future annual ecosystem reports, it anticipates continuing to review the reports’ contents so that they may be tailored to provide information that best meets management needs.

4 References

Coll M., S. Libralato, S. Tudela, I. Palomera, F. Pranovi. 2008. Ecosystem Overfishing in the Ocean. PLoS ONE 3(12): e3881. doi:10.1371/journal.pone.0003881.

FAO, UNEP. Report of the FAO/UNEP Expert Meeting on Impacts of Destructive Fishing Practices, Unsustainable Fishing, and Illegal, Unreported and Unregulated (IUU) Fishing on Marine Biodiversity and Habitats. Rome, 23–25 September 2009. FAO Fisheries and Aquaculture Report. No. 932. Rome, FAO. 2010. 32p.

Mid-Atlantic Fishery Management Council. 2018. MAFMC 2019 Implementation Plan [for the MAFMC Strategic Plan]. 8p.
<https://static1.squarespace.com/static/511cdc7fe4b00307a2628ac6/t/5c2d25b08a922dd52e543b80/1546462641381/MAFMC+2019+Implementation+Plan+2019-01-02.pdf>

Millennium Ecosystem Assessment. 2005. Ecosystems and Human Well-being: Synthesis. Island Press, Washington, DC.

Murawski, S.A. 2000. Definitions of overfishing from an ecosystem perspective. ICES Journal of Marine Science, 57: 649-658. doi:10.1006/jmsc.2000.0738.

Appendix – 2013 FEP Chapters 1 and 2

1.0 Introduction

1.1 Purpose and Need

The purpose of the Fishery Ecosystem Plan (FEP) is to enhance the Pacific Fishery Management Council's (Council) species-specific management programs with more ecosystem science, broader ecosystem considerations, and management policies that coordinate Council management across its Fishery Management Plans (FMPs) and the California Current Ecosystem (CCE). An FEP should provide a framework for considering policy choices and trade-offs as they affect FMP species and the broader CCE.

The needs for ecosystem-based fishery management within the Council process are:

1. Improve management decisions and the administrative process by providing biophysical and socio-economic information on CCE climate conditions, climate change, habitat conditions and ecosystem interactions.
2. Provide adequate buffers against the uncertainties of environmental and human-induced impacts to the marine environment by developing safeguards in fisheries management measures.
3. Develop new and inform existing fishery management measures that take into account the ecosystem effects of those measures on CCE species and habitat, and that take into account the effects of the CCE on fishery management.
4. Coordinate information across FMPs for decision-making within the Council process and for consultations with other regional, national, or international entities on actions affecting the CCE or FMP species.
5. Identify and prioritize research needs and provide recommendations to address gaps in ecosystem knowledge and FMP policies, particularly with respect to the cumulative effects of fisheries management on marine ecosystems and fishing communities.

The FEP is meant to be an informational document. It is not meant to be prescriptive relative to Council fisheries management. Information in the FEP, results of the Integrated Ecosystem Assessment (IEA), and the Annual State of the California Ecosystem Report may be available for consideration during the routine management processes for fisheries managed in each FMP. How exactly these items will affect fishery management decisions is at the discretion of the Council.

1.2 How this Document is Organized

This FEP takes its organization from the Council's Purpose and Need statement, in Section 1.1. Chapter 2 provides the FEP's Objectives, a more detailed exploration of what the FEP would do to meet its Purpose and Need. Chapter 3 provides an overview of the CCE from a variety of physical, biological, and socio-economic perspectives and disciplines. Chapter 4 discusses the cumulative effects and uncertainties of environmental shifts and human activities on the marine environment. Chapter 5 discusses Council CCE policy priorities across its FMPs, so that ocean resource management and policy processes external to the Council (e.g. West Coast Governors' Alliance on Ocean Health, National Ocean Council, international fishery and ocean resource management bodies) may be made aware of and may better take into account those priorities.

Chapter 6 broadly discusses processes for bringing ecosystem science into the Council process. In addition to this main FEP, there is an FEP Appendix A that provides an ecosystem-based fishery management initiative process for the FEP's use into the future.

1.3 Schedule and Process for Developing and Amending the FEP and the Ecosystem Initiatives

In November 2009, the Council appointed two new ad hoc advisory bodies, the Ecosystem Plan Development Team (EPDT) and the Ecosystem Advisory SubPanel (EAS). From 2010 through early 2013, these advisory bodies, with direction from the Council and in cooperation with its permanent committees, developed a draft FEP for public review, released in February 2013. At its April 2013 meeting in Portland, Oregon, the Council adopted a final FEP, providing instructions for the document's last revisions and for the Council's future discussions of ecosystem science and cross-FMP policy issues.

This document, the main body of the FEP, will not be amended until the Council determines that an FEP review and revision process is necessary. At that time, the Council may consider appointing new ad hoc advisory bodies to review and recommend revisions to the FEP. The Council does not anticipate initiating an FEP review process until at least 2018. In addition to the main body of the FEP, which consists of Chapters 1-6, the Council may choose to add one or more appendices to the FEP without opening the main body of the FEP to revision.

Appendix A to the FEP is an Ecosystem Initiatives appendix that: 1) provides the Council with a process by which it may consider ecosystem-based management initiatives to address issues of interest to the Council that may cross authorities of two or more of its FMPs; 2) provides a fleshed-out example FEP Initiative 1 that the Council has decided to consider in 2013 and beyond, to protect unfished lower trophic level (forage) fish species within the U.S. West Coast Exclusive Economic Zone (EEZ); and 3) provides additional potential cross-FMP initiatives for review and consideration by the Council and the public.

Each year at the Council's March meeting, the Council and its advisory bodies will:

- review progress to date on any ecosystem initiatives the Council already has underway;
- review the list of potential ecosystem initiatives provided in Appendix A to the FEP and determine whether any of those initiatives merit Council attention in the coming year;
- if initiatives are chosen for Council efforts, request background materials from the appropriate entities;
- in March 2015 and in each subsequent odd-numbered year, assess whether there are new ecosystem initiative proposals that could be added to the appendix; and
- in March 2018, assess whether to initiate a review and update of the FEP.

Each initiative in Appendix A includes suggestions for background information needed to support consideration of the initiative and suggestions for the expertise needed on an ad hoc team to develop the initiative. If the Council determines that it wishes to address a new ecosystem initiative, it would begin by requesting relevant background information from the appropriate agencies and other entities, which would then be made available to the Council and its advisory bodies at a subsequent Council meeting, scheduled at the Council's discretion. Upon review of the background informational materials, the Council will decide whether to further pursue that

initiative, and may then request nominations for appointments to an ad hoc team to be tasked with developing the initiative. Any materials developed through the ad hoc team process would, as usual with Council advisory body materials, be made available for review and comment by all of the Council's advisory bodies and the public during the Council's policy assessment and development process.

1.4 State-of-the-Ecosystem Reporting

In support of its ecosystem-based management processes, the Council has requested that NMFS, in coordination with other interested agencies, provide it with an annual state-of-the-ecosystem report at each of its March meetings, beginning in March 2014. The Council asked that the report:

- be bounded in terms of its size and page range to about 20 pages in length, and
- not wait for the “perfect” science to become available, should there be scientific information that does not come with definitive answers and numbers, but which may be useful for the Council to consider.

At its November 2012 meeting, the Council received a draft Annual State of the California Current Ecosystem Report. That report briefly synthesized those results of the California Current IEA that might be most useful to the Council's major decisions on potential harvest levels for its managed species groups. The Council and its advisory bodies reviewed the draft report, provided suggestions for future reports by commenting on the information in the report that appeared to be most useful to the Council process, and asked if National Oceanic and Atmospheric Administration (NOAA) Fisheries Northwest and Southwest Fisheries Science Centers might collaborate on developing the report annually into the future. The Council re-iterated its guidance that the report not exceed 20 pages in length, and be tailored to providing information on indicators directly relevant to Council decision-making. Information in the report is intended to improve the Council and public's general understanding of the status and functions of the CCE and is not tied to any specific management measures or targets for Council-managed species. When the Council receives future annual ecosystem reports, it anticipates continuing to review the reports' contents so that they may be tailored to best meet management needs.

2. Objectives

The FEP objectives, listed below, are intended to address the purpose and need statement in Section 1.1. This FEP and related activities are together expected to further integrate management across all Council FMPs, while recognizing that the Council's authority is generally limited to managing fisheries and the effects of fisheries on the marine ecosystem, protected species, and to consultations on the effects of non-fishing activities on essential fish habitat (EFH). The Council's work often requires Council members to think about their larger goals for the CCE, including and beyond goals they may have for managing fisheries. Chapter 5 of this FEP, *PFMC Policy Priorities for Ocean Resource Management*, discusses the Council's CCE policy priorities as they apply to ocean resource management and policy processes external to the Council. Thus, Chapter 2 provides Council objectives for Council work, while Chapter 5 provides the Council's aspirations for the work of others within the CCE, given Council priorities for the fish stocks and fisheries it manages.

The Council's four existing FMPs each have suites of goals and objectives that differ in their precise language, but have five common themes consistent with an ecosystem approach to fishery management: avoid overfishing, minimize bycatch, maintain stability in landings, minimize impacts to habitat, and accommodate existing fisheries sectors. The Coastal Pelagic Species (CPS) FMP has an additional goal of providing adequate forage for dependent species. The following FEP objectives are intended to build upon the Council's four FMPs by recognizing that, through the Magnuson-Stevens Fishery Conservation and Management Act (MSA), the United States (U.S.) supports the ongoing participation of its citizens in commercial and recreational fisheries off its coasts, while also requiring that fish stocks be conserved and managed for optimum yield.

1. Improve and integrate information used in Council decision-making across the existing FMPs by:
 - a. Describing the key oceanographic, physical, biological, and socioeconomic features of the CCE and dependent fishing communities;
 - b. Identifying measures and indicators, and informing reference points to monitor and understand trends and drivers in key ecosystem features;
 - c. Identifying and addressing gaps in ecosystem knowledge, particularly with respect to the cumulative and longer-term effects of fishing on marine ecosystems;
 - d. Examining the potential for a science and management framework that allows for managing fish stocks at spatial scales relevant to the structure of those stocks.
2. Build toward fuller assessment of the greatest long-term benefits from the conservation and management of marine fisheries, of optimum yield, and of the tradeoffs needed to achieve those benefits while maintaining the integrity of the CCE through:
 - a. Assessing trophic energy flows and other ecological interactions within the CCE;
 - b. Assessing the full range of cultural, social, and economic benefits that fish and other living marine organisms generate through their interactions in the ecosystem;
 - c. Improving assessment of how fisheries affect and are affected by the present and potential future states of the marine ecosystem.
3. Provide administrative structure and procedures for coordinating conservation and management measures for the living marine resources of the U.S. West Coast EEZ:
 - a. Guiding annual and regular reporting of status and trends to the Council;
 - b. Providing a nexus to regional, national, and international ecosystem-based management endeavors, particularly to address the consequences of non-fishing activities on fisheries and fish habitat;
 - c. Identifying ecological relationships within the CCE to provide support for cross-FMP work to conserve non-target species essential to the flow of trophic energy within the CCE.