

ECOSYSTEM WORKGROUP REPORT ON UNMANAGED FORAGE FISH PROTECTION INITIATIVE

A. Introduction

Upon adopting its Fishery Ecosystem Plan (FEP) and FEP appendix in April 2013, the Council decided to immediately begin work on FEP Initiative 1 to implement the Council's policy on protection for unfished forage fish species. The Council discussed its motivations for pursuing this initiative at its June 2012, April 2013, and June 2013 meetings. Based particularly on the Council's June 2012 discussions, the FEP appendix describes the objectives of FEP Initiative 1 as:

“FEP Initiative 1 is intended to recognize the importance of forage fish to the marine ecosystem off the U.S. West Coast, and to provide adequate protection for forage fish. The Council's objective is to prohibit the development of new directed fisheries on forage species that are not currently managed by the Council, or the States, until the Council has had an adequate opportunity to assess the science relating to any proposed fishery and any potential impacts to our existing fisheries and communities. The Council is not pursuing a permanent moratorium on fishing for forage fish. Instead, the Council stated that the proposed goal is to not allow new fisheries to begin without adequate opportunity for assessing the science and the potential impacts on existing fisheries and fishing communities. Under the current rules, there is some risk that fisheries could develop before such analysis could be conducted.”

At its April 2013 meeting, the Council outlined work for an ad hoc committee to develop recommendations on revising the federal list of authorized fisheries and gear (see agenda item I.1.) and to begin developing FEP Initiative 1 to “incorporate any additional needed protections [for lower trophic level species] into the current suite of FMPs through an FMP amendment process” (Final Council action at G.1.d, June 2012, see also FEP appendix at A.1.2.2). The Council's April 2013 motion asked that the ad hoc committee address questions in the FEP appendix intended to better define the potential list of species or species groups that could be subject to new protections under FEP Initiative 1:

1. Does the species meet the definition for lower trophic level species: *often present in high abundance, forming dense aggregations, and which are generally plankton feeders for a large portion of their life cycle* (adapted from Smith et al. 2011)?
2. Does it occur within the U.S. West Coast EEZ? (Meaning, could it be considered under federal jurisdiction, or does it primarily occur within state waters?)
3. Is it managed within a Council FMP or state management program?
4. Is the species or species group: taxonomically similar to species within any FMP, the prey of any FMP species or species group, or bycatch within an FMP fishery?

The Council also asked that the ad hoc committee use the appendix's preliminary summary of select lower trophic level CCE species as an initial starting point to address the above four questions and to:

- A. Build on the assessment, started by the Ecosystem Plan Development Team (EPDT), of the likelihood of fisheries developing to harvest those unmanaged species on the preliminary list—for example, consider whether these species are harvested elsewhere or whether markets exist for them;
- B. Brainstorm on whether there are general gear restrictions or prohibitions that could be used to restrict harvest of these unmanaged species;
- C. Develop recommendations for a proposed Council process for moving forward with Initiative 1 and identify next steps; and
- D. Report back to the Council later this year with a more definitive timeline to be discussed under future Council agenda planning and workload.

In June 2013, the Council dissolved the EPDT and formed the Ecosystem Workgroup as an ad hoc committee to develop FEP Initiative 1. The Workgroup first met on August 29, 2013, via conference call. With the short timeframe between the Workgroup's meeting and this September Council meeting, this report focuses on questions C. and D., above, and provides questions for Council consideration that will help the Workgroup to better develop materials for future Council meetings. Question B. will be addressed in part by Council action under Agenda Item I.1., which could remove the gear types commonly used to target schooling lower trophic level species from the list of gears available to non-FMP commercial fisheries.

B. FEP Initiative Draft Statement of Purpose and Need

The Council typically begins consideration of new issues with a discussion of the purpose of and need for action. The objectives of FEP Initiative 1, drawn from the Council's June 2012 discussions on developing new protections for lower trophic level species of the California Current Ecosystem (CCE) can be re-framed as a draft statement of purpose and need for the Council's review and consideration:

The purpose of this action is to recognize the importance of forage fish to the marine ecosystem off the U.S. West Coast. This action is needed to provide protection for unmanaged, unfished forage fish of the U.S. West Coast EEZ by prohibiting new directed fishing on those species until the Council has had an adequate opportunity to assess the scientific information relating to any proposed fishery and to consider potential impacts to existing fisheries, fishing communities, and the greater marine ecosystem.

Throughout its discussions on this issue, the Council has been focused on the question of how to provide new management measures, as needed, for lower trophic level species that are not now managed under its FMPs or under state or tribal management programs. In its November 2011 report, the EPDT noted “*that the greatest proportion of energy flow in the CCE [California Current Ecosystem] appears to be through krill, market squid, northern anchovy, Pacific sardine and Pacific herring. There are few other species (excluding juveniles of non-lower trophic level species) that occur with high frequency and with a comparable significance to that core group of species. Thus, despite real or potential historical or future conservation problems for some of these species, there is not a high level of unmanaged standing biomass for forage species that*

could become subject to fisheries targeting over the short term and which are critical to large scale CCE functioning, energy flow, or integrity.”

The federal list of authorized fisheries and gear, addressed under Agenda Item I.1 of this meeting and Agenda Item H.1 of the Council’s June 2013 meeting, requires that persons wishing to develop new fisheries consult with the Council, so that the Council has an opportunity to comment on, develop a regulatory plan for, or recommend that NMFS prohibit the proposed fishery as appropriate. The absence of a particular fishery from that list does not mean that starting such a fishery is prohibited. However, the Council’s potential action under I.1 at this meeting to update and tighten the list of authorized fisheries and gear, including the removal of seine, trawl, and other net gears from the categories of gears generally available for use in non-FMP commercial fisheries, and the removal of Pacific saury from the list of commercially fished species, would make it highly unlikely that new fisheries for forage fish species could begin in the U.S. West Coast EEZ without prior Council authorization. The small size and schooling habits of forage fish species makes them most effectively caught with trawl, seine and other net gears.

As the EPDT has stated several times in the past, revising and updating the federal list of authorized fisheries and gear ensures that the Council will be notified if a new fishery begins, but does not prohibit such fisheries from occurring without Council consultation. If the Council wishes to prohibit *“new directed fishing on those species until the Council has had an adequate opportunity to assess the scientific information relating to any proposed fishery and to consider potential impacts to existing fisheries, fishing communities, and the greater marine ecosystem,”* those species must be managed under the authority of an FMP or FMPs.

C. Defining Unmanaged and Unfished Forage Fish Species Under Potential Council Authority

Council questions 1-4 on page 1 of this report, originally from the FEP’s appendix, help frame the list of species that could be the subject of this action. Question 1 asks about species that meet the Council’s definition of “forage fish” species, which is based on a Smith et al. (2011) paper on lower trophic level species: *species that are often present in high abundance, forming dense schools or aggregations, and which are generally plankton feeders for a large part of their life cycle.* Question 2 looks at the degree to which species occur within the U.S. West Coast EEZ and at whether they might be subject to federal jurisdiction.

In a November 2011 report, the EPDT provided a preliminary list of some managed and unmanaged West Coast EEZ species that could fall under the above definition of “forage fish.” At the time, the EPDT noted that the list should be considered incomplete, particularly because it included only pelagic species, and that the EPDT had not had time to complete a review of food habits studies during the preparation of that list. In its April 2013 motion on FEP Initiative 1, the Council identified that list as an initial starting point for launching the initiative, noting that additional review would be needed to move forward in any management process. Characterizing the place of unmanaged and unfished lower trophic level species in the food habits of Council-managed species and looking at the bycatch of lower trophic level species in Council-managed fisheries are essential to better understanding how this action could affect species taken in existing fisheries, fishing communities, and the greater marine ecosystem. The Workgroup does not have members with expertise in these areas; therefore, the Workgroup requests that the Council consider a mechanism for bringing needed scientific expertise into the FEP Initiative 1 process, such as by:

- Adding Workgroup positions for scientists with the appropriate expertise from NMFS’s Northwest and Southwest Fisheries Science Centers, or;
- Arranging a workshop to review the food habits of Council-managed species, with a focus on which species meeting the definition of “forage fish” are the prey of Council-managed species, and on which lower trophic level CCE species are taken as bycatch in Council-managed fisheries, or;
- Asking that the Scientific and Statistical Committee’s Ecosystem Based Management Subcommittee serve as a discussant committee to identify forage fish species with trophic interactions with Council-managed species or with gear interactions with Council-managed fisheries.

The purpose of this scientific review would be to help the Workgroup make recommendations to the Council on: 1) which EEZ species meet the definition of “forage fish” species; and 2) of those species, which have some connection to one or more FMP species – either as prey of an FMP species, as being taxonomically similar to an FMP species, or as bycatch in an FMP fishery. The Workgroup would also appreciate Council guidance on whether this action should address lower trophic level species that may not have any direct connection to FMP species. For example, are there lower trophic level species that are the prey of seabirds, but which are not also preyed upon by FMP species? If so, are those lower trophic level species of interest to the Council under this action? The Council may also wish to have more scientific discussion on its definition of “forage fish.” For example, are there lower trophic level species that serve as prey for FMP species, but which do not form “dense schools or aggregations”? If so, are those species of interest to the Council under this action?

The Workgroup is not suggesting that new food habits studies need to be conducted in support this initiative. However, we do need advice from scientists with appropriate expertise to better understand which of the existing food habits studies and other scientific information are most useful for this action. Should the Council wish to add forage fish species to one or more of its FMPs as fishery management unit species (FMU), discussed in more detail in Section D of this report, additional scientific expertise will also be needed to develop harvest reference points and essential fish habitat (EFH) recommendations for the candidate FMU species. The Workgroup also notes that its membership does not include any economists, whose expertise could be useful to addressing the Council’s Question A on page 2 of this report, which asks about markets for forage fish species.

The Council may also wish to consider framing FEP Initiative 1 by commenting on how it would define “unmanaged” and “unfished” species. The FEP Appendix at section A.1.2.2 states “*If a species is already within an FMP, or under the jurisdiction of a state management program of Washington, Oregon, or California, that species would not be subject to this initiative.*” In the November 2011 EPDT report mentioned above, the EPDT’s preliminary list of managed and unmanaged forage fish species also included species listed under the ESA, such as Eulachon, as federally-managed species. Some of the species in that table, such as Osmerid smelts, may be inappropriately identified as “unmanaged” if they do not fall within state management programs for all three states. Council guidance on how to identify which species are “unmanaged” would be helpful, particularly addressing these questions:

- What does “subject to a state management program” mean? Must the species in question be either taken in a state-managed fishery, or be subject to fishery prohibitions to be considered “managed” by the state?

- If a species is found within the EEZ and is subject to a state management program in one or two states, but not all three, should it be considered for inclusion in this action?

The Workgroup plans to describe state policies on forage fish and discuss how those may interact with each other and with federal management programs in future Workgroup reports to the Council.

While defining the term “unfished” may seem unnecessary, it may be useful to ensure that the Council shares an understanding of what is meant by “unfished,” in order to identify the species that could be the subject of this action. Under the Magnuson-Stevens Fishery Conservation and Management Act (MSA), the term “fishing” means: “(A) the catching, taking, or harvesting of fish; (B) the attempted catching, taking, or harvesting of fish; (C) any other activity which can be reasonably expected to result in the catching, taking, or harvesting of fish; or (D) any operations at sea in support of, or in preparation for, any activity described in subparagraphs (A) through (C).” Using this definition, the species that could be considered “unfished” for the purposes of this action could be those that are either not encountered in any fishery (not caught, taken, or harvested) or those that may be encountered as bycatch in a fishery, but which are not retained for sale or sold.

D. Process Considerations for Adding Unmanaged Species to FMPs

If species are to be added to one or more FMPs, they would be added as either FMU species or as ecosystem component (EC) species. Federal regulations at 50 CFR 600.10 define the term “fishery management unit” to mean: “a fishery or that portion of a fishery identified in an FMP relevant to the FMP’s management objectives. The choice of an FMU depends on the focus of the FMP’s objectives, and may be organized around biological, geographic, economic, technical, social, or ecological perspectives.” Fish stocks that are classified as FMU species are considered to be in the fishery, whether as target or non-target species. The National Standard Guidelines at 50 CFR 600.310(d)(3) and (4) provide the following definitions for “target stocks” and “non-target species,” both of which are considered FMU species:

“*Target stocks*” are stocks that fishers seek to catch for sale or personal use, including “economic discards” as defined under the MSA at section 3(9).

“*Non-target species*” and “*non-target stocks*” are fish caught incidentally during the pursuit of target stocks in a fishery, including “regulatory discards” as defined under the MSA at section 3(38). They may or may not be retained for sale or personal use. Non-target species may be included in a fishery and, if so, they should be identified at the stock level. Some non-target species may be identified in an FMP as ecosystem component (EC) species or stocks.

At 50 CFR 600.310(d)(5), federal regulations provide details on classifying species as EC species, saying that those species should:

- (A) Be a non-target species or non-target stock;
- (B) Not be determined to be subject to overfishing, approaching overfished, or overfished;
- (C) Not likely to become subject to overfishing or overfished, according to the best available information, in the absence of conservation and management measures; and

- (D) Not generally be retained for sale or personal use.

Those same regulations provide further guidance, stating “Occasional retention of [a] species would not, in and of itself, preclude consideration of the species under the EC classification . . . EC species may be identified at the species or stock level, and may be grouped into complexes. EC species may, but are not required to, be included in an FMP or FMP amendment for any of the following reasons: For data collection purposes; for ecosystem considerations related to specification of OY for the associated fishery; as considerations in the development of conservation and management measures for the associated fishery; and/or to address other ecosystem issues. While EC species are not considered to be ‘in the fishery,’ a Council should consider measures for the fishery to minimize bycatch and bycatch mortality of EC species consistent with National Standard 9, and to protect their associated role in the ecosystem. EC species do not require specification of reference points but should be monitored to the extent that any new pertinent scientific information becomes available (e.g., catch trends, vulnerability, etc.) to determine changes in their status or their vulnerability to the fishery. If necessary, they should be reclassified as ‘in the fishery.’”

The North Pacific Fishery Management Council (NPFMC) has a potentially useful example of adding large groups of lower trophic level species, characterized at the family or genus taxonomic order, to FMPs in order to prohibit the development of fisheries for those species. In 1998, the NPFMC first defined forage fish species categories within Amendment 36 to its FMP for Groundfish of the Bering Sea and Aleutian Islands and Amendment 39 to its FMP for Groundfish of the Gulf of Alaska. The NPFMC chose its groups of forage fish species based on data from the groundfish trawl fisheries, where lower trophic level species were occurring as minimal bycatch. The FMPs prohibited directed fishing for the forage species categories and restricted the fisheries to minimal levels of bycatch for these species.

The NPFMC Groundfish FMPs were updated via more recent amendments to comply with new requirements to establish annual catch limits and comply with National Standard 1 guidelines (Amendments 95 and 96 for the Bering Sea and Aleutian Islands, and Amendment 87 for the Gulf of Alaska FMPs). The FMPs now separate the “species or species groups [that] are likely to be taken in the groundfish fishery” into three categories: target species, prohibited species, and forage fish species, with the latter two categories together representing the EC species of the FMPs. For illustration purposes, a portion of Section 3.1.2 of the Gulf of Alaska Groundfish FMP (NPFMC 2011) is excerpted here:

1. *In the Fishery:*

a) *Target species* – are those species that support a single species or mixed species target fishery, are commercially important, and for which a sufficient data base exists that allows each to be managed on its own biological merits. Accordingly, a specific total allowable catch (TAC) is established annually for each target species or species assemblage. Catch of each species must be recorded and reported. This category includes walleye pollock, Pacific cod, sablefish, shallow and deep water flatfish, rex sole, flathead sole, arrowtooth flounder, Pacific ocean perch, shortraker/rougheye rockfish, northern rockfish, “other slope” rockfish, pelagic shelf rockfish, demersal shelf rockfish, thornyhead rockfish, Atka mackerel, squid, sculpin, sharks, octopus, and skates.

2. *Ecosystem Component:*

a) *Prohibited Species* – are those species and species groups the catch of which must be avoided while fishing for groundfish, and which must be immediately returned to sea with a minimum of injury except when their retention is authorized by other applicable law (see also Prohibited Species Donation Program described in Section 3.6.1.1. Groundfish

species and species groups under the FMP for which the quotas have been achieved shall be treated in the same manner as prohibited species.

b) Forage fish species – *are those species listed in Table 3-1, which are a critical food source for many marine mammal, seabird and fish species. The forage fish species category is established to allow for the management of these species in a manner that prevents the development of a commercial directed fishery for forage fish. Management measures for this species category will be specified in regulations and may include such measures as prohibitions on directed fishing, limitations on allowable bycatch retention amounts, or limitations on the sale, barter, trade or any other commercial exchange, as well as the processing of forage fish in a commercial processing facility.*

The species within both of the NPFMC Groundfish FMPs’ forage fish species categories are:

Osmeridae family (eulachon, capelin, and other smelts)

Myctophidae family (lanternfishes)

Bathylagidae family (deep-sea smelts)

Ammodytidae family (Pacific sand lance)

Trichodontidae family (Pacific sand fish)

Pholidae family (gunnels)

Stichaeidae family (pricklebacks, warbonnets, eelblennys, cockscombs, and shannys)

Gonostomatidae family (bristlemouths, lightfishes, and anglemouths)

Order *Euphausiacea* (krill)

The NPFMC does not establish annual harvest limits for its forage fish species, and both FMPs state that there is insufficient information to provide EFH descriptions for forage fish species. Under federal regulations at 50 CFR 679.20(i)(3): “directed fishing for forage fish is prohibited within the Bering Sea, Aleutian Islands, and Gulf of Alaska; the sale, barter, trade, or processing of forage fish is prohibited except as fishmeal; and, retained catch of forage fish not exceeding maximum retainable bycatch amounts set in Federal regulations at 50 CFR 679, Table 10 may be processed into fishmeal for sale, barter, or trade.” NMFS’s Alaska Fisheries Science Center reports on the life histories of and data available on the FMP forage fish species, but does not have adequate data to conduct stock assessments for these species groups (Ormseth et al. 2008, Ormseth 2011).

In a June 2012 report (see Agenda Item G.1.b), the EPDT described two options for adding forage fish species to one or more FMPs, as either FMU or EC species. Regardless of whether those species would be added as FMU or EC species or some mix thereof, the implementation process would occur approximately as follows:

1st Council meeting (September 2013): review a draft process and schedule for FMP amendment(s) to add new species to applicable FMP(s) and provide guidance to the Ecosystem Workgroup on future reports to the Council.

2nd Council meeting: review list of potential species to be added to FMP(s), review ecological, biological, economic and other data on the role of species as forage and potential for the development of fisheries on those species, adopt process and schedule for potential draft FMP amendment(s). Review availability of scientific data and analyses needed to develop MSA-required harvest reference points for the new species

3rd Council meeting: Review recommendations of SSC and other advisory bodies on list of species to be added to the FMP(s) and MSA-required harvest reference

points and EFH designations. Develop draft FMP amendatory language to be sent out for public review.

4th Council meeting: Review and either adopt FMP amendatory language (which would include MSA-required harvest reference points and EFH designations,) or revise and send language out for an additional round of review and comment by advisory bodies and the public. If an additional round of review and comment is needed, a 5th Council meeting will be needed to finalize Council recommendations to NMFS.

1st Federal Register Notice: NMFS publishes a Notice of Availability for an FMP amendment for the appropriate FMP(s).

2nd Federal Register Notice: NMFS publishes Council recommendations as proposed rule.

3rd Federal Register Notice: NMFS will publish a final rule if it partially or fully approves the Council's recommendations to amend the FMP(s) and Federal regulations.

This process assumes that the Ecosystem Workgroup will take on the bulk of the workload associated with developing FMP amendments. The Workgroup notes, however, that amendments to one or more FMPs will necessarily require tight coordination with other Council advisory bodies and ample review time for those advisory bodies to consider potential changes to their FMPs. When considering scheduling this issue for further discussion at its future meetings, the Council may wish to take into account the meeting schedules of the Council's various advisory bodies and the adequacy of opportunities for those bodies to comment on actions that may affect the FMPs they administer on behalf of the Council.

E. Next Steps

If the Council wishes to proceed with FEP Initiative 1 through amendments to one or more of FMPs to add new lower trophic level species to those FMPs, the Ecosystem Workgroup suggests that the Council:

- Review and comment on the draft Purpose and Need statement in Section B of this report.
- Discuss a method for bringing persons with expertise in CCE ecology, the food habits of CCE species, and bycatch in FMP fisheries into the FEP Initiative 1 development process.
- Assign the appropriate advisory bodies or workshop process to draft a list of lower trophic level species that: 1) are found within the EEZ and which meet the definition of "forage fish" species, 2) have some connection to one or more FMP species, either as prey of an FMP species, as being taxonomically similar to an FMP species, or as bycatch in an FMP fishery. The Council may also wish to consider lower trophic level species that serve as forage for non-FMP CCE species. If appropriate, this list should identify these lower trophic level species at the family or genus level.
- Discuss its preferences for whether and how lower trophic level species should be characterized as "managed" or "unmanaged," and discuss whether it has changes to the Workgroup's MSA-derived discussion of the term "unfished" – see page 4 of this report.

- Assign the Workgroup to describe potential alternatives for amending the FMPs to include forage species management: forage species are incorporated into one FMP as FMU or EC species, or some mix of FMU and EC species, as appropriate; forage species are incorporated into multiple FMPs as FMU or EC species, or some mix of FMU and EC species, as appropriate.
- Schedule the Ecosystem Workgroup to report back to the Council in Spring 2014, as appropriate to the Council's schedule, and taking into account the need for review and comment from multiple advisory bodies across the FMPs.

F. References

North Pacific Fishery Management Council. December 2011. Fishery Management Plan for Groundfish in the Gulf of Alaska.

(<http://www.fakr.noaa.gov/npfmc/PDFdocuments/fmp/GOA/GOA.pdf>.)

Ormseth, O.A., L. Conners, M. Guttormsen, and J. Vollenweider. December 2008. Forage Fishes in the Gulf of Alaska. In: NPFMC Gulf of Alaska Stock Assessment and Fishery Evaluation Report (<http://www.afsc.noaa.gov/refm/docs/2008/GOAforage.pdf>).

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