GROUNDFISH ESSENTIAL FISH HABITAT/ROCKFISH CONSERVATION AREA
PROJECT TEAM REPORT

Introduction

The Pacific Fishery Management Council (Council) is considering revisions to essential fish habitat (EFH) and trawl rockfish conservation area (RCA) component elements of the Pacific Coast Groundfish Fishery Management Plan (FMP). If made, modifications may reconfigure groundfish Essential Fish Habitat Conservation Areas (EFHCAs) and the trawl RCA, close waters deeper than 3,500m to bottom contact gear, update several appendices related to EFH, and/or update the EFH Information and Data Needs and the EFH review process. At the September 2015 meeting, the Council directed the Project Team (Team) to provide updated information on the range of alternatives for discussion at the April 2016 meeting. At the November 2015 meeting, the Council agreed to consider, at the April 2016 meeting, revising the range of alternatives (ROA) and, if possible, select the Preliminary Preferred Alternative (PPA).

To that end, this report provides the Council with 1) a table of the full suite of alternatives; 2) a proposed approach for analyzing the EFHCA and RCA alternatives; 3) an EFHCA-specific progress report; 4) an RCA-specific progress report. The Council also has the opportunity to revise the range of alternatives and select a PPA, if possible.

Relevant to the Council's considerations, on January 14, 2016, National Marine Fisheries Service (NMFS) determined that alternatives being considered warrant the preparation of an environmental impact statement (EIS) pursuant to the National Environmental Policy Act (NEPA). Accordingly, NMFS published a notice of intent to prepare the document on February 1, 2016 with a 30-day comment period that closed on March 2, 2016. NMFS received more than 6,000 electronic letters of comment. The majority of the comments were form letters that address changes to the EFHCAs and the protection of waters deeper than 3,500 meters. A few comments address changes to the trawl RCA.

1. Range of Alternatives

The Council established the range of alternatives (ROA) at the September 2015 meeting. Table 1 presents the Team's interpretation of that decision. The ROA includes both fishery management actions and non-management ("administrative") actions. The Council directed the Team to analyze a total of 40 alternatives, including the no action alternatives. Of those 40 alternatives, 19 address changes to the existing EFHCAs, seven address adjustments to the trawl RCA, two address NMFS discretionary closures in waters deeper than 3,500m, and 12 address changes in the administrative subject areas. Table 1 also illustrates the complex nature of the alternatives, especially those for the EFHCAs, under consideration.

The Council is considering seven proposals to modify the EFHCA and, in one case, the RCA provisions of the FMP:

- A collaborative of fishing industry and environmental organizations (Collab)
- Fisherman's Marketing Association (FMA)
- Greenpeace (GP)
- Gulf of the Farallones National Marine Sanctuary, now called the Greater Farallones National Marine Sanctuary (GFNMS)
- Marine Conservation Institute (MCI)
- Monterey Bay National Marine Sanctuary (MBNMS)
- Oceana, National Resources Defense Council, and Ocean Conservancy (ONO)

The table organizes the alternatives into two main groups: those that address fishery management actions that close or open areas to certain gear types and those that address administrative-type actions. The fishery management actions include changes to the EFHCAs that prohibit bottom-trawl gear, adjustments to the trawl RCAs, and using the discretionary authorities under section 303(b) of the Magnuson-Stevens Act (MSA) to close waters deeper than 3,500m to bottom contact gear. The first row includes the alternatives that address both closures and re-openings in the public proposals.

Table 1. EFH alternatives based on Team interpretation of the September 2015 Council action.

Subject Area	**ALTERNATIVES**								
Fishery Management Actions									
1. EFHCA changes contained in public proposals (re-openings and new closures)	1.a No Action	1.b Open some or all of EFHCAs	1.c Collaborative	1.d Greenpeace	1.e MCI	1.f Oceana, et al.	1.g FMA	1.h GFNMS	1.i MBNMS
		1.b.i Open some or all of EFHCAs *exclusive* of the U&A	1.c.i Collaborative, *exclusive* of the U&A	1.d.i Greenpeace, *exclusive* of the U&A	1.e.i MCI, *exclusive* of the U&A	1.f.i Oceana, et al. , *exclusive* of the U&A			
2. New EFHCAs within current RCAs[1]	2.a No Action	2.b Add new EFHCAs within the trawl RCA, based on verification of the presence of priority habitats				2.c Add new EFHCAs within the trawl RCA, where there is either verification of priority habitats, or when modeling indicates the likelihood of priority habitats.			
		2.b.i Add new EFHCAs within the trawl RCA, based on verification of the presence of priority habitats, *exclusive* of the U&A				2.c.i Add new EFHCAs within the trawl RCA, where there is either verification of priority habitats, or when modeling indicates the likelihood of priority habitats, *exclusive* of the U&A.			
3. Adjustments to Trawl RCA	3.a No Action	3.b Remove the trawl RCA		3c Discrete area closures for overfished species		3.d Block area closures for overfished species and non-overfished species,			
		3.b.i Remove the trawl RCA, *exclusive* of the U&A		3.c.i Discrete area closures for overfished species *exclusive of the U&A*		3.d.i Block area closures for overfished species and non-overfished species, *exclusive* of the U&A			

[1] The trawl RCA is defined as the 2015 trawl RCA which is 100-150 fm coastwide, except for the area 45°46´ N. lat. to 40°10´ N. lat., which is 100 fm to 200 fm modified.

Subject Area	ALTERNATIVES	
4. Use MSA Sec. 303(b) discretionary authorities	4.a No Action	4.b Use MSA Sec. 303(b)(2)(A), 303(b)(2)(B), or 303(b)(12) to close waters deeper than 3,500 m to bottom contact gear, consistent with September 2015 Agenda Item H.8.a, Supplemental NMFS Report.
Administrative Actions		
5. Groundfish FMP Appendix B	5.a No Action	5.b Update/revise information in Groundfish FMP Appendix B of the FMP to reflect new information on Pacific Coast Groundfish life history descriptions, text descriptions of groundfish EFH, and major prey items.
6. Groundfish FMP Appendix C Part 2	6.a No Action	6.b Revise fishing gear effects described in Groundfish FMP Appendix C Part 2.
7. Groundfish FMP Appendix D	7.a No Action	7.b Update Groundfish FMP Appendix D with new information and add descriptions and conservation measures for new non-fishing activities that may adversely affect EFH.
8. Groundfish FMP EFH Information and Research Needs	8.a No Action	8.b Revise groundfish EFH Information and Research Needs section of the FMP and move to an appendix.
9. Groundfish FMP EFH Review and Revision Process	9.a No Action	9.b Update groundfish EFH review and revision process and describe elsewhere (e.g., COP). Include criteria prior to each review.
10. Clarifications and Corrections	10.a No Action	10.b Provide clarifications and correct minor errors from Amendment 19.

This revised range of alternatives is based on the Council's instructions, including the terms "some or all," "priority habitats," "verified" and "modeled." The Team describes here how these terms are to be applied for the EIS analyses of the alternatives.

- Alternatives 1.b. and 1.b.i: These alternatives are based on opening some or all of the EFHCAs identified in the public proposals. Because there are multiple proposed openings, it is not possible to analyze every possible combination of the proposed openings. Therefore, the Team will analyze two alternatives that include all of those proposed openings: one that is inclusive and one that is exclusive of the usual and accustomed fishing areas (U&A).

- Alternatives 2.b through 2.c.i: These alternatives call for new EFHCAs within the current trawl RCA, based on priority habitats that have been either verified or modeled. Understanding these terms is necessary to meet the Council's intent when developing and analyzing this alternative.
    - Priority habitats are defined consistent with the Amendment 19 EIS definition of "complex sensitive habitats", to identify areas for protection. Priority habitats, therefore, include:
        - Hard substrate, including rocky ridges and rocky slopes
        - Habitat-forming invertebrates
        - Submarine canyons and gullies
        - Untrawlable areas (trawl hangs and abandoned trawl survey stations)
        - Seamounts
        - Highest 20 percent habitat suitability for overfished groundfish species as defined by NOAA
    - Verified is defined to mean a high degree of confidence in the presence of the habitat identified for protection. This could be via direct visual observations (e.g., from an ROV), grab samples, trawl survey or West Coast Groundfish Observer Program (WCGOP) data, or other means.
    - Modeling efforts are defined to include true models (e.g., the MCI proposal) as well as inferred or interpolated information (e.g., Habitat Suitability Index).
    - Alternatives 2.b and 2.b.i would add new EFHCAs within the trawl RCA, where there is either verification of priority habitats, or when modeling indicates the likelihood of priority habitats..

2. Analytical Approach

The Team is conducting two levels of analysis for the EFHCA and trawl RCA alternatives. The first level will be an alternative-wide "big picture' analysis that will broadly describe how each alternative will impact environmental and socioeconomic resources and can be used to present a relative comparison of the alternatives. The second level will present data on the same environmental and socioeconomic resources from individual closure or opening (i.e., polygons) in each alternative. This will allow comparison of the impacts of the individual polygons within and between alternatives. This information can be used by the Council to specify a preferred alternative.

Both levels of analysis will be based on the following preliminary types of metrics:

1. **Spatial extent of closures and openings.**
   This metric will report the spatial extent of the areas that would be closed to bottom trawling or opened to bottom trawling, in hectares (ha). For the alternative-wide analysis, this will also include the net change in area closed to bottom trawling.

2. **Physical substrate composition of areas proposed for closures and openings.**
   This metric will report, in ha, the amount of each type of substrate that would be closed to bottom trawling or opened to bottom trawling. Substrate types include: 1) hard bottom; 2) mixed bottom; 3) soft bottom; and 4) unknown. The alternative-wide analyses will also include the net change in the spatial extent of each substrate type closed to bottom trawling.

3. **Overlap with other alternatives.**
   This metric will describe the extent of the spatial overlap of the various alternatives as a percentage of the alternative. This is especially important for the alternatives that represent the public proposals because there is considerable overlap, especially between the small-scale proposals (i.e., FMA, GFNMFS, and MBNMS) and the larger, coastwide proposals (i.e., Collab, GP, MCI, and ONO), and it may reduce the need to separately analyze some of them. It will also consider the overlap of RCA alternatives with the EFHCA alternatives.

4. **Bottom trawl effort displaced by the closures and restored by the openings.**
   This metric describes the anticipated impact that the closures or openings will have on bottom trawl effort. "Trawl effort" is defined, for the purposes of this analysis, as the total kilometers of trawling that occurs within the proposed closures or openings. This metric will be expressed as the percentage of the coastwide effort that would be displaced or restored. Displaced fishing effort will be estimated using logbook data in the Pacific Fishery Information Network (PacFIN) data between 2011 and 2014. The alternative-wide analyses will also include the net change in trawl effort. Predicting the effort that would be restored by the openings is very difficult because of both data limitations and data availability. The only fishery-dependent data available are from 2002 - mid-2006, before the EFHCAs were closed to bottom trawling by Amendment 19 and there is less information to predict the effort that would be restored by opening some parts of the RCA. These data may not be an accurate reflection of the current trawl fishery, which has undergone significant changes over the ensuing decade, most recently with implementation of catch shares.

5. **Catch composition displaced by the closures and restored by the openings.**
   This metric describes the anticipated impact that the closures or openings will have on catch and will be estimated using data collected by the WCGOP or the trawl survey, for years 2011 - 2014. Restored catch resulting from re-openings will be estimated using, where appropriate, fishery-dependent catch data from 2002 – 2006 and the NMFS Trawl Survey. The alternative-wide analyses will also include the net change in catch. Predicting

the effort that would be restored by the openings is very difficult because of data limitations. The only fishery-dependent data available are from 2002 – mid-2006, before the EFHCAs were closed to bottom trawling by Amendment 19; and there is less information to predict the catch that would be restored by opening some parts of the RCA. As with the effort analysis, these data are not an accurate reflection of the current trawl fishery.

6. **Ex-vessel value of the catch displaced by the closures and restored by the openings.**
   This metric estimates the average annual fleet-wide revenue, in real dollars, associated with bottom trawl effort displaced by closures (between 2011 and 2014) and restored by openings (between 2002 and 2006). As with #5, data on openings from a partially observed, non-Individual Fishing Quota (IFQ) fishery provide only a snapshot of historical fishing behavior and may not accurately predict impacts to the current trawl fishery.

7. **Biogenic habitat.**
   This metric is still under consideration, but it will likely be a presence/absence metric. Presence/absence is of little value at the alternative-wide level, but will be more important at the individual polygon level.

8. **Conservation value of the closures and openings.**
   This metric is still under consideration, but will likely rely, at least in part, on the habitat use database and the Habitat Suitability Probability scores generated from the Habitat Use Database. The database and scores are scheduled to be updated in summer 2016 but if they are delayed, the Team will rely on the current database and scores.

9. **Effects on protected resources.**
   This metric is still under consideration but would likely rely on data products produced by the West Coast Groundfish Observer Program. The Council may wish to convene the Groundfish Endangered Species Workgroup to review the draft protected species analysis when it becomes available.

10. **Overlap with combined usual and accustomed fishing areas (U&A) of the four coastal treaty tribes off Washington (Quinault Indian Nation, Ho Tribe, Quileute Tribe, and Makah Tribe).**
    This metric will describe the spatial extent of the proposed closures and openings in the tribal U&A as well as the other metrics (e.g., physical substrate composition, trawl effort, catch composition, etc.) and is important due to the potential impacts on the coastal treaty tribes of those changes.

Confidentiality Rules: It is important to note that due to confidentiality rules, we will not be able to report displaced fishing effort, catch data, or ex-vessel values for individual polygons with low fishing participation. Confidentiality rules prevent the Team from reporting information when fewer than three fishing vessels are involved. In those cases, the data will be summarized or aggregated in a manner that maintains confidentiality while, at the same time, providing the Council with the information needed to make management decisions.

The remaining alternatives, including closing waters deeper than 3,500m to bottom-contact gear and the administrative alternatives, cannot be analyzed using the approach described above. Individual approaches for those alternatives have yet to be developed.

3. EFH Conservation Areas Progress Report

3.1. Analysis of EFHCAs to Date

Due to a gap in the availability of a GIS analyst, the Team is unable to provide the Council with the preliminary analysis of alternatives at the level originally intended. Instead, the analysis presented here is limited to the seven public proposals as they relate to the EFHCAs, and consists of a summary of some alternative-wide metrics that have already been developed, at Council's request, by the Northwest Fishery Science Center (NWFSC). The metrics here have been updated to reflect Council decisions, such as the exclusion of proposed EFHCAs in state waters and changes to bottom contact closed areas. Similar analyses will be conducted for the other alternatives in the near future. Although these metrics provide information relevant to the Council as it considers refining the range of alternatives and were available in previous briefing books, they have not been discussed in any detail by the Council.

3.1.1. Spatial Extent of Closures and Openings in the Public Proposals

The spatial extent, in ha, of the proposed closures and openings are summarized in Table 2. Of the seven proposals, all but the FMA proposal would close some areas and four would open some areas. All but the FMA proposal would result in a net gain in EFH protections ranging from just under 18,000 ha (MBNMS) ha to over 5 million ha (ONO). The FMA proposal would reduce EFHCAs by 786 ha.

Table 2. Summary of area (ha) and proportion of EFH designated area, encompassed by each proposal to modify groundfish EFH regulations. The table also includes the number of areas proposed for closure or opening. The last column summarizes the net change in Ha of areas closed to bottom trawling. Results exclude proposed changes within state waters.

	Close			Reopen			
Proposal	**Area (ha)**	**#**	**% EFH**	**Area (ha)**	**#**	**% EFH**	**Net Change**
Collab	392,307	57	0.83%	95,876	23	0.20%	296,431
FMA	0	0	0.00%	786	1	0.00%	-786
GFNMS	18,347	3	0.04%	0	0	0.00%	18,347
GP	1,722,099	9	3.52%	0	0	0.00%	1,722,099
MBNMS	43,476	10	0.09%	25,686	5	0.05%	17,790
MCI	1,121,751	29	2.40%	0	0	0.00%	1,121,751
ONO	5,355,410	65	11.28%	43,554	9	0.09%	5,312,044

3.1.2. Substrate composition in closures and openings in the Public Proposals

The substrate composition of the areas in the proposals are summarized in Table 3. The proposals, with the exception of FMA, would generally increase the spatial extent of protections for soft-bottom habitat far more than the other types, and hard-bottom habitats more than mixed habitats. The FMA proposal would have a small decrease in protection for soft-bottom habitats, and no changes to the other types.

Table 3. Summary of proportional habitat types in hectares encompassed by each proposal. Net Change summarizes the change in the areal extent of EFHCAs for each habitat type in each proposal. Data sources: Goldfinger et al. 2014, PFMC 2012.

		Proposal						
Action	Sediment type	Collab	FMA	GFNMS	GP	MBNMS	MCI	ONO
Close	Hard	56,100		1,193	103,326	7,043	114,419	332,035
	Mixed	32,954		0	48,219	0	11,218	69,620
	Soft	303,253		17,154	1,570,554	36,433	742,599	4,943,043
	Unknown	0		0	0	0	253,516	10,711
Open	Hard	1,342	0			103		131
	Mixed	479	0			0		0
	Soft	94,054	786			25,583		43,423
	Unknown	0	0			0		0
Net	Hard	54,758	0	1,193	103,326	6,940	114,419	331,916
	Mixed	32,474	0	0	48,219	0	11,218	69,623
	Soft	209,199	-786	17,154	1,570,554	10,850	742,599	4,899,794
	Unknown	0	0	0	0	0	253,516	10,711

3.1.3. Overlap with other proposals

The following tables show the overlap of each proposal with each of the other proposals. Table 4a shows the spatial extent, in ha, of the overlap of the proposed closures, while Table 4b shows the percentage of the overlap of the proposed closures. Table 4c shows the spatial overlap of the proposed openings and Table 4d shows the percentage overlap of the openings. As expected, the smaller proposals (FMA, GFNMS, and MBNMS) overlap entirely, or nearly so, with at least one of the large, coastwide alternatives. And some of the coastwide proposals overlap to a large degree with the other coastwide proposals, such as the 84.5 percent overlap of the Collaborative proposal areas that are also included in the ONO proposal. This suggests that even if the Council were to eliminate an individual proposal, at least part of it would be represented in one or more of those that remain.

Table 4a. Summary of overlap, reported in area (ha) for proposal in first row, among proposals to modify groundfish EFH regulations by closing additional areas to use of bottom trawl gear.

Proponent	Collab	FMA	GFNMS	GP	MBNMS	MCI	ONO
Collab	-	0	15,203	197,572	43,457	75,840	331,419
FMA	0	-	0	0	0	0	0
GFNMS	15,203	0	-	18,347	0	16,512	18,135
GP	197,572	0	18,347	-	28,605	371,172	469,915
MBNMS	43,457	0	0	28,605	-	5,916	43,403
MCI	75,840	0	16,512	371,172	5,916	-	325,239
ONO	331,419	0	18,135	469,915	43,403	325,239	-

Table 4b. Summary of overlap, reported in proportion of area for proposal listed in first row, among proposals to modify groundfish EFH regulations by closing additional areas to use of bottom trawl gear.

Proponent	Collab	FMA	GFNMS	GP	MBNMS	MCI	ONO
Collab	-	-	82.9%	11.5%	100.0%	6.8%	6.2%
FMA	-	-	-	-	-	-	-
GFNMS	3.9%	-	-	1.1%	0.0%	1.5%	0.3%
GP	50.4%	-	100.0%	-	65.8%	33.1%	8.8%
MBNMS	11.1%	-	0.0%	1.7%	-	0.5%	0.8%
MCI	19.3%	-	90.0%	21.6%	13.6%	-	6.1%
ONO	84.5%	-	98.8%	27.3%	99.8%	29.0%	-

Table 4c. Summary of overlap, reported in area (ha) for proposal in first row, among proposals to modify groundfish EFH regulations by reopening areas to use of various gear types.

Proponent	Collab	FMA	MBNMS	ONO
Collab	-	608	25,665	37,919
FMA	608	-	-	0
MBNMS	25,665	0	0	25,679
ONO	37,919	0	25,679	-

Table 4d. Summary of overlap, reported in proportion of area for proposal listed in first row, among proposals to modify groundfish EFH regulations by reopening areas to use of various gear types.

Proponent	Collab	FMA	MBNMS	ONO
Collab	-	77.3%	99.9%	87.1%
FMA	0.6%	-	0.0%	0.0%
MBNMS	26.8%	0.0%	-	59.0%
ONO	39.5%	0.0%	100.0%	-

3.1.4. Coastwide trawl effort displaced by proposed closures or restored by the proposed openings

The effects of the proposals on the coastwide trawl effort is summarized in Table 5. Displaced effort was based on logbook data from 1 January 2011 through 31 December 2014, and reflects the current fishery. Restored effort is based on logbook data from 1 January 2002 through 11 June 2006, before those areas were closed by Amendment 19. Effort is reported in minimum tow length (km) and percentage of coastwide bottom trawl effort. Minimum tow lengths are calculated from a line connecting the recorded haul start and end points.

Two of the proposals, GP and MCI, would result in the largest displacement of bottom trawl effort, at 25 percent and 14.8 percent, respectively. Although the ONO proposal would close the largest amount of habitat (see Table 2), those closures occur in areas with relatively low trawl effort, resulting in a 2.3 percent net displacement of effort. The small-scale proposals (FMA, GFNMS, and MBNMS) and the Collab proposal would result in minimal changes to the coastwide effort, although the changes in the FMA and MBNMS proposals are likely very important to local fishermen.

It is important to note here that estimating the trawl effort that would be restored by opening some of the EFHCAs is extremely difficult to predict, due to the lack of effort in those areas since they were closed by Amendment 19 and changes to the fishery with the implementation of the Catch Shares Program in 2011. Input from fishermen on where they are likely to fish could improve the ability to make these estimates.

Table 5. Summary of bottom trawl fishing effort in areas proposed for closure (1 Jan 2011 – 31 Dec 2014) and opening (1 Jan 2002 – 11 Jun 2006). Effort is reported in minimum tow length (km) and proportion of coastwide fishing effort. Minimum tow lengths are calculated from a line connecting the haul start and end points. Trawl effort data are limited to those vessels and trips fishing on either a limited-entry (2002-2006) or a catch-share (2011-2014) bottom trawl permit, and exclude hauls targeting California halibut, pink shrimp and ridgeback prawns. Results include proposal areas inside Federal waters only. Data source: PacFIN database. The last column shows the net effect as a percentage of the coastwide bottom trawl effort. Data source: PacFIN database.

	Close		Open		
Proponent	Length (km)	%	Length (km)	%	Net Change %
Collab	1,410	0.3%	4,444	0.5%	0.2%
FMA	-	-	38	0.0%	0.0%
GFNMS	5	0.0%	-	-	0.0%
GP	110,155	25.0%	-	-	-25.0%
MBNMS	3	0.0%	553	0.1%	0.1%
MCI	65,119	14.8%	-	-	-14.8%
ONO	10,722	2.4%	811	0.1%	-2.3%

3.1.5. Catch composition for five major categories of fishes displaced by proposed closures and restored by proposed openings.

These metrics were not available at the time that this report was submitted to the briefing book.

3.1.6. Ex-vessel value of the catch displaced by closures or restored by openings.

This metric is not available at this time.

3.1.7. Presence of biogenic habitat.

Biogenic habitat is present in at least some of the areas proposed for closing or opening in all of the proposals. (While there is one observation of sea pens, the area proposed in the FMA proposal includes soft-bottom habitat only and, therefore, does not contain any suitable habitat for deep-sea corals or sponges).

3.1.8. Overlap with U&A of the four coastal treaty tribes off of Washington (Quinault Indian Nation, Ho Tribe, Quileute Tribe, and Makah Tribe).

At the present time, the only metric available on the overlap with tribal U&As is the spatial extent. The remaining metrics are yet to be developed.

The spatial extent of the overlap of the proposals with the U&A are summarized in Table 6. The percentage of the U&A that is affected by the proposed closures ranges from a high of 16.7 percent for the ONO proposal to a low of 6.5 percent for the Collab proposal. The Collab proposal openings, the only openings in the U&A, would affect 2.2 percent of the U&A.

Table 6 Summary of overlap with Tribal Usual and Accustomed fishing area (U&A) by each proposal, reported in area (ha) and proportion of proposal area and tribal UA. Results only include proposal areas inside current EFH designated area, which excludes state waters.

		Proponent			
Action		**Collab**	**GP**	**MCI**	**ONO**
Close	**Area (ha)**	82,007	128,069	109,932	212,196
	Proposal %	20.9%	7.4%	9.8%	4.0%
	Tribal U&A %	6.5%	10.1%	8.7%	16.7%
Open	**Area (ha)**	27,341	0	0	0
	Proposal %	28.5%	0.0%	0.0%	0.0%
	Tribal U&A %	2.2%	0.0%	0.0%	0.0%

3.2. Workload Associated with the Range of alternatives

The list below is a second depiction of the range of alternatives relative to the EFHCAs and it serves to illustrate the extent of work to be undertaken to perform the analysis necessary for the EIS. There are 19 separate alternatives to address the EFHCAs alone, and each alternative requires its own set of metrics as well as a significant effort to develop the text that describes the analysis.

1. Public Proposals
    - 1.a No Action on Public proposals
    - 1.b Open some or all of EFHCAs identified in the public alternatives named below – inclusive of the U&A
    - 1.b.i Open some or all of EFHCAs identified in the public alternatives named below - exclusive of the U&A
    - 1.c Collaborate Alternative
    - 1.c.i Collaborate Alternative - exclusive of the U&A
    - 1.d Greenpeace Alternative
    - 1.d.i Greenpeace Alternative - exclusive of the U&A
    - 1.e MCI Alternative
    - 1.e.i MCI Alternative - exclusive of the U&A
    - 1.f Oceana et al. Alternative
    - 1.f.i Oceana et al. Alternative - exclusive of the U&A
    - 1.g Fisherman's Marketing Association Alternative
    - 1.h Greater Farallones National Marine Sanctuary Alternative
    - 1.i Monterey Bay National Marine Sanctuary Alternative

2. New EFHCAs in Trawl RCA
    - 2.a No Action on new EFHCAs within the trawl RCA
    - 2.b Add new EFHCAs within the trawl RCA, based on verification of the presence of priority habitats
    - 2.b.i Add new EFHCAs within the trawl RCA, based on verification of the presence of priority habitats, exclusive of the U&A
    - 2.c Add new EFHCAs within the trawl RCA, where there is either verification of priority habitats, or when modeling indicates the likelihood of priority habitats
    - 2.c.i. Add new EFHCAs within the trawl RCA, where there is either verification of priority habitats, or when modeling indicates the likelihood of priority habitats, exclusive of the U&A

As currently composed, tasks necessary to prepare the EFHCA section of an EIS include developing information for a minimum of 15 metrics for each of the 19 different alternatives, demanding description for at least 285 different resource impacts. The characteristics associated with the metrics are complex, the level of detail necessary to fully articulate is labor intensive, and the interplay among the alternatives has a multiplicity of permutations. To draft a defensible and well-articulated EIS that incorporates these elements will take a significant amount of time, and is likely to place an undue burden on staff and resources. In order to stay within timeframes, budget, meet public expectation associated with Amendment 28, and meet the Council's stated purpose and need, the Team requests that the Council consider reducing the number of alternatives for analysis and/or postponing the selection of the PPA until April 2017. To accomplish this, the Team

suggests that the Council re-examine how each of EFHCA alternatives fits with the stated Purpose and Need (see Appendix A). Those that don't fit with the purpose and need can be removed from analysis and classified as "considered but not analyzed in detail." In particular, the Council should consider the requirement, at 50 CFR 600.815 (a)(2)(ii), that it "act to minimize any adverse effects from fishing, to the extent practicable, if there is evidence that the fishing activity adversely affects EFH in a manner that is more than minimal and not temporary…..and adopt any new measures that are necessary and practicable."

3.3. Refining the Range of EFH Alternatives

As noted earlier, the Council set the broad ROA at their September 2015 meeting, but agreed to revisit that decision in April 2016. Therefore, the Team provides the following to assist the Council in determining whether a narrowing of the ROA is warranted.

Relative to the EFH Conservation Areas, the purpose is: "Minimize the adverse effects of fishing on EFH to the extent practicable." The corollary need is: "Consider new information on seafloor habitats, the distribution of fishing effort, the distribution of deep-sea corals, and new ecosystem-related products as they relate to protecting EFH from the adverse effects of fishing." The salient tests from the purpose and need are 1) Minimizing Adverse Effects, and 2) Practicability.

> 1) Regulatory Standard for Minimizing Adverse Effects [50 CFR 600.815(a)(2)(ii)]. "Each FMP must minimize to the extent practicable adverse effects from fishing on EFH… and adopt any new [minimization] measures that are necessary and practicable." While this standard is somewhat tautological, it is clear that minimizing the effects of a fishery includes the premise that a fishery will occur. The minimization measures themselves must be practicable.
>
> 2) Regulatory Standard for Practicability [50 CFR.815(a)(2)(iii)]: In determining whether it is practicable to minimize an adverse effect from fishing, the council considers long and short-term costs and benefits of potential management measures to EFH as well as to associated fisheries.

In Amendment 19 to the FMP, the Council identified the EFHCAs that prohibit certain types of fishing gear, primarily bottom trawls, to minimize the effects of fishing on groundfish EFH. Even though area closures are identified by regulation as within the range of actions for managing or minimizing adverse effects, it still presumes that such action must be within the larger framework of conducting a fishery. Accordingly, the Team asks the Council to consider whether any of the EFHCA alternatives are outside of the Council's stated purpose and need.

If the Council concludes that alternatives with openings but no additional closures to balance the effects on EFH is an alternative that does not minimize adverse effects of fishing, then this would be outside of the stated purpose and need. Similarly, if the Council concludes that any proposal that exceeds its threshold for displacement of the current trawl effort is not practicable, then it would also be outside of the stated purpose and need. These could then fall within the category of "considered, but not analyzed". For any public proposal that is eliminated, but from which the Council elects to draw components into the PPA, the Team will still provide the polygon-level

metrics. However, further analysis of omitted proposals, as stand-alone alternatives, would not be conducted.

There are additional options that the Council may elect in order to refine the range of alternatives, including avoiding redundant alternatives. As shown by the analysis conducted at the request of the Council, there are varying degrees of overlap between the proposals in the areas to be closed (Figure 1) or opened (Figure 2) to bottom trawling. The three smaller proposals (Fishermen's Marketing Association, Greater Farallones National Marine Sanctuary, and Monterey Bay National Marine Sanctuary) overlap entirely, or nearly so, with at least one of the coast-wide proposals (i.e., the Collaborative, Greenpeace, MCI, and Oceana et al.). Therefore, the PPA, once selected, will likely incorporate one of more of these smaller proposals. The Team recommends that any such proposal be excluded from further analysis. This will help to reduce considerable workload faced by the Team.

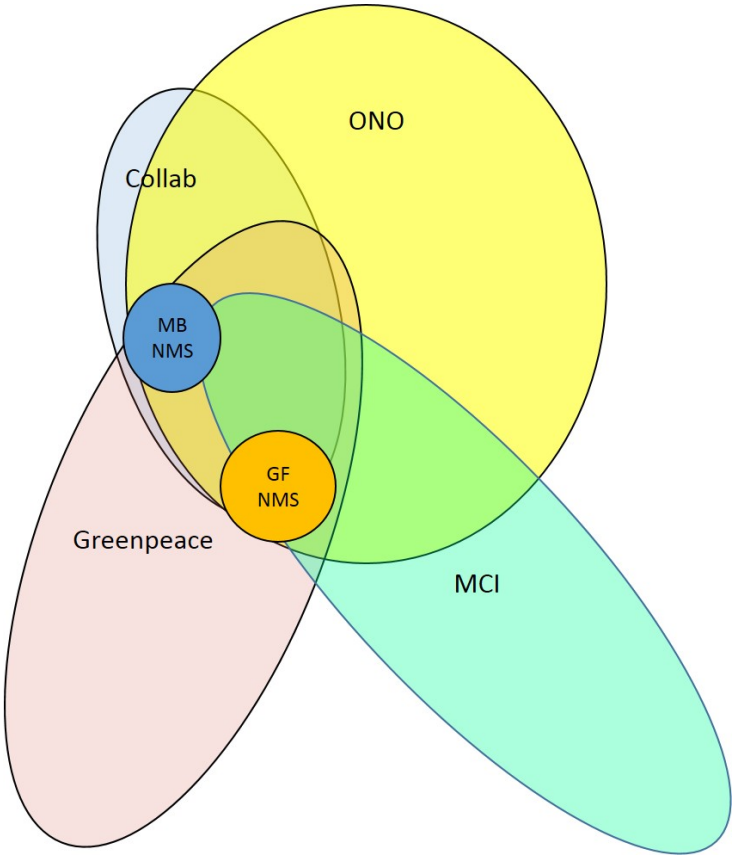

Figure 1. Conceptual Venn diagram showing relative overlap of the closures in the public proposals. Note: not to scale. The diagram more accurately shows overlap of small-scale proposals with the coastwide proposals than it does the overlap of the coastwide proposals with each other.

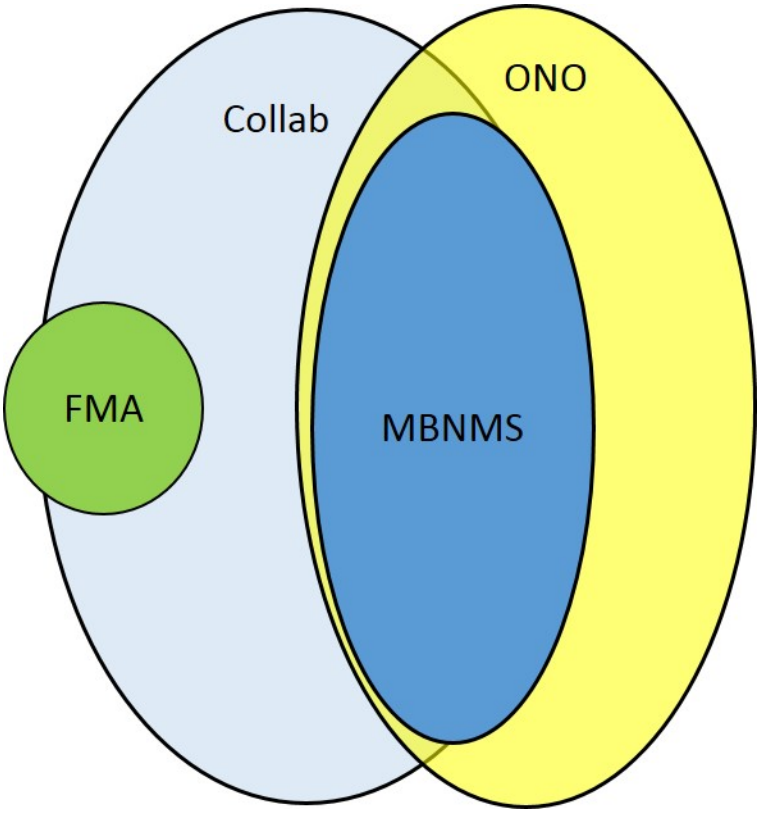

Figure 2. Conceptual Venn diagram showing relative overlap of openings in the public proposals. Note: not to scale. The diagram more accurately shows overlap of small-scale proposals with the coastwide proposals than it does the overlap of the coastwide proposals with each other.

References:

Goldfinger C, Henkel, SK, et al. 2014. Benthic Habitat Characterization: Volume 1 Evaluation of Continental Shelf Geology Offshore the Pacific Northwest. US Dept. of the Interior, Bureau of Ocean Energy Management, Pacific OCS Region. OCS Study BOEM 2014-662. 161 pp.

PFMC (Pacific Fishery Management Council). 2012. Pacific coast groundfish 5-year review of essential fish habitat Phase 1: New information. Final Report to Pacific Fishery Management Council, September 2012, Portland, OR. 416 pp.

4. Adjustments to the Trawl Rockfish Conservation Areas

4.1. Development of Alternatives

At the September 2015 Council meeting, the Team presented a range of alternatives and the Council adopted the range for more detailed analysis (Table 7). The following is a brief description of the alternatives and summary of the anticipated analytical approach. The details contained in Alternatives 3a through 3c have been formally adopted by the Council, whereas Alternative 3d is a draft proposal for Council consideration and refinement at this meeting.

Table 7. Range of Trawl RCA alternatives adopted in September 2015.

3. Trawl RCA Changes	3a. No Action	3b. Remove the trawl RCA	3c. Discrete area closures for overfished species	3d. Closures for overfished species and/or as catch control mechanisms for non-overfished groundfish species

Alternative 3a. No Action

Under No Action, the current configuration of the RCA would remain (Table 8) with routine inseason adjustments available to reduce catch of a particular species or species complex, while maximizing catch of target species. The shallowest seaward RCA boundary in the area between 45°46' N. latitude and 40°10' N. latitude would be the 200 fm modified petrale line.

Primary catch controls for vessels using trawl gears in the shorebased IFQ program would include the trawl RCA (Table 8), IFQ for selected species (Table 9), and trip limits for non-IFQ species (Table 10). NMFS also has the authority to close the shorebased IFQ fishery as a result of projected overages to prevent the trawl sector in aggregate or the individual trawl sectors from exceeding an annual catch limit (ACL), optimum yield (OY), annual catch target (ACT), or formal allocation specified in the FMP or regulation (see regulations at 660.140(a)(3)).

Table 8. No Action Trawl RCA.

	JAN-FEB	MAR-APR	MAY-AUG	SEPT-OCT	NOV-DEC
North of 48°10' N. lat.	shore - modified[2/] 200 fm line[1/]	shore - 200 fm line [1/]	shore - 150 fm line[1/]	shore - 200 fm line[1/]	shore - modified[2/] 200 fm line[1/]
48°10' N. lat. - 45°46' N. lat.	100 fm line[1/] - 150 fm line[1/]				
45°46' N. lat. - 40°10' N. lat.	100 fm line[1/] - modified[2/] 200 fm line[1/]				
South of 40°10' N. lat.	100 fm line[1/] - 150 fm line[1/ 3/]				

1/ The Rockfish Conservation Area is an area closed to fishing by particular gear types, bounded by lines specifically defined by latitude and longitude coordinates set out at §§ 660.71-660.74. This RCA is not defined by depth contours, and the boundary lines that define the RCA may close areas that are deeper or shallower than the depth contour. Vessels that are subject to the RCA restrictions may not fish in the RCA, or operate in the RCA for any purpose other than transiting.

2/ The "modified" fathom lines are modified to exclude certain petrale sole areas from the RCA.

3/ South of 34°27' N. lat., the RCA is 100 fm line - 150 fm line along the mainland coast; shoreline - 150 fm line around islands.

Table 9. List of IFQ Species in the Shorebased IFQ Program.

ROUNDFISH	**ROCKFISH**
Lingcod N. of 40°10’ N. lat.	Bocaccio S. of 40°10' N. lat.
Lingcod S. of 40°10’ N. lat.	Canary rockfish
Pacific cod	Chilipepper S. of 40°10' N. lat.
Pacific whiting	Cowcod S. of 40°10' N. lat.
Sablefish N. of 36° N. lat.	Darkblotched rockfish
Sablefish S. of 36° N. lat.	Longspine thornyhead N. of 34°27' N. lat.
FLATFISH	Minor shelf rockfish complex N. of 40°10' N. lat.
Arrowtooth flounder	Minor shelf rockfish complex S. of 40°10' N. lat.
Dover sole	Minor slope rockfish complex N. of 40°10' N. lat.
English sole	Minor slope rockfish complex S. of 40°10' N. lat.
Other flatfish stock complex	Pacific ocean perch N. of 40°10' N. lat.
Petrale sole	Shortspine thornyhead N. of 34°27' N. lat.
Starry flounder	Shortspine thornyhead S. of 34°27' N. lat.
Pacific halibut (IBQ) N. of 40°10' N. lat.	Splitnose rockfish S. of 40°10' N. lat.
	Widow rockfish
	Yelloweye rockfish
	Yellowtail rockfish N. of 40°10' N. lat.

Table 10. List of Species Managed with Trip Limits in the Shorebased IFQ Program.

Species or Complex	Limit
Minor nearshore rockfish & Black rockfish	300 lb/month
Whiting	
midwater trawl	Before the primary whiting season: CLOSED. -- During the primary season: mid-water trawl permitted in the RCA. See §660.131 for season and trip limit details. -- After the primary whiting season: CLOSED.
large & small footrope gear	Before the primary whiting season: 20,000 lb/trip. -- During the primary season: 10,000 lb/trip. -- After the primary whiting season: 10,000 lb/trip.
Cabezon	
North of 46°16' N. lat.	Unlimited
South of 46°16' N. lat.	50 lb/ month
Shortbelly	Unlimited
Spiny dogfish	60,000 lb/month
Longnose skate	Unlimited
Big Skate	Unlimited from January 1 to May; 15,000 lbs/month in June; and 35,000 lbs/2 months for the rest of the year
Other Fish	Unlimited
Longspine thornyhead	
South of 34°27' N. lat.	24,000 lb/ 2 months

Alternative 3b. Remove the Trawl RCA
The current trawl RCA would be removed. The primary catch controls for vessels using trawl gear within the shorebased IFQ program would be IFQ, trip limits for non-IFQ species, and NMFS authority to close the fishery to prevent the trawl sector in aggregate or the individual trawl sectors from exceeding an ACL, OY, ACT or formal allocation specified in the FMP or regulation.

Alternative 3c. Discrete Area Closures for Overfished Species
The current trawl RCA would be removed; however, discrete area closures (i.e., polygons) would be implemented to reduce catch of overfished species. The species under consideration for discrete area closures include those classified as overfished in the 2017-2018 cycle: bocaccio, cowcod, darkblotched, Pacific ocean perch, and yelloweye. Coordinates for the overfished species closures will be generated by evaluating updated[2] catch-per-unit effort geographic information systems plots for the aforementioned species from the Northwest Fisheries Science Center groundfish bottom trawl survey (Agenda Item H.8, Attachment 3, September 2015) and the limited entry trawl fishery dependent data from 2011-2014 (Agenda Item H.8, Attachment 4, September 2015).

The overfished species closed areas could be implemented preseason or inseason, as needed. Inseason actions could arise via a Council recommendation or by NMFS' automatic action

[2] Updates include revisions requested by the Scientific and Statistical Committee, see Agenda Item H.8.a, Supplemental SSC Report, September 2015.

authority when the shorebased IFQ program overfished species allocation is attained by a pre-specified percentage (value to be recommended by the Council) or if an overfished species ACL is attained by a pre-specified percentage (value to be recommended by the Council) or exceeded.

The primary catch controls for vessels using trawl gear within the shorebased IFQ program would be IFQ, RCA polygons for overfished species, trip limits for non-IFQ species, and NMFS' authority to close the fishery to prevent the trawl sector in aggregate or the individual trawl sectors from exceeding an ACL, OY, ACT or formal allocation specified in the FMP or regulation.

Alternative 3d. Closures for overfished species and/or as catch control mechanisms for non-overfished groundfish species

The analyses presented in September 2015 evaluated discrete area closures for non-overfished species where the Council had recently considered additional catch controls in the shorebased IFQ program (i.e., measures in addition to IFQ and trip limits). For example, the analysis considered whether additional catch controls were needed for stocks that are managed in complexes with IFQ (blackgill, rougheye, shortraker,) or trip limit species (longnose and spiny dogfish). The Groundfish Management Team (GMT) noted that blackgill rockfish should not be considered despite the stock being in the precautionary zone since effort is underway to manage blackgill with stock-specific harvest specifications (Agenda Item H.8.a, Supplemental GMT Report, September 2015). Historically, rougheye rockfish mortality had exceeded its component overfishing limit (OFL); however mortality in 2014 was lower than the component OFL due to industry avoidance (89 mt, compared to a 206 mt OFL). Furthermore, the 2013 rougheye stock assessment suggests the stock is currently stable and thus additional catch controls may not be needed. Shortraker rockfish mortality has been consistently higher than the component OFL in recent years, however, fishing activities within the Council's jurisdiction generally have little impact on the overall health of the stock. Lastly, spiny dogfish and longnose skate have not approached their ACLs in recent years (30 percent and 49 percent of the ACLs in 2013, respectively). In sum, none of the species initially identified for discrete area closures were deemed appropriate.

At the September 2015 meeting, the Council considered the available information and advisory body comment on the approach described above and requested further development of Alternative 3d. During Council discussion, it was noted that Alternative 3d was envisioned to be similar to the ocean salmon conservation area closures, which can be implemented inseason when a conservation concern is identified. The Council also requested that the analysis consider which groundfish species would benefit from area management (e.g., a highly migratory species wouldn't be a good candidate). The Council recommended that the GMT discuss the approach and species for consideration under Alternative 3d at their October 2015 meeting. However, after the September Council 2015 meeting, the NMFS RCA lead left the agency and there was no one available to prepare materials to facilitate discussion at the GMT's October meeting. Furthermore, the GMT was fully subscribed with workload associated with the 2017-2018 harvest specifications and management measures process.

Over winter, members of the project team developed an alternate approach for Alternative 3d, which would remove the year-round trawl RCA but retain the ability to close off areas if a need arises. Under Alternative 3d, "block area" closures would be available using the existing latitude and longitude coordinates in regulation. Such an approach would be similar to the way the current

trawl RCA is used where routine inseason adjustments are available to reduce catch of a particular species or species complex, while maximizing catch of target species. The difference between No Action and Alternative 3d is that the area closures would only be implemented when needed. Alternative 3d would also be similar to the bycatch reduction areas currently in regulation, which provide for routine and automatic action to close areas shoreward of the 75 fm, 100 fm, and 150 fm depth contours when NMFS projects that a sector will exceed an allocation for a non-whiting groundfish species specified for that sector before the sector's whiting allocation is projected to be reached. Alternative 3d would also be similar to the ocean salmon conservation zone which prohibits Pacific whiting fishing shoreward of the 100 fm depth contour when NMFS projects the Pacific whiting fishery may take in excess of 11,000 Chinook.

Table 5 displays the geographic coordinates available in regulation for implementing management measures, including the years in which the boundaries were used to implement a trawl RCA and whether the area is considered a biogeographic break. Biogeographic breaks are areas where a large number of species find their range limits or areas where the species composition is expected to change. Detailed analysis for Alternative 3d would be conducted on the five latitudinal biogeographic breaks (Cape Flattery, Pt. Chehalis, Cape Blanco, Cape Mendocino, and Point Conception) combined with three longitudinal continental shelf breaks. The continental shelf breaks would include the nearshore (0-30 fm), shelf (30-150 fm), and slope (deeper than 150 fm) areas. The analysis would also generally describe the expected impacts when implementing a closure using an area located between the biogeographic breaks (e.g., closing from Cape Falcon to Cascade Head).

These groundfish block area closures could be implemented preseason or inseason, as needed. Inseason actions could arise via a Council recommendation or by NMFS automatic action authority when a shorebased IFQ allocation is projected to be a specified percent attained (value to be recommended by the Council) or when a groundfish species ACL is projected to be a specified percent attained or exceeded.

Table 11. Geographic coordinates available in regulations for implementing management measures, including the years in which the boundary was used to implement an RCA and whether the area is considered a biogeographic break.

Area	Years Used as RCA	Biogeographic Break
Cape Flattery to Pt. Chehalis		Yes
-Cape Alava	2007 to present	
-Queets River		
Pt. Chehalis to Cape Blanco		Yes
-Leadbetter Point	2007, 2008	
-Columbia River	2007, 2008	
-Cape Falcon	2008 to present	
-Cape Lookout		
-Cascade Head	2007	
-Heceta Head		
-Cape Arago	2007, 2008	
Cape Blanco to Cape Mendocino		Yes
-Humbug Mountain	2007, 2008	
-Mach Arch		
-OR/CA		
Cape Mendocino to Point Conception		Yes
-North/South	2002 to present	
-Cape Vizcaino		
-Point Arena	2003, 2006, 2007	
-Point San Pedro		
-Pigeon Point		
-Ano Nuevo		
-Point Lopez		
South of Point Conception	2003 to present	Yes

4.2. RCA Workload

The Team believes that the current range of trawl RCA alternatives, including the proposal for Alternative 3d, is comprehensive and would provide the information necessary for the Council to make an informed decision about any changes to the current trawl RCA.

The Team does have concerns if Alternative 3d is structured in a way that requires the Team to identify species of concern that are well suited to area management and then create discrete area closures. There are 100 plus stocks and complexes in the groundfish FMP (see Table 3-1, SAFE). Within the shorebased IFQ program, 29 stocks and stock complexes are managed with IFQ or bycatch quota (Table 9) while others are managed with trip limits (Table 10). The challenges with the approach in Alternative 3d, as proposed in September 2015, is that it would be overly burdensome to analyze discrete area closures for 100+ species in the FMP and we have limited ability to predict today which species will be a conservation concern tomorrow.

Additionally, there have been some concerns with the ability of NMFS and Council staff to devote the appropriate time to analyze the alternatives. The two RCA leads (one from NMFS and one from the Council) are currently occupied with other projects (Spex, Sablefish, Blackgill, GMT duties, etc.) and would not be able to devote adequate time to this project until late summer/early fall.

Appendix A: Updated Purpose and Need

Pacific Coast Groundfish essential fish habitat (EFH), trawl rockfish conservation area (RCA) modifications, and MSA Section 303(b) discretionary authorities.

There are multiple purposes and needs of the proposed action that fall into one of two categories: (1) Fishery management; and (2) Administrative. Each purpose is paired with its associated need:

Category: Fishery Management

P1: Minimize the adverse effects of fishing on EFH to the extent practicable.
N1: Consider new information on seafloor habitats, the distribution of fishing effort, the distribution of deep-sea corals, and new ecosystem-related products as they relate to protecting EFH from the adverse effects of fishing.

P3: Evaluate and revise the RCA closures to minimize bycatch of a particular species or species group, primarily those that are overfished.
N2: Consider the RCAs in light of the 2011 implementation of the Shorebased IFQ Program.

P3: Protect benthic habitats, including deep-sea corals, from the adverse effects of fishing.
N3: Consider new discretionary MSA authorities under Section 303(b) that can be used to protect species and habitats, including deep-sea corals.

Category: Administrative

P4: Establish experimental and control areas within groundfish EFH to support research-based information on habitat impacts from fishing activities.
N4: Consider the need for scientific research on the effects of fishing activities on EFH, consistent with EFH regulatory guidance and the Groundfish FMP.

P5: Revise the groundfish EFH research and information needs.
N5: Revise the research and information needs for groundfish, EFH based on consideration of new information on seafloor habitats, the distribution of fishing effort, and the distribution of deep-sea corals.

P6: Develop a more detailed description of the process to review and revise the EFH components of the groundfish FMP, including development of criteria prior to the next review cycle that would help inform potential modifications to EFH.
N6: Provide for a more efficient process for reviewing and revising groundfish EFH.

P7: Revise Appendix B to the Groundfish FMP: Essential Fish Habitat.
N7: Consider new information on the adverse effects of the groundfish fishery on EFH as it relates to the information in Appendix C, Part 2 of the groundfish FMP.

P8: Revise Appendix C, Part 2 to the Groundfish FMP: “The Effects of Fishing on Habitat: West Coast Perspective.”

N8: Consider new information on groundfish EFH components, including major prey species, as it relates to the information in Appendix B of the Groundfish FMP.

P9: Revise Appendix D to the Groundfish FMP: "Nonfishing Effects on West Coast Groundfish Essential Fish Habitat and Recommended Conservation Measures."

N9: Consider new information on the non-fishing activities that may adversely affect groundfish EFH and conservation measures to avoid, minimize, or mitigate those effects as it relates to the information in Appendix D to the groundfish FMP.

In addition, this EFH action is not intended to apply to, supersede, or otherwise affect management of state - managed species in state waters.

Appendix B: List of Alternatives – Pacific Coast Groundfish Essential Fish Habitat and Trawl Rockfish Area Modifications

Changes to Essential Fish Habitat Conservation Areas in Public Proposals

This suite of alternatives addresses potential changes to the areas currently closed to bottom trawling activities, outside of the trawl RCA, and are derived from seven public proposals submitted by:

- A collaborative of representatives of fishing industry and environmental groups
- Greenpeace
- Marine Conservation Institute
- Oceana, National Resource Defense Council, and Ocean Conservancy
- Gulf of the Farallones National Marine Sanctuary
- Monterey Bay National Marine Sanctuary
- Fishermen's Marketing Association

Since 2006, there have been 36 areas closed to bottom trawling, in addition to the trawl closure westward of 1280m (700fm) to 3500m. The Council established the scope to address the EFHCAs that prohibit bottom trawl activities. Therefore, EFHCAs that are closed to all bottom contact gear in Federal waters are not being considered for modification. Proposed modifications within state waters are also not under consideration, consistent with the range of alternatives established by the Council.

Alternative 1a: No Action
Under this alternative, none of the changes to the EFHCAs contained in the public proposal would be adopted.

Alternative 1b: Open some or all EFHCAs that are identified in the public proposals
This alternative would result in some EFHCAs becoming partially or completely open to bottom trawling activities, based on the public proposals, including the Collaborative proposal. This Alternative would include EFHCAs in Federal waters off Washington, California, and Oregon

Alternative 1bi: Open some or all EFHCAs that are identified in the public proposals, excluding EFHCAs in tribal U&As
This alternative is identical to Alternative 1b, with the exception that the two areas proposed for re-opening in the U&As of the coastal treaty tribes would not be considered.

Alternative 1c: Collaborative group proposal
This alternative includes all modifications to EFHCAs included in the Collaborative proposal, off Washington, Oregon, and California. This includes 59 partial or complete closures and 23 partial or complete openings.

Alternative 1ci: Collaborative group proposal, excluding EFHCAs in tribal U&As
This alternative is identical to Alternative 1c, with the exception that modifications to EFHCAs in the tribal U&As off Washington would not be considered.

Alternative 1d: Greenpeace proposal
This alternative includes nine proposed closures in areas off Washington, Oregon, and California that encompass submarine canyons that would be newly-closed to bottom trawl fishing.

Alternative 1di: Greenpeace proposal, excluding EFHCAs in tribal U&As
This alternative would be identical to Alternative 1d, but would exclude one proposed closure that lies within the Tribal U&As off Washington.

Alternative 1e: Marine Conservation Institute proposal
This alternative includes 29 areas proposed for closure in Federal waters off Washington, Oregon, and California, based on a predictive deep sea coral habitat suitability model described in the MCI proposal.

Alternative 1ei: Marine Conservation Institute proposal, excluding EFHCAs in tribal U&As
This alternative would be identical to Alternative 1e, but would exclude areas proposed for closure that lie within the Tribal U&As off Washington.

Alternative 1f: Oceana/Natural Resources Defense Council/Ocean Conservancy proposal
This alternative includes 65 areas proposed for closure and 9 areas proposed for opening in Federal waters off Washington, Oregon, and California.

Alternative 1fi: Oceana/Natural Resources Defense Council/Ocean Conservancy proposal, excluding EFHCAs in tribal U&As
This alternative would be identical to Alternative 1f, but would exclude the portions of five areas proposed for closure that lie partially or completely within the Tribal U&As off Washington.

Alternative 1g: Fishermen's Marketing Association proposal
This alternative would open a small portion of the Eel River Canyon EFHCA, at the eastern end of the EFHCA. The FMA proposed reopening the area in 2008, but that decision was deferred until the EFH review was completed. This is the smallest in spatial extent of any of the alternatives.

Alternative 1h: Gulf of the Farallones National Marine Sanctuary proposal
This alternative includes three new EFHCAs within the sanctuary's boundaries. (The sanctuary recently changed its name to the Greater Farallones National Marine Sanctuary, concurrent with a recent expansion of the sanctuary's boundaries).

Alternative 1i: Monterey Bay National Marine Sanctuary proposal
This alternative presents a combination of 10 new closures and five openings. Two of these closures are 'voluntary management' areas that would not have regulatory trawl prohibitions applied, but would depend on voluntary agreements to prevent bottom trawling in those two areas.

New EFHCAs within Current RCAs

These alternatives describe the designation of new EFHCAs within the current trawl RCA. These alternatives are based on a scenario in which the trawl RCA would be eliminated. Because there

are likely high-quality habitats within the trawl RCA, the Council may choose to protect some of those areas for habitat protection purposes.

Alternative 2a: No Action
This alternative would result in no new EFHCAs created within the trawl RCA. Several current EFHCAs overlap with the trawl RCA, and those EFHCAs would remain in place, unless modified by Council action.

Alternative 2b: Add new EFHCAs based on verification of presence of priority habitats in the trawl RCA
This alternative would apply new EFHCAs inside the boundaries of the 2015 trawl RCA, in areas where the presence of priority habitats has been verified. The trawl RCA is defined as between the depth contours approximating the 100fm – 150fm, for the entire length of the U.S. west coast, and includes the 100fm – 200fm depth contours between 45°46' N. lat. - 40°10' N. lat. Verification of priority habitats is defined as direct observations from sources such as ROV surveys, trawl survey data, or WCGOP data, in which the presence of priority habitat is documented.

Alternative 2bi: Add new EFHCAs based on verification of presence of priority habitats in the trawl RCA, excluding changes in tribal U&As
This alternative would be identical to Alternative 2b, but would exclude the RCA within the Tribal U&As off Washington.

Alternative 2c: Add new EFHCAs where there is verification of priority habitats, or where modeling indicates presence of priority habitats in the trawl RCA
This alternative would add new EFHCAs within the trawl RCA, where there is either verification of priority habitats, or when modeling indicates the likelihood of priority habitats. The 2015 trawl RCA is between the depth contours approximating the 100fm – 150fm depths for the entire length of the U.S. west coast, and includes the 100fm – 200fm depth contours between 45°46' N. lat. - 40°10' N. lat. Modeling of priority habitats may be based on the Habitat Suitability Index (HSI), the Habitat Use Database (HUD), the model presented in the MCI proposal, or other sources.

Alternative 2ci: Add new EFHCAs where modeling indicates presence of priority habitats in the trawl RCA, excluding changes in tribal U&As
This alternative would be identical to Alternative 2c, but would exclude the RCA within the Tribal U&As off Washington.

Rockfish Conservation Area Changes

This section describes potential modifications to the trawl RCA. The Council considered changes to the RCA in 2013 but chose to postpone a decision until the EFH review was complete. The Council subsequently merged the two actions (RCA modifications and EFH changes), with the recognition that there is significant overlap between the activities that are managed as well as the effects of any changes to RCAs or EFH.

Alternative 3a: No Action
This alternative would result in no changes to the current RCA configuration, and would retain the current trawl RCA boundaries coastwide.

Alternative 3b: Remove the trawl RCA
This alternative would eliminate the trawl RCA, thereby allowing bottom trawl fishing to take place in areas within the RCA that are not otherwise off limits. For example, EFHCAs within the 'old' RCA boundary would still be closed to bottom trawling. The alternative would be selected based on an assumption that under a rationalized ITQ trawl fishery, the RCA is no longer necessary to limit catches of selected groundfish species.

Alternative 3bi: Remove the trawl RCA, excluding changes in tribal U&As
This alternative would be identical to Alternative 3b, but would exclude any areas in tribal U&As off Washington. Therefore, the trawl RCA would be removed everywhere south of Point Chehalis, Washington (46°53'18" N. latitude).

Alternative 3c: Remove the trawl RCA and establish closures for overfished groundfish species
This alternative would remove the trawl RCA but would retain discrete RCA closed areas based on potential catch of overfished species. These areas will be developed based on a NMFS analysis that identifies areas of high CPUE from the NMFS trawl survey.

Alternative 3ci: Remove the trawl RCA and establish closures for overfished groundfish species, excluding changes in tribal U&As
This alternative is identical to Alternative 3c, but would exclude any areas in tribal U&As off Washington. Therefore, the only changes to the trawl RCA would be south of Point Chehalis, Washington. The trawl RCA would remain in place north of Point Chehalis (46°53'18" N. latitude).

Alternative 3c: Remove the trawl RCA and establish closures for overfished and non-overfished groundfish species
This alternative would remove the trawl RCA but would retain discrete RCA closed areas based on potential catch of overfished species and selected non-overfished groundfish species. Discrete areas established to protect overfished groundfish species would remain in place indefinitely, while closures for non-overfished groundfish species would be based on groundfish block area closures that could be implemented preseason or inseason, as needed. Inseason actions could be based on Council recommendations or by NMFS automatic action authority when a shorebased IFQ allocation is projected to reach a pre-determined level of attainment.

Alternative 3di: Remove the trawl RCA and establish closures for overfished and non-overfished groundfish species, excluding changes in tribal U&As
This alternative would be identical to Alternative 3d, but would exclude any areas in tribal U&As off Washington. Therefore, the only changes to the trawl RCA would be south of Point Chehalis, Washington. The trawl RCA would remain intact north of Point Chehalis (46°53'18" N. latitude).

MSA Section 303(b) Discretionary Authorities
MSA discretionary authorities [303(b)(2)(A), 303(b)(2)(B), and 303(b)(12)] allow for Regional Fishery Management Councils and NMFS to establish regulatory restrictions to protect habitats.

These authorities are independent of the EFH authorities and can, therefore, occur outside of designated EFH. Pacific Coast groundfish EFH extends to 3500m depth. North of the Mendocino Ridge (40°10' N. lat.) the continental shelf does not exceed 3500m until outside of the U.S. West Coast Exclusive Economic Zone (EEZ). Hence the entire EEZ north of this point is currently designated as groundfish EFH. However, south of 40°10' N. lat. the shelf does not extend as far offshore and a significant portion of the EEZ off California is deeper than 3500m and therefore outside of groundfish EFH. If the Council chooses to protect those areas from bottom contact fishing activities, the regulatory pathway would have to be via MSA discretionary authorities.

Alternative 4a: No Action
This alternative would result in no new closures based on NMFS discretionary authorities under MSA Section 303(b). Waters deeper than 3500m would not be subject to bottom contact fishing closures.

Alternative 4b: Use MSA Section 303(b) to close waters deeper than 3,500 meters to bottom contact gear, and establish EFP process
This alternative would prohibit bottom contact fishing activities in West Coast EEZ waters deeper than 3,500m, unless a permit holder or vessel owner receives approval via a groundfish Experimental Fishing Permit (EFP) through the Council and NMFS processes, in the event that the vessel or permit owner wants to fish using bottom contact gear in these waters. Fishing with bottom contact gear outside of an EFP could only be authorized through an FMP amendment and changes in regulation.

EFH Descriptions, Life History, and Major Prey Species

Alternative 5a: No Action
This alternative would retain the same EFH descriptions that are currently in Appendix B to the groundfish FMP, and would not add information on species that have been added to the FMU since 2006.

Alternative 5b: Update and revise information in Appendix B of the FMP
This alternative would update and revise information on EFH descriptions, life history, and major prey species; and would include groundfish species that have been added to the FMP since 2006. The EFH regulatory guidance requires description of habitat components, currently included as Appendix B to the Groundfish FMP.

Fishing Activities That May Adversely Affect EFH

Alternative 6a: No Action
This alternative would retain the same description of fishing activities that is currently in Appendix C Part 2 or the groundfish FMP.

Alternative 6b: Revise fishing gear effects described in Appendix C Part 2 of the FMP
This alternative would update the description of fishing gear effects that are described in Appendix C Part 2 of the Groundfish FMP.

Non-Fishing Activities that May Adversely Affect EFH

Alternative 7a: No Action

This alternative would retain the current description of non-fishing activities that is in Appendix D to the groundfish FMP. It would not update or revise the associated conservation measures.

Alternative 7a: Update Appendix D with new information and add descriptions and conservation measures for new non-fishing activities that may adversely affect EFH.
This alternative would update information on non-fishing effects and associated conservation measures. These are currently included in Appendix D of the Groundfish FMP. The identification of potential non-fishing effects are used by NMFS in EFH consultations with Federal agencies that are conducting or authorizing non-fishing activities that may adversely affect groundfish EFH.

Information and Research Needs

Alternative 8a: No Action
This alternative would retain the same Information and Research Needs that are currently in the groundfish FMP.

Alternative 8b: Revise the Information and Research Needs section and move to an appendix.
This alternative would result in an updated Information and Research Needs section related to groundfish EFH, and would move that section to an FMP appendix, thereby allowing for efficient updating as warranted.

Review and Revision Process

Alternative 9a: No Action
This alternative would retain the same review and revision process currently described in the groundfish FMP.

Alternative 9b: Update review and revision process and describe elsewhere. Include criteria prior to each review.
This alternative will describe a new process for review and revision of groundfish EFH, and would memorialize the process in an FMP appendix, a Council Operating Procedure, or elsewhere outside of FMP text. This alternative also would describe a process in which goals and objectives of each review/revision process would be established prior to each periodic review.

Minor Clarifications and Corrections

Alternative 10a: No Action
This alternative would not correct minor errors, nor make minor clarifications to the FMP.

Alternative 10b: Provide clarifications and correct minor errors from Amendment 19.
This alternative would make minor corrections and clarifications in the Groundfish FMP. One example of an error is a minor mapping error regarding Potato Bank, off the California Coast. One example of a clarification would be to use common units of measure for better understanding. For example, reporting all depth units in meters instead of fathoms, or vice versa.