Appendix C

New Management Measures Detailed Analysis

Pacific Coast Groundfish Fishery 2019-2020 Harvest Specifications and Management Measures

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C.1 *Salmon Incidental Take Statement: Mitigation Measures and Reserve Rule Analysis*

Part A

1. Describe the new management measure.
    - What stocks will it affect? What fisheries will it affect? What is the geographic scope?

In December 2017, the National Marine Fisheries Service (NMFS) completed an Endangered Species Act (ESA) consultation on the continued implementation of the Groundfish Fishery Management Plan (FMP) and released the results of the Biological Opinion (BiOp), including a new Incidental Take Statement (ITS). The ITS included six reasonable and prudent measures (RPMs) which require the Pacific Fishery Management Council (Council) and NMFS to take certain actions to address Chinook and coho salmon bycatch in U.S. West Coast groundfish fisheries. These RPMs are non-discretionary, and were developed based on the BiOp analysis of the West Coast groundfish fishery's effects on salmon. The RPMs included in this ITS are grouped by topic as follows:

1. Monitoring;
2. Developing Measures to Keep Bycatch within Guidelines;
3. The Reserve;
4. New Times and Areas;
5. Identifying and Addressing High Bycatch Times/Areas/Conditions; and
6. Reporting and Evaluation.

The ITS provides terms and conditions (T&C) under each RPM that are also non-discretionary, and are required to implement each specific RPM. Specific T&Cs were required to be considered within the 2019-20 biennial harvest specifications and management measures process. Those include:

2.a. As part of its process for developing the biennial specifications for the groundfish fishery for 2019 and 2020, the Council will review the existing mechanisms in the FMP and regulations for avoiding and reducing salmon bycatch, including but not limited to 50 CFR 660.60(d), to determine if these measures are adequate to allow for timely inseason management to keep the sectors from exceeding their bycatch guidelines. This review shall consider, at a minimum, (1) the effectiveness of the Ocean Salmon Conservation Zone and Bycatch Reduction Zones for addressing the potential for bycatch guideline exceedances inseason, and (2) the efficacy of using bycatch reduction areas (BRAs) to reduce interactions between the whiting fisheries and salmon. The review shall include recommendations for increasing the effectiveness of these measures.

3.a. The Council and NMFS shall develop and implement initial regulations governing the Reserve of 3,500 Chinook salmon as part of the 2019-20 biennial specifications and management measures. These regulations will be designed to, among other things, allow for inseason action to prevent any exceedance of a sector guideline plus the full amount of the Reserve, and minimize the chance that the Reserve is used in three out of any consecutive five years.

3.c. If, at any time during the fishery, it is anticipated that the coastwide bycatch will exceed the annual Chinook salmon bycatch guideline of 11,000 for the whiting sector or 5,500 for the non-whiting sector, NMFS and the Council will take action to avoid an exceedance of either guideline. If either sector exceeds its guideline plus the Reserve, fisheries for that sector will close for the remainder of the year. If a sector exceeds its guideline plus the Reserve, but the other sector has not exceeded its guideline, only the sector

that has exceeded its guideline plus the Reserve will be closed. If one sector has been closed for the remainder of the year under the above scenario, and the other sector reaches its guideline, all sectors would be closed for the remainder of the year. NMFS and the Council shall develop and implement regulations governing closure of the fishery sector(s) as described here as part of the biennial harvest specifications and management measures for 2019-20.

2. What was considered in order to optimize the performance of this measure?

In March 2018, the Groundfish Management Team (GMT) reviewed the results of the BiOp and the T&Cs in the ITS, and provided the Council with Agenda Item H.5.a, GMT Report 1, March 2018. In that report and Agenda Item F.5.a, Supplemental GMT Report 3, April 2018, the GMT reviewed the Council's and NMFS's current monitoring capabilities, available mitigation measures, and historical industry bycatch avoidance tactics. Additionally, the GMT investigated salmon bycatch data by area, depth, and time for the whiting and non-whiting midwater trawl sectors to determine if depth restrictions would be effective for reducing salmon bycatch (see Appendix A of the March 2018 report).

3. What and when was the Council's decision and how did it arrive at the decision?

In April 2018, the Council selected the following as the Preliminary Preferred Alternatives (PPA) for salmon mitigation measures to be analyzed in the 2019–20 harvest specifications and management measures for use in the 2019–20 biennium:

1. In addition to the current BRAs, add the 200 fathom depth contour for use as a BRA for vessels using midwater trawl gear (whiting and mid-water non-whiting) through routine inseason action.
2. Eliminate the Ocean Salmon Conservation Zone (OSCZ) from regulation.
3. Prohibit all midwater trawling within the Klamath River Salmon Conservation Zone (KRCZ) and Columbia River Salmon Conservation Zone (CRSZ) year-round; and prohibit the use of all bottom trawl gear except selective flatfish trawl (SFFT) inside the KRCZ and CRCZ.
4. Create two automatic authorities in regulations that would allow NMFS to
    a. Close either sector (whiting or non-whiting[1]) upon that sector having exceeded or being projected to exceed its Chinook salmon bycatch threshold and the reserve amount of 3,500; and
    b. Close a sector (whiting or non-whiting) when one sector has been closed after exceeding or projected to exceed its Chinook salmon bycatch threshold and the reserve amount of 3,500, and the second sector exceeds or is projected to exceed its salmon bycatch threshold.

After much consideration of the risk of exceeding the thresholds, the workload associated with additional new mitigation measures, and the tools currently available to mitigate salmon bycatch (discussed in #4), the Council chose to limit the suite of salmon mitigation measures to be included for the 2019-20 biennium, and consider other measures in separate processes.

[1] Note that the ITS only applies to select recreational fisheries of which salmon impacts are not attributed to preseason salmon modeling. The recreational fisheries not accounted for in preseason salmon modeling are those occurring outside of the open salmon seasons and the Oregon longleader fishery; any impacts from these fisheries must be attributed to the non-whiting threshold, and these fisheries are subject to closures per the ITS. In contrast, impacts from recreational fisheries during open salmon seasons are accounted for in preseason salmon modeling therefore any impacts from these fisheries are not attributed to the non-whiting threshold and these fisheries are not subject to ITS closures.

4. Is there any other background information that was important to the Council's decision? For example, has this measure been previously discussed by the Council, if so what was the outcome?

Prior to the selection of a PPA, the Council discussed the results of the 2017 ITS at the March 2018 Council meeting. The GMT reviewed the analysis in the BiOp and the T&Cs and provided the Council with Agenda Item H.5.a, GMT Report 1, March 2018. In that report, the GMT described the current monitoring capabilities and bycatch projection methods, and a range of alternatives for mitigation measures and reserve rules for the Council to consider. The Council provided additional guidance to the team on other alternatives to consider, which were included in the April 2018 report. Below, information regarding monitoring abilities and current mitigation measures are summarized.

C.2 *Monitoring*

In March, the GMT evaluated the Council's and NMFS's ability to track the amount and location of any salmon bycatch by the sectors (whiting and non-whiting) and sub-sector (at-sea, individual fishing quota [IFQ], recreational, etc.) defined in the ITS. In order to assess, on an ongoing basis, the inseason bycatch of salmon against the guidelines in the ITS and the likelihood of a sector, or subsector, exceeding the guideline; NMFS would need this information inseason and a method of projecting or accounting for catch.

Table 1 in Agenda Item H.5.a, GMT Report 1, March 2018 summarizes the timeliness and ability to project data inseason by sector and sub-sector. Based on this evaluation, NMFS and the Council should be able to monitor salmon bycatch by species, area, and sector for the trawl fisheries on a weekly basis (T&C 1(a)(i)). Since the vast majority of historical bycatch has been from the trawl fisheries, the timely reporting of salmon bycatch in the trawl fishery should help ensure that inseason monitoring includes the majority of salmon bycatch.

C.3 *Current Mitigation Measures*

C.3.1 Bycatch Reduction Areas

BRAs are depth-based management measures used to close depths shallower than a specified depth contour to vessels using midwater gear to minimize impacts to groundfish, or any prohibited or protected species, such as salmon. Currently in regulation, BRAs are available to close areas shoreward of the 75, 100, and 150 fathom depth contours, and can be implemented for a specific sector (i.e., catcher/processor, mothership, shoreside whiting, and shoreside non-whiting midwater) at any latitudinal break (50 CFR 660.11). BRAs are available through automatic action if a whiting sector is projected to reach or exceed a sector-specific groundfish allocation prior to attaining the whiting allocation (§ 660.60(d)); however, this is not currently available for salmon bycatch mitigation for any of the sectors.

C.3.2 Ocean Salmon Conservation Zone

The OSCZ consists of all waters shoreward of a boundary line approximating the 100 fathom (183 m) depth contour. When triggered, the OSCZ is closed to the non-tribal whiting fleet. This closure is implemented coastwide through automatic action when NMFS projects the Pacific whiting fishery (tribal and non-tribal) may take in excess of 11,000 Chinook salmon within a calendar year (50 CFR 660.131(c)(3)).

C.3.3 Industry Mitigation

As noted in public testimony and Council discussion, industry may be best equipped to react quickly, and more directly, to high bycatch events of salmon compared to broad Council or NMFS actions. In recent years, some industry sub-sectors have shown the ability to be proactive in minimizing salmon bycatch. As

an example, in the Mothership co-op agreement, there are bycatch rate rules and hotspot closures for Chinook salmon (as well as other bycatch species). Specifically for Chinook salmon, there is a relocation requirement if 50 percent of the seasonal pool's pro-rata share of Chinook salmon is reached (Information Report 5, April 2018).

C.3.4 Trawl Rockfish Conservation Areas

Rockfish Conservation Areas (RCAs) are currently available to mitigate salmon bycatch by the bottom trawl sector (50 CFR 660.60 (c)(3)). As discussed below, the RCA will remain in effect until the final rule publishes and Essential Fish Habitat Conservation Areas (EFH)/RCA action is implemented.

C.4 *Future Mitigation Measures*

C.4.1 Trawl RCA/Block Area Closures

In April 2018, the Council took final action to remove the trawl RCA from the Oregon/Washington border to the U.S./Mexico border. As a part of this action, the Council also recommended the development of Block Area Closures (BACs) to be used to mitigate against impacts resulting from the bottom trawl fishery. BACs would be available to mitigate against salmon bycatch, and could prohibit fishing by vessels using groundfish bottom trawl gear at certain depths and latitudes. The waters off the West Coast, seaward of state waters to the 700 fathom contour line, would be divided into 20 separate BACs using existing depth contours and latitudes in regulation. (Agenda Item F.3.a, Project Team Report 1, April 2018).

C.4.2 Additional mitigation measures and reserve rules

The Council separately moved forward two other items for consideration in November 2018 ("Additional ESA Salmon Mitigation Measures") based on Agenda Item F.5.a, Supplemental GMT Report 3, April 2018 (Agenda Item F.5., Council Motion). This range of alternatives will be considered, along with any other mitigation measures and reserve rules, in November 2018.

Part B

For reference:

Definitions:
• Effect (40 CFR 1508.8) - (a) Direct effects, which are caused by the action and occur at the same time and place. (b) Indirect effects, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems. Effects and impacts as used in these regulations are synonymous. Effects includes ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Effects may also include those resulting from actions which may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial.
• Mitigation (40 CFR 1508.20) - (a) *Avoiding* the impact altogether by not taking a certain action or parts of an action. (b) *Minimizing* impacts by limiting the degree or magnitude of the action and its implementation. (subparts c-e generally not applicable to Management Measures in Specs). • Examples: ensure that the Harvest Guideline or ACL is not exceeded; reduce bycatch of target or non-target species; or reduce encounters with protected resources such as ESA listed fish, seabirds, or marine mammals or turtles.

- Significant (40 CFR 1508.27) - Significantly as used in NEPA requires considerations of both context and intensity: (a) Context. This means that the significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality. Significance varies with the setting of the proposed action. For instance, in the case of a site-specific action, significance would usually depend upon the effects in the locale rather than in the world as a whole. Both short- and long-term effects are relevant. (b)Intensity. This refers to the severity of impact.

- Human Environment (40 CFR 1508.14) - Human environment shall be interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment. (See the definition of "effects" (§ 1508.8)*.) This means that economic or social effects are not intended by themselves to require preparation of an environmental impact statement*. When an environmental impact statement is prepared and economic or social and natural or physical environmental effects are interrelated, then the environmental impact statement will discuss all of these effects on the human environment.

1. What is the objective of this management measure?
    - Does it have a conservation purpose? (e.g., managing catch within ACLs? mitigating impacts to habitat or protected species?) Does it have a social/economic purpose? (e.g., allowing increased opportunity to catch target species? Does it have a social making fishing opportunity among different user groups more equitable?)

The objective of this management measure is to monitor and mitigate impacts to ESA-listed Chinook and coho salmon caught as bycatch in the West Coast groundfish fishery, as required by the 2017 BiOp.

2. The following screening is intended to help NMFS understand the broad implications of the management measure and to determine the appropriate NEPA compliance strategy.

a. How would you describe this new management measure (may select more than one)

- ☐ Technical correction or a change to a fishery management action or regulation, which does not result in a noticeable change in any of the following: fishing location, timing, effort, authorized gear types, or harvest levels.
- ■ Has potential for noticeable change to any of the following: fishing location, timing, effort, authorized gear types, or harvest levels.
- ■ Designed to mitigate some other environmentally negative effect (e.g., cap, closed area, bag limit).
- ☐ Designed to mitigate a negative economic or social effect.
- ☐ Applies to only a small area of the total EEZ.

b. What resource(s) would the management measure likely effect, either positively or negatively?

- ☐ Physical EFH or Ecosystems
- ■ Biological Resources (target, non-target species)
- ■ Protected Resources (mammals, ESA-listed)
- ■ Economic, social, cultural

c. If the management measure is mitigating or offsetting an effect on a resource, identify that resource.

- ☐ Physical EFH or Ecosystems
- ☐ Biological Resources (target, non-target species)
- ■ Protected Resources (mammals, ESA-listed)
- ☐ Economic, social, cultural

Part C

Keeping in mind the responses provided in part 2 above, briefly answer the following questions. Please focus on the issues of importance; if there are no potential effects, say 'no anticipated effects'. Remember both positive and negative effects.

a. Groundfish
    a. How does any change in catch relate to harvest specifications and the risk that overfishing will occur? Can the proposed measure reasonably be expected to adversely affect managed fish species?

200 fathom BRA- The implementation of a 200 fathom BRA through routine inseason action could adversely affect non-target species, especially in the at-sea sectors. As discussed below in 1b, the shoreside whiting and especially the non-whiting midwater trawl sector would likely have limited or no ability to fish outside of 200 fathoms. The at-sea sectors have historically been able to fish outside of 200 fathoms, but in limited capacity, especially the Mothership (MS) sector. As described in Agenda Item H.5.a, Supplemental GMT Report 1, March 2018, only 58.4 percent of hauls for the MS sector from 2011-2017 occurred outside of 200 fathoms compared to 88.8 percent in the Catcher/Processor (CP) sector. Based on conversations with industry, the MS sector catcher vessels may lack the horsepower to fish effectively in those deeper depths.

The amount of bycatch of groundfish species outside of 200 fathoms would ultimately depend on the sectors ability to find and process whiting. However, if the fleets were able to find and harvest whiting in these depths, it could lead to increases in other groundfish species catch. Table C-1 and Table C-2 below show the yearly totals of groundfish caught inside and outside of 200 fathoms for the CP and MS sectors. Only those species with greater than 10 metric tons total catch in the seven year time period are shown. Spiny dogfish, yellowtail rockfish, and widow rockfish have shown higher amounts of bycatch outside of 200 fathoms compared to inside of 200 fathoms. Therefore, if the sectors were pushed outside of 200 fathoms, there could be increased bycatch of these species.

From 2011-2016, the shoreside whiting sector had only six hauls outside of 200 fathoms (Table A-11 in Agenda Item H.5.a, Supplemental GMT Report 1, March 2018). Therefore, a 200 fathom BRA could hinder their ability to operate efficiently. Vessels participating in the MS and shoreside fleet overlap considerably, so the catcher vessels face the same horsepower issue mentioned above.

For the mid-water non-whiting trawl fishery, a 200 fathom BRA would represent a de facto closure since all catch and effort has occurred in shallower depths (see the March 2018 GMT report) and because the primary targets of the fishery (canary, widow, and yellowtail rockfish) are found in shallower depths[2]. The non-whiting midwater trawl fishery re-emerged in 2017, after a nearly 20 year hiatus, due to the recent rebuilding of canary rockfish and widow rockfish, two of the most prevalent stocks encountered when targeting yellowtail rockfish. In 2017, NMFS issued a trawl gear exempted fishing permit (EFP) that allowed bottom trawl fishermen to use nets capable of catching mid-water rockfish before the start of the "mid-water season" on May 15th, and expanded the EFP to include year-round, coastwide non-whiting midwater fishing in 2018. The 2017 EFP was not in place until mid-March of 2017, so landings data for a full calendar year from that EFP is not available. Therefore, the best approximation of what the mid-water non-whiting fishery landings would resemble in a full calendar year requires basing April-December from the 2017 EFP and non-EFP mid-water non-whiting data and basing January-March from the 2018 EFP data

[2] http://www.dfo-mpo.gc.ca/species-especes/profiles-profils/yellowtail-rockfish-sebaste-queue-jaune-eng.html; http://www.pcouncil.org/wp-content/uploads/2016/05/Canary_2016_Final.pdf http://www.pcouncil.org/wp-content/uploads/2016/04/WidowAssessment2015.pdf

(Table C-3). Discards will be uncertain until total mortality data is published in August 2019. A late season de facto closure associated with a 200 fathom BRA would reduce mortality of midwater rockfish, as landings were highest in December.

Table C-1. Catcher-Processor Bycatch (mt).

Species	Less than 200 fathom							200 fathom or greater						
	2011	2012	2013	2014	2015	2016	2017	2011	2012	2013	2014	2015	2016	2017
ARROWTOOTH FLOUNDER	0.56	0.04	5.05	2.98	0.15	0.36	7.11	36.89	2.25	5.74	5.46	65.71	6.46	6.34
DARK BLOTCHED ROCKFISH	4.9	0.04	0.54	0.54	0.17	0.89	24.25	5.09	1.17	1.28	2.62	5.2	1.94	7.06
GRENADIER UNIDENTIFIED	0	0	0	0	0	0	0.05	0.13	0	0.15	0.3	0.15	40.02	0.93
PACIFIC OCEAN PERCH	1.49	0	0.22	0.08	0.12	0.67	3.64	4.69	2.89	3.89	0.14	6.58	1.95	15.58
REX SOLE	0.41	0.18	5.75	1.97	0.06	0.14	4.87	3.39	2.37	5	5.45	5.73	1.66	2.22
ROUGHEYE ROCKFISH	0.81	0	0.67	0.46	0.03	0.39	1.27	73.5	41.92	10.42	3.67	14.86	21.85	32.6
SABLEFISH	0.06	0.19	5.41	3.82	0.11	0.28	17.79	2.81	3.95	4.09	11.38	9.5	17.65	49.47
SHORTBELLY ROCKFISH		0	0	0	0	0.09	96.14		0	0	0	0.02	0.14	44.18
SHORTSPINE THORNYHEAD	0.41	0.03	8.55	8.45	0.33	0.93	16.85	11.4	1.16	7	10.29	8.31	6.09	7.7
SPINY DOGFISH SHARK	33.81	6.91	4.1	3.18	0.64	5.9	9.32	606.52	140.89	60.85	34.53	93.3	128.78	98.46
SPLITNOSE ROCKFISH	2.16	0.24	11	3.86	1.37	9.69	54.01	2.57	9.39	10.93	9.26	9.67	26.74	8.18
WIDOW ROCKFISH	0.4	0.12	0.76	6.84	1.77	8.49	76.86	23.35	41.88	14.64	9.36	15.4	103.32	331.82
YELLOWTAIL ROCKFISH	0.01	0	3.14	0	0	0.45	14.16	14.49	31.56	74.94	0	0.48	10.69	115.69

Table C-2. Mothership Bycatch (mt).

Species	Less than 200 fathoms							Greater than 200 fathoms						
	2011	2012	2013	2014	2015	2016	2017	2011	2012	2013	2014	2015	2016	2017
ARROWTOOTH FLOUNDER	0.79	0.68	1.82	0.81	0.09	0.19	0.96	6.15	1.19	1.35	0.87	0.64	2.5	2.29
CHILIPEPPER ROCKFISH	0	0	0			0.64	11.19	0.01	0	0			0.32	0.01
DARK BLOTCHED ROCKFISH	0.26	0.72	3.64	6.66	1.37	0.12	5.01	1.29	0.37	0.51	0.34	0.75	1.12	2.16
PACIFIC OCEAN PERCH	0.08	0.33	0.62	2.49	0.22	1.76	0.93	0.47	0.98	0.4	0.95	1.33	5.11	4.54
ROUGHEYE ROCKFISH	0.09	0.79	1.47	0.1	0.09	0.46	0.23	3.95	11.1	5.17	1.41	6.62	6.73	4.05
SABLEFISH	0.32	0.56	2.56	0.2	0.01	0.2	52.47	1.62	0.25	0.49	0.66	1.85	9.36	32.96
SHORTBELLY ROCKFISH		0.15	0.66	0	0	0.01	26.12		0.03	0.03	0	0	1.88	1.5
SHORTSPINE THORNYHEAD	0.12	0.09	3.75	1.01	0.03	0.32	1.42	1.26	0.32	2.19	0.54	1.65	2.9	1.58
SPINY DOGFISH SHARK	2.7	10.44	18.26	3.67	0.55	10.89	12.6	82.07	19.37	14.12	17.79	2.37	47.47	18.59
SPLITNOSE ROCKFISH	2.49	10.35	3	5.59	0.34	0.25	17.15	4.46	0.22	0.82	0.42	2.9	6.08	5.31
WALLEYE POLLOCK	0		0			0	11.91	0		0			0.01	0
WIDOW ROCKFISH	1.73	26.57	10.91	26.23	11.23	32.72	37.9	10.87	10.21	4.24	13.2	5.77	41.3	27.59
YELLOWTAIL ROCKFISH	45.72	2.84	132.47	22.35	49.31	24.42	58.1	20.95	8.5	57.88	22.14	37	26.48	89.61

Table C-3. Best representation of potential mid-water non-whiting trawl landings (mt) over a full calendar year, noting the fishery did not fully re-emerge until mid-March 2017 after a nearly 20 year hiatus.

Month	Canary	Widow	Yellowtail	Total	Source
Jan	0.0	657.3	34.6	691.8	2018 EFP
Feb	1.6	516.7	134.3	652.6	2018 EFP
Mar	2.2	757.4	242.8	1,002.3	2018 EFP
Apr	1.1	280.3	79.4	360.9	2017 EFP
May	12.6	649.0	135.8	797.4	2017 EFP + Mid-water non-whiting
Jun	11.0	779.8	170.5	961.3	2017 EFP + Mid-water non-whiting
Jul	5.7	487.4	106.6	599.7	2017 EFP + Mid-water non-whiting
Aug	3.7	457.2	269.6	730.5	2017 EFP + Mid-water non-whiting
Sep	2.2	210.2	160.7	373.1	2017 EFP + Mid-water non-whiting
Oct	0.2	482.9	11.7	494.8	2017 EFP + Mid-water non-whiting
Nov	0.1	524.0	23.4	547.5	2017 EFP + Mid-water non-whiting
Dec	0.0	1,080.1	18.5	1,098.7	2017 EFP + Mid-water non-whiting

Elimination of OSCZ- There are no anticipated effects of removing this provision from regulation. NMFS has only implemented the OSCZ once since 2004 (in 2014; NMFS-SEA-14-23). Furthermore, as described in Agenda Item H.5.a, Supplemental GMT Report 1, March 2018, while the precise impacts would depend on the time of implementation, the OSCZ may be too shallow to be effective for reducing salmon bycatch by measurable amounts at any time. No fishing by the at-sea has occurred in this depth bin after October since 2011, and little activity has occurred by the shoreside sectors, so the OSCZ would likely have little to no impact later in the year, when it is most likely to be implemented. Additionally, the Council and NMFS have the ability using the above mentioned BRAs to close specific areas to midwater trawling.

Klamath River Salmon Conservation Zone (KRCZ) and Columbia River Salmon Conservation Zones (CRCZ)- There are no anticipated impacts of closing these areas to midwater trawling, as there has been no mid-water trawl activity in these areas since 2011 (Agenda Item F.5.a, Supplemental GMT Report 3, April 2018), and industry stated that it would not be practical to fish in either zone (Agenda Item F.5.a, Supplemental GAP Report 1, April 2018). Additionally, the current bottom trawl activity (shown in Agenda Item F.5.a, Supplemental GMT Report 3, April 2018) could be maintained in the area as vessels could still fish in the zones with selective flatfish trawl (SFFT). Observer data from 2002-2006 and 2007-2010 show similar patterns of relatively low to medium fishing intensity compared to coastwide effort. Therefore, the levels of harvest within these areas would likely be maintained or could decrease with the removal of the SFFT restrictions coastwide (cumulative impacts of the trawl gear rulemaking are discussed below).

Closures- No anticipated adverse impacts on managed fish stocks, as the closure of any sector due to salmon bycatch would result in lower attainment of ACLs and no negative impacts on managed stocks.

b. Will this management measure change catch of groundfish stocks compared to past catches and management reference points? If no, describe in a few sentences why not. If yes, what stocks would be substantially affected?

200 fathom BRA- If a 200 fathom BRA were implemented for a sector through routine inseason action, it would likely affect the catch of groundfish species, target and non-target. As described above, for the shoreside whiting sector, these depths are outside of the normal operating area; whiting and other species catch by either sector after this closure would likely be restricted. For the at-sea sectors, the fleets may be able to operate outside of 200 fathoms and continue to catch their whiting allocation. However, the concentrated schools of whiting necessary for efficient fishing may not always be available outside of 200 fathoms due to the interannual variation in whiting distribution, which may increase the risk of not harvesting significant portions of the whiting allocation.

As described above, a 200 fathom BRA would likely represent a de facto closure of the midwater non-whiting trawl fisheries, given that all catch and effort has come from the shallower depths where target species are found. This would potentially reduce landings of canary, yellowtail, and widow rockfish by significant amounts, as a closure would likely occur later in the year at the same time as a significant proportion of targeted catch typically occurs (Table 3).

Elimination of OSCZ- No anticipated effects as this would remove this little-used provision from regulation, and is not expected to result in effort shift affecting groundfish catch.

KRCZ and CRCZ- As described in part 1a above, there are no anticipated effects of these gear/area restrictions.

Closure- If a sector were closed after reaching the salmon bycatch threshold plus the reserve, and/or the other sector were closed after they reached the reserve, then there would likely be a change in catch compared to past catches due to the early closure of the fishery. The magnitude of the difference will depend on the time of year the closure occurred, the sector(s) closed, and ocean conditions, as well as other factors which the Council and NMFS have no control over. A closure earlier in the fishing year would have a greater negative impact on the catch of groundfish stocks as compared to past catches from full seasons. The following sections analyze the potential effects of this action on the different groundfish sectors.

Whiting

If the whiting sectors were to close, whiting allocations would likely be under attained; however, it would depend on the time of year and the proportion of whiting allocation already attained by the fleets. Table C-4 below shows the average whiting catch from 2011-2017 by month and sector. Depending on when the closure happened, tens of thousands of metric tons could be left unharvested.

Table C-4. Non-tribal average landings of whiting (mt) by month, 2011-2017.

Month	Sector		
	CP	MS	SS
April	---	---	c
May	26,490.34	10,909.80	4,976.35
June	10,393.80	9,186.14	11,731.80
July	---	2,448.37	20,349.58
Aug.	1,668.7	2,186.95	23,897.28
Sept.	18,696.67	8,142.36	17,173.38
Oct.	20,654.81	16,159.35	12,522.89
Nov	12,385.18	5,826.79	3,161.76
Dec	12,375.49	c	495.39

--- means that no whiting was harvested by that sector in any year during that month

c = data confidential due to less than 3 vessels in that strata

Tribal

The tribal commercial fisheries include both whiting-directed and yellowtail rockfish-directed midwater fisheries, as well as a small footrope bottom trawl fishery. The Makah Tribe's trawl fleet is composed of five whiting-directed midwater vessels and up to ten non-whiting directed vessels that may switch between mid-water yellowtail rockfish and small footrope bottom trawling. The treaty fisheries are allocated 17.5 percent of the U.S. allocation of whiting and 1,000 mt of yellowtail rockfish annually, but landings have been less.

The main groundfish stocks caught in the tribal fisheries are Dover sole, Pacific cod, Pacific whiting, petrale sole, sablefish, and yellowtail rockfish (Table C-5). Pacific whiting landings include average shoreside landings since 2011 and average mothership landings from 2011-2012 when fishing last occurred and is expected to reflect future tribal mothership landings if fishing resumes. Early closure of tribal fisheries is not expected to have much effect on whiting landings, as not much is landed after October when closures would be most likely to occur. However, moderate declines would be expected for landings of non-whiting stocks since there is a moderate amount of tribal activity in November and December.

Table C-5. Average landings (mt) of the main tribal fishery stocks by month (dates), 2011-2017.

Month	Dover sole	Pacific cod	Pacific whiting a/	Petrale sole	Sablefish	Yellowtail rockfish	Other groundfish
Jan	3.9	5.3	0	1.3	0.7	17.3	30.7
Feb	1.8	9.0	0	1.8	0.0	13.6	32.6
Mar	1.9	11.5	0	3.1	33.9	11.5	28.7
Apr	11.3	28.2	0	9.6	93.2	33.2	40.4
May	8.0	56.8	0	29.0	61.7	53.2	39.6
Jun	6.0	43.1	10.5	33.5	62.8	34.8	43.2
Jul	4.2	36.4	3,300.6	22.6	54.6	30.5	48.5
Aug	11.5	22.8	5,109.8	16.5	39.8	33.3	43.4
Sep	18.6	15.2	5,966.5	11.3	49.1	41.5	48.2
Oct	10.5	17.7	2,578.4	10.6	64.7	54.9	35.2
Nov	13.0	5.9	59.8	4.1	24.0	12.0	19.0
Dec	7.8	6.6	0	1.8	12.5	9.7	18.8

a/ Includes 2011-2017 average for shoreside and 2011-2012 average for mothership as that could reflect future landings if fishing resumes

Non-Whiting Midwater Trawl

Implications of early closure of the non-whiting midwater trawl fishery are described above under the 200 fathom BRA section as that would represent a de facto closure of the fishery since all catch and effort has occurred in shallower depths. An early closure would negatively impact the fishery and reduce landings of widow, yellowtail, and canary rockfish, which are moderate in fall and highest in December (Table C-3).

Bottom Trawl

The bottom trawl fishery occurs year-round and primarily targets “DTS” (i.e., Dover sole, shortspine thornyheads, longspine thornyheads, and sablefish) as well as petrale sole (Table C-6). An early closure would negatively impact the bottom trawl fishery, and reduce catch for these main stocks, and others, since landings are relatively high during the fall, and especially in December.

Table C-6. Average landings (mt) of the main bottom trawl stocks by month, 2011-2017.

Month	DTS strategy				Petrale sole	Other
	Dover sole	Shortspine thornyheads N. of 34° 27' N. lat.	Longspine thornyheads N. of 34° 27' N. lat.	Sablefish N. of 36° N. lat.		
Jan	843	47	62	92	206	1,104
Feb	1,209	62	80	112	247	1,569
Mar	1,538	79	97	155	176	1,982
Apr	1,356	76	84	147	75	1,853
May	968	81	67	124	114	1,537
Jun	751	52	70	100	124	1,227
Jul	717	39	53	86	141	1,210
Aug	864	46	78	109	128	1,308
Sep	793	47	62	101	125	1,182
Oct	963	67	81	136	139	1,328
Nov	924	60	51	141	197	1,181
Dec	1,104	62	49	155	305	1,406

IFQ Fixed Gear

Within the IFQ sector, a portion of the fleet fishes with fixed gear and are known as “gear switchers”. These vessels exclusively target sablefish, with some incidental landings of slope rockfish and shortspine thornyhead off of California. Table C-7 below shows the average landings by month for sablefish north and south of 36° N. lat. These landings are consistently over 400 mt for the north and ranged from 80-430 mt in the south since 2011. All other species landings were less than 30 mt in a year. If the fishery were closed before the end of the year, it could result in significant under attainment of sablefish. Specifically, October has the highest average monthly landing of sablefish. A closure at that point would result in almost 400 mt of sablefish being left unharvested coastwide, along with any other targeted species.

Table C-7. Average landings of sablefish north and south of 36° N. lat., by IFQ fixed gear vessels, 2011-2017.

Month	Sablefish N	Sablefish S
Jan	2.65	2.33
Feb	5.41	8.44
Mar	12.55	10.74
Apr	29.98	11.57
May	20.21	2.58
Jun	38.63	27.98
Jul	69.07	26.39
Aug	66.56	19.72
Sep	180	38.24
Oct	166.73	57.91
Nov	77.02	22.06
Dec	39.49	20.74

Commercial Non-Trawl (Limited Entry and Open Access, Nearshore and Non-nearshore)

The commercial non-trawl fishery is comprised of the limited entry and open access (OA) non-nearshore fixed gear fisheries, which target primarily sablefish coastwide. Off California, fishers also target shortspine thornyhead; slope rockfish, primarily blackgill rockfish; and shelf rockfish, typically vermilion rockfish. Oregon and California also have nearshore fisheries targeting a suite of nearshore rockfish species, cabezon, kelp greenling, and lingcod. Table C-8 and Table C-9 below show the average landings by month for key target species for the non-nearshore and nearshore fisheries respectively from 2011-2017. An early closure of the limited entry fixed gear (LEFG) and OA fisheries would reduce mortality of the many key target stocks, but by relatively less than the trawl fisheries, since LEFG and OA activity declines in the fall and December.

Table C-8. Non-Nearshore Average Landings (mt) of Main Stocks by Month, 2011-2017.

Month	Sablefish a/	Shortspine thornyhead a/	Minor Slope Rockfish (North of 40° 10' N. lat.)	Minor Slope Rockfish (South of 40° 10' N. lat.)
Jan	73.25	14.35	0.39	3.89
Feb	68.36	9.42	0.73	3.25
Mar	96.47	13.05	1.27	3.89
Apr	224.21	13.07	3.86	4.32
May	262.87	14.34	6.84	3.86
Jun	242.81	12.19	8.44	4.73
Jul	221.61	14.80	6.27	6.54
Aug	273.04	13.48	9.23	6.36
Sep	349.30	15.41	10.31	7.07
Oct	301.65	15.24	6.50	4.81
Nov	96.55	14.28	0.70	3.04
Dec	77.89	12.43	1.35	2.39

a/ Coastwide non-nearshore landings.

Table C-9. Nearshore Average Landings (mt) of Main Stocks by Month, 2011-2017.

Month	Black rockfish (OR)	Black rockfish (CA)	Lingcod N. 40° 10' N. lat.	Lingcod S. 40° 10' N. lat.	Other catch (OR) a/	Other catch (CA) a/
Jan	3.4	1.3	0.4	0.4	2.6	12.8
Feb	3.5	1.5	0.8	0.4	2.2	9.0
Mar	5.4	2.5	1.4	0.0	2.8	0.5
Apr	9.0	3.7	1.3	0.0	3.8	0.5
May	17.0	5.6	9.3	3.3	7.0	15.9
Jun	12.9	5.7	7.1	2.9	5.0	15.6
Jul	14.4	6.5	6.0	4.4	4.6	22.7
Aug	15.0	7.9	8.0	3.9	7.4	18.6
Sep	13.0	6.0	6.9	3.5	8.3	18.6
Oct	8.0	4.4	6.5	3.3	5.6	15.3
Nov	4.0	2.3	5.2	3.0	3.0	14.5
Dec	4.3	1.2	0.9	0.7	2.9	11.8

a/ Other mainly includes kelp greenling, cabezon, and nearshore rockfish complexes

Recreational

The recreational fishery off of all three states primarily targets nearshore species such as black rockfish, nearshore rockfish species, vermilion rockfish, bocaccio, cabezon, greenlings, lingcod, and California scorpionfish. However, each state has different seasons for recreational groundfish (bottomfish) and therefore may be impacted by closures differently.

As noted above, the ITS only applies to select recreational fisheries that are not accounted for in pre-season salmon modeling. The recreational fisheries not accounted for in preseason salmon modeling are those occurring outside of the open salmon seasons and the Oregon longleader fishery; any impacts from these fisheries must be attributed to the non-whiting threshold, and these fisheries are subject to potential closures. In other words, any recreational fisheries that occur during open salmon seasons (except Oregon longleader) would not be subject to closure if the salmon threshold (and reserve) were exceeded. Grey shading is used for the Washington, Oregon, and California recreational fisheries (Tables 10, 11, and 12, respectively) to denote the months where the salmon seasons are typically closed, although this is subject to change. This table provides the best approximation of the impacts of salmon bycatch closures on catch and effort in applicable recreational fisheries. Most months with open salmon seasons would not be affected.

The Washington recreational groundfish fishery is open from mid-March through mid-October. Washington coastal weather is prohibitive from late fall through early spring and as such, recreational fishing effort is concentrated during late spring and summer (April through August). An early closure of the recreational fishery would have the most impact if it occurred before the October season closure. The

impact would be greatest for black rockfish and lingcod. Table C-10 shows the 2013-2017 average landings by month for the Washington recreational fishery.

Table C-10. Average monthly landings (mt) 2013-2017 for the Washington recreational fishery with grey shading representing months when the salmon seasons are typically closed, and thus eligible for ITS closures.

Month	Black RF	Lingcod	NSRF	Canary RF	Yellowtail RF	Cabezon	Vermillion RF	Greenlings	Bocaccio RF
Jan	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Feb	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mar	8.20	4.70	0.11	0.02	0.20	0.04	0.00	0.03	0.01
Apr	26.58	16.67	0.05	0.08	0.78	0.26	0.03	0.08	0.09
May	77.30	64.03	0.24	0.42	1.59	2.11	0.47	0.59	0.83
Jun	44.84	20.97	0.18	0.21	3.18	0.52	0.14	0.20	0.04
Jul	34.10	7.72	0.09	0.04	2.65	0.39	0.06	0.20	0.00
Aug	31.26	7.47	0.11	0.06	3.85	0.51	0.09	0.28	0.01
Sep	14.24	5.25	0.05	0.04	3.34	0.20	0.03	0.08	0.00
Oct	2.99	1.36	0.00	0.00	0.51	0.03	0.01	0.02	0.00
Nov	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Dec	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

The Oregon recreational groundfish fishery is scheduled to be open year-round. Effort and landings are highest during the summer season (roughly Memorial Day to Labor Day) when weather is generally more favorable. Early closures could occur in November or December as these months are outside the open salmon seasons, whereas earlier months during salmon seasons would remain open. November and/or December closures would reduce mortality of key recreational stocks by relatively modest amounts given that the majority of catch occurs in earlier months (Table C-11).

Table C-11. Average monthly landings (in mt) from 2013-2017 for the Oregon recreational fishery with grey shading representing months when the salmon seasons are typically closed and thus eligible for ITS closures.

Month	Black RF	Lingcod	NSRF	Canary RF a/	Yellowtail RF	Cabezon b/	Vermilion RF	Greenlings	Widow RF
Jan	4.38	7.78	0.86	0.20	0.62	0.01	0.06	0.12	0.04
Feb	5.66	5.46	0.86	0.40	0.48	0.00	0.04	0.08	0.06
Mar	21.08	22.02	2.50	1.30	1.96	0.04	0.40	0.32	0.28
Apr	24.46	14.74	2.64	1.50	0.50	0.01	0.42	0.30	0.02
May	50.90	28.92	2.68	2.20	0.76	0.09	0.66	0.66	0.02
Jun	68.82	23.80	3.46	4.60	1.28	0.48	0.56	0.54	0.02
Jul	78.32	25.00	3.36	5.40	1.42	4.26	0.64	0.66	0.04
Aug	78.42	25.86	5.84	6.60	1.98	4.38	1.40	0.90	0.10
Sep	40.36	11.66	3.80	2.00	0.92	2.30	0.70	0.42	0.02
Oct	11.08	12.18	2.28	1.40	3.28	0.62	0.22	0.18	0.78
Nov	2.28	3.54	0.66	0.10	0.28	0.31	0.02	0.06	0.04
Dec	1.64	2.32	0.46	0.70	0.38	0.14	0.02	0.04	0.04

a/ 2017 data only, as canary rockfish became part of the regular marine fish daily bag limit beginning in 2017, and is therefore more reflective of the current fishery than previous years when prohibited or restricted.
b/ Retention of cabezon is prohibited January 1 through June 30 in state regulations. Open July 1- December 31 with a 1 fish sub-bag limit.

Off California there are five groundfish management areas with standardized bag and size limits, but each area has differing season structures. Due to constraints from overfished groundfish species, the more northern management areas are limited to short season lengths, open during summer and fall months to provide the best weather opportunity to maximize fishing opportunity. The potential for a fishery closure would further shorten the seasons, and would reduce landings of the aforementioned target species. Additionally, attainment of associated state managed groundfish species such as California sheephead and ocean whitefish would be impacted by early closures. Table C-12 shows the 2013-2017 average catch of target species by month from the California recreational fishery.

Table C-12. Average monthly catches (mt) from 2013-2017 for the California recreational fishery with grey shading representing months when the salmon seasons are typically closed and thus eligible for ITS closures. Note that salmon seasons vary by management area (2018 seasons can be found here).

Month	Lingcod	NSRF (minus BLK)	Black RF	Vermilion RF	Bocaccio	CA Scorpion fish a/	Yellowtail RF	Canary RF b/	Pacific Sanddab	Cabezon
Jan	0.48	1.16	0.07	0.06	0.02	3.84	0.00	0.00	5.35	0.80
Feb	0.45	1.28	0.07	0.10	0.03	5.00	0.02	0.02	6.31	1.01
Mar	6.30	14.84	0.45	21.48	12.55	3.54	0.14	0.10	7.81	1.54
Apr	19.64	28.80	2.11	22.88	9.60	4.55	1.49	4.53	6.06	1.82
May	58.49	44.28	19.27	31.88	13.02	17.49	6.30	10.90	4.37	5.01
Jun	69.64	58.74	34.76	31.62	11.01	23.44	7.79	7.77	4.62	5.53
Jul	94.12	91.32	59.30	30.85	9.29	20.35	11.60	10.43	6.40	7.80
Aug	111.44	90.52	63.01	34.23	11.64	9.58	13.79	15.93	4.80	8.15
Sep	72.81	62.31	29.70	27.32	10.41	2.27	8.25	9.66	4.37	4.70
Oct	50.01	51.49	14.61	20.85	12.35	2.08	6.48	6.98	3.05	2.90
Nov	43.49	50.05	9.66	17.16	8.27	1.28	4.88	7.13	2.51	2.47
Dec	49.00	37.57	5.70	17.60	5.02	0.87	2.85	8.95	1.45	2.81

a/ The scorpionfish fishery was closed Nov 15-Dec 31, 2014, and Sept-Dec from 2015-2017.
b/ Data for 2017 only. Prior to 2017 canary rockfish was a prohibited species so any catches were incidental and not reflective of current or future expected catch trends.

2. Other Fish

a. Will this management measure affect catch of non-groundfish species? If no, describe in a few sentences why not. If yes, is the magnitude of the change substantial and to what stocks? How is this catch monitored? Are the affected stocks managed under another federal FMP or by a state? Do other management plans include harvest specifications? Is it possible to assess the contribution of the measure, if any, to overfishing risk of a non-groundfish stock?

200 fathom BRA- If the Council were to implement a 200 fathom BRA inseason, the effect on non-groundfish species would depend on which sector was affected by the BRA, and the time of year. As described above, certain sectors would likely have to cease fishing if pushed outside of 200 fathoms due to operational constraints (e.g., too far from processors or lack of target species). Table C-13 and Table C-14 below shows the total catch of other non-groundfish species by year inside and outside of 200 fathoms for each at-sea sector. Shoreside whiting and midwater non-whiting are not discussed in these tables as there has recently (2011-2016) been limited effort outside of 200 fathom for either sector (less than 10 percent of total hauls for shoreside whiting, and only six hauls for non-whiting midwater; see Table A-10 and A-11 of Agenda Item H.5.a, GMT Report 1, March 2018).

Table C-13. CP Catch of Non Groundfish (mt) (CPS = Coastal Pelagic Species, HMS = Highly Migratory Species, Other = No management group or FMP)

Year	Less than 200 fathoms			Greater than 200 fathoms		
	CPS	HMS	OTHER	CPS	HMS	OTHER
2011	0	0	0.57	0.28	0.2	232.33
2012	0	-	0.69	6.72	-	98.42
2013	0.08	0.12	58.5	3.62	0.12	174.29
2014	17.92	0.01	19.52	71.41	0.67	177.92
2015	33.22	0	4.78	74.25	1.72	355.65
2016	2.29	0.12	6.85	137.3	2.99	383.67
2017	374.69	1.78	77.74	136.03	1.22	219.06

Table C-14. MS Catch of Non Groundfish (mt) by Year (CPS=Coastal Pelagic Species, HMS=Highly Migratory Species, Other= No management group or FMP).

Year	Less than 200 fathoms			Greater than 200 fathoms		
	CPS	HMS	OTHER	CPS	HMS	OTHER
2011	1.44	0.06	19.62	12.43	0.7	48.06
2012	8.67	0.04	9.6	1.6	0.06	26.18
2013	79.74	0.19	44.15	6.05	0.24	27.04
2014	18.37	0.49	17.66	2.05	0.94	55.66
2015	0.03	0.15	4.75	23.85	0.47	31.95
2016	0.4	0.3	4.59	115.39	0.92	100.58
2017	110.23	1.05	27.1	22.13	0.39	56.6

A 200 fathom BRA would represent a de facto closure for the non-whiting midwater trawl fishery as described above and would eliminate their bycatch of non-groundfish stocks, which has been very minor (i.e., less than 500 lbs. of mackerel species total in 2017 and 2018). These estimates do not include discard at-sea as the Groundfish Mortality report for 2017 is not available.

The high amounts of "Other" species catch outside of 200 fathoms is squid (unidentified) with one high instance of King of the Salmon in 2015 by the CP sector. Higher values of coastal pelagic species include jack and chub mackerel.

Vessels could decide to move into other fisheries; however, other opportunities would be limited by the vessel's gear availability, and which fisheries remained open (more discussion under "Closure" below).

Elimination of OSCZ- No anticipated effects as this provision is rarely used, so removing it would be unlikely to shift effort or affect non-groundfish species catch.

KRCZ and CRCZ- No anticipated effects as this maintains the current footprint of activity within these areas.

Closures- If a sector, or both sectors, were closed prior to obtaining their full allocations or before the end of their season due to reaching the salmon threshold and the reserve, there could be increases in catch of non-groundfish species if vessels shift efforts into another fishery. However, the actual impact is difficult to quantify as it would depend on the time of year and fishing conditions in those other fisheries. There are limited opportunities in the fall and winter, when a potential closure would likely occur, for other non-groundfish fisheries. Coastwide, the primary opportunity for commercial vessels would be Dungeness crab. However, while the Dungeness crab fishery can start on December 1, recent years have seen delays into January due to low meat recovery or domoic acid. Additionally, a shift into the crab fishery would likely not increase total crab catch since the fishery is at full capacity (i.e., near full exploitation of legal size males), but instead result in the same amount of crab being caught more quickly. Dungeness crab is managed by the three states as part of the Tri-State Crab agreement.

Additionally, there could be some California opportunities in both federal and state managed fisheries. For federal opportunities, highly migratory species and coastal pelagic species may be available depending on ocean and weather conditions. There are a variety of state-managed commercial fisheries in California, but sometimes restrictive permit requirements and the associated costs to acquire permits and re-gear for different target species could limit a vessel in easily accessing additional commercial fishing opportunities. For non-restrictive state opportunities, vessels could switch to fisheries such as California halibut, pink shrimp, or white seabass. These opportunities can be limited to seasonal availability and market demand. Recreational fishing opportunities would be reduced to other popular targets such as California halibut, striped bass, white seabass, surfperches, Dungeness crab, other shellfish, and highly migratory species, such as albacore tuna, depending on the year. Off southern California, there are opportunities to target white seabass, California halibut, sea basses (e.g., kelp bass, barred sand bass), and coastal migratory species (e.g., barracuda, yellowtail).

3. EFH and Ecosystems

    a. Will this management measure change fishing activity so as to adversely affect essential fish habitat compared to no-action effects? If no, describe in a few sentences why not. If yes, is the magnitude of the change substantial and why? Describe the mechanism linking the management measure to adverse impacts. For example, changes in fishing gear or methods; changes in the temporal and/or geographic distribution fishing effort.

None of the proposed measures are expected to adversely affect EFH compared to no action, as the measures primarily affect midwater gear (which, according the FMP Amendment 19, has little to no EFH impacts), and would maintain the current footprint of activity within the KRCZ and CRCZ. Additionally, these mitigation measures do not open up any new areas to midwater trawling. Therefore, the area in which these measures would be implemented is current geographic footprint for the midwater trawl fishery.

    b. Can the proposed measure reasonably be expected to adversely affect vulnerable marine or coastal ecosystems, including but not limited to, deep coral ecosystems?

These measures are not expected to adversely affect vulnerable marine or coastal ecosystems due to the reasons described in 3a above.

    c. Can the proposed measure reasonably be expected to adversely affect biodiversity or ecosystem functioning (e.g., benthic productivity, predator-prey relationships, etc.)?

These measures are not expected to adversely affect biodiversity or ecosystem functioning, because stocks would continue to be managed within scientifically-determined catch limits.

4. Marine Mammals and ESA Species

    a. Will this management measure result in adverse effects to ESA-listed species and/or non-listed marine mammals and seabirds? If no, describe in a few sentences why not. If yes, is the magnitude of change substantial and why? Describe the mechanism linking the management measure to adverse impacts. For example, changes in fishing gear or methods; changes in the temporal and/or geographic distribution fishing effort.

There are likely no adverse effects to other ESA-listed species and/or non-listed marine mammals and seabirds. There are no changes to gear or methods proposed, and if the 200 fathom BRA were to be implemented, it would likely reduce activity in the shoreside sectors and limit the activity in the at-sea sectors.

5. Social and Economic

    a. Will this management measure change the distribution of catch opportunity among user groups, fishing communities, states, or regions? If no, describe in a few sentences why not. If yes, is the magnitude of the change substantial? Why is it substantial? For example, which user groups are likely to see increased catch opportunity? Which may lose catch opportunity?

200 fathom BRA- If this measure is implemented through routine inseason action, distribution of catch opportunity could shift amongst the non-tribal whiting sectors and the non-whiting midwater fishery sector. Implementing a BRA at this depth bin could possibly eliminate any opportunity for either shoreside fleet to catch their targeted species, and could limit the opportunity for either at-sea fleet to catch their full whiting allocation. The degree of impact would depend on the time of year, the distribution of whiting, and the capability to fish in deeper water. Additionally, the BRA could be implemented on a sector-specific basis, further limiting catch opportunity to that sector. A worst case scenario would be a de facto closure of shoreside whiting, which could be possible since nearly all effort and catch occurs in shallower depths, and a 41.6 percent reduction for mothership, reflecting the percent of effort that occurs in shallower depths that would be closed. These are likely high estimates that bookend the upper range of potential impacts, because effort could potentially shift deeper to offset losses from shallower depths. More detail is provided in the "Closure" section below.

A 200 fathom BRA would represent a de facto closure of the midwater non-whiting trawl fishery since nearly all catch and effort has occurred in the shallower depths where target stocks are present. As with whiting, the economic impacts would depend on when the BRA was implemented, and would likely be later in the year as this is when salmon bycatch would be more likely to accumulate to problematic levels. Two scenarios were used to bookend possible economic impacts. The high impact scenario would be an October-December de facto closure based on a 200 fathom BRA and the low impact scenario would be a December only closure. The high impact scenario (Oct-Dec) would be projected to result in a loss of $1.8 million in ex-vessel revenue (Table C-15), $4.4 million in personal income (Table C-18), and 52 jobs (Table

C-19) for the mid-water non-whiting trawl fishery. The low impact scenario (Dec) would be projected to result in a loss of $0.9 million in ex-vessel revenue, $2.1 million in personal income, and 24.8 jobs.

Table C-15. Average ex-vessel revenue in millions of $USD by fishery and month, 2011-2017, that are the base input for projecting total economic impacts of closures for shoreside commercial fisheries. High impact (Oct-Dec) and low impact (Dec) closure scenarios are used in the analysis to bookend possible economic impacts.

Month	SS Whiting	Treaty	Mid-water non-whiting a/	B trawl	LEFG OA	IFQ FG
Jan	0	0	0.6	1.7	0.8	0
Feb	0	0	0.7	2.2	0.7	0.1
Mar	0	1	1	2.6	0.8	0.1
Apr	0	0.8	0.4	2.3	1.6	0.2
May	0.3	1	0.7	2.1	2.5	0.1
Jun	2.3	0.9	0.8	1.8	2.3	0.3
July	4.5	0.7	0.5	1.8	2.4	0.4
Aug	5.6	0.5	0.5	2	2.6	0.5
Sep	4	0.4	0.4	1.8	3.1	1.4
Oct	2.9	0.5	0.4	2.1	2.6	1.4
Nov	0.8	0.2	0.5	2	1.1	0.6
Dec	0	0.1	0.9	2.3	0.9	0.3

a/ Based on 2017-2018 EFP results and non-EFP mid-water non-whiting (see Table 3).

Elimination of OSCZ- There are no anticipated effects as this is removing this rarely used provision from regulation and not changing the distribution of catch opportunities once the 11,000 Chinook salmon threshold is taken.

KRCZ and CRCZ- No anticipated effects as this is maintaining the current footprint of activity within these areas.

Closure- As described above in 1b, depending on the time of year that the closure to one or both sectors occurs due to reaching the threshold plus the reserve (and the other sector reaching their threshold), there could be significant amounts of groundfish unharvested.

At the harvester level, this could result in economic losses in terms of ex-vessel revenue for shoreside commercial fisheries (Table C-15), pounds for at-sea catches (Table C-16), and angler trips for recreational fisheries (Table C-17).

Table C-16. Average millions of pounds of retained whiting for the at-sea whiting sectors by month, 2011-2017, that are base input for projecting total economic impacts associated with closures.

Month	Avg. lbs (millions)	
	CP	MS
May	58.5	24.2
June	19.7	20.4
July	c	3.6
August	3.7	3.1
September	41.2	18.4
October	45.6	36.6
November	23.4	9.2
December	3.9	0.5

c = confidential

Table C-17. Average recreational angler trips by month, boat type, and state that are the basis of projecting total economic impacts associated with closures; grey shading representing months when the salmon seasons are typically closed and thus eligible for ITS closures.

Month	WA charter	WA private	OR charter	OR private	CA charter	CA private
Jan	0	5	479	1,645	11,018	6,137
Feb	0	4	788	1,036	13,058	4,607
Mar	721	349	3,122	3,548	35,192	11,883
Apr	2,380	926	3,281	2,962	38,350	13,857
May	3,956	4,361	4,795	7,520	47,917	26,153
Jun	3,666	1,595	7,972	7,282	71,191	34,607
July	2,277	1,677	9,778	7,444	83,825	48,351
Aug	2,271	1,675	9,985	8,677	67,637	44,332
Sep	1,190	797	4,726	4,004	48,766	25,172
Oct	262	144	2,041	1,802	40,388	18,750
Nov	0	14	320	707	33,711	19,782
Dec	0	0	295	542	28,277	14,242

Closures also result in additional economic and social impacts beyond the harvester level that include secondary impacts to processors, fishing support businesses, and communities in general. These total economic impacts are measured in terms of personal income and jobs, and are based on the multipliers being applied to the base inputs of ex-vessel revenue for shoreside commercial fisheries, angler trips for recreational fisheries, and pounds of whiting retained for the at-sea fisheries. The multipliers are specific to

species, gear, sector, boat type, and trip type/target species. Projections of income and jobs (Table C-18 and Table C-19, respectively) are estimated using the IO-PAC model (Leonard and Watson 2011) that is used for many fishery economic analyses (e.g., biennial harvest specifications and management measures).

Table C-18. Projected loss in personal income in millions of $USD associated with fishery closures by month (based on average ex-vessel revenue and angler trips from above).

Month	CP Whiting	MS Whiting	SS Whiting	Treaty	Mid-water non-whiting	B. trawl	LEFG OA	IFQ FG	Rec.
Jan	---	---	---	0.2	1.5	3.9	1.7	0	5.4
Feb	---	---	---	0.2	1.6	5.2	1.4	0.1	5.8
Mar	---	---	---	0.6	2.4	6.2	1.7	0.3	15.6
Apr	---	---	---	1.5	0.9	5.4	3.3	0.4	17.8
May	29.4	5.9	1	1.4	1.6	4.8	5.1	0.2	25.1
Jun	9.9	5	6.7	1.4	1.8	4.2	4.8	0.5	35.2
July	0	0.9	13.2	2.8	1.2	4.2	4.9	0.9	41.9
Aug	1.8	0.8	16.3	3.4	1.2	4.6	5.3	0.9	35.3
Sep	20.7	4.5	11.7	4.2	1.1	4.2	6.4	2.8	23.4
Oct	22.9	8.9	8.3	2.6	1	4.9	5.4	2.9	17.8
Nov	11.8	2.2	2.5	0.5	1.3	4.5	2.3	1.3	15.1
Dec	2	0.1	0.1	0.3	2.1	5.3	1.8	0.7	12.3

Table C-19. Projected loss in jobs associated with fishery closures by month (based on average ex-vessel revenue and angler trips from above).

Month	CP Whiting	MS Whiting	SS Whiting	Treaty	Mid-water non-whiting	B. trawl	LEFG OA	IFQ FG	Rec.
Jan	---	---	0	1.9	18.4	23	26.6	0.5	96.1
Feb	---	---	0	2.1	18.9	30.8	21.9	2	106.5
Mar	---	---	0	9.6	28.2	36.6	25.4	3.9	291.8
Apr	---	---	0	22.7	10.6	31.8	50.9	6.5	332.9
May	391.3	149.4	11.7	20.9	18.8	28.1	78.3	3.7	459.2
Jun	131.5	126	78.9	20.4	21.8	24.4	73.7	8.2	649.2
July	c	22.1	156.6	58.1	13.8	24.8	75.3	14.1	760.8
Aug	24.6	19.3	192.9	75.8	14.1	27.1	81	14.2	641.3
Sep	276	113.7	139.2	90.9	12.7	24.3	98	42.9	427.1
Oct	305.1	226.2	99.1	51.8	11.9	28.3	83.3	45.2	326.7
Nov	156.9	56.9	29.2	7.5	15.6	26.1	34.8	19.3	270.8
Dec	26.1	3	1.1	4.2	24.8	30.5	28	10.7	222.3

The magnitude of economic losses is difficult to project since it would depend on when the closure would occur, which fisheries would be closed, and if loses from closures could be offset by substitution to other fisheries or other non-fishery activities that would generate comparable economic stimulus. As such, the same high impact (Oct-Dec closure) and low impact (December closure) scenarios from the 200 fathom BRA mid-water non-whiting trawl section were used to bookend a possible range of potential impacts of complete closure of West Coast Groundfish fisheries. These represent maximum potential impacts since they assume no substitutions to other activities that generate economic stimulus. Note that custom projections for alternative closure scenarios can be easily developed since the impacts are itemized by each fishery and month (Table C-18 and Table C-19).

The IO-PAC model predicts that the maximum potential economic impacts associated with the high impact (Oct-Dec closure) scenario are losses of $138.6 million in income (Figure C-1) and 2,083 jobs (Figure C-2). For the low impact (Dec. closure) scenario, the model predicts the impact to be losses of $24.6 million in income and 349 jobs. These maximum projections assume no substitutions would occur that could offset economic losses, and are only approximations since they are based on averages that are prone to variation.

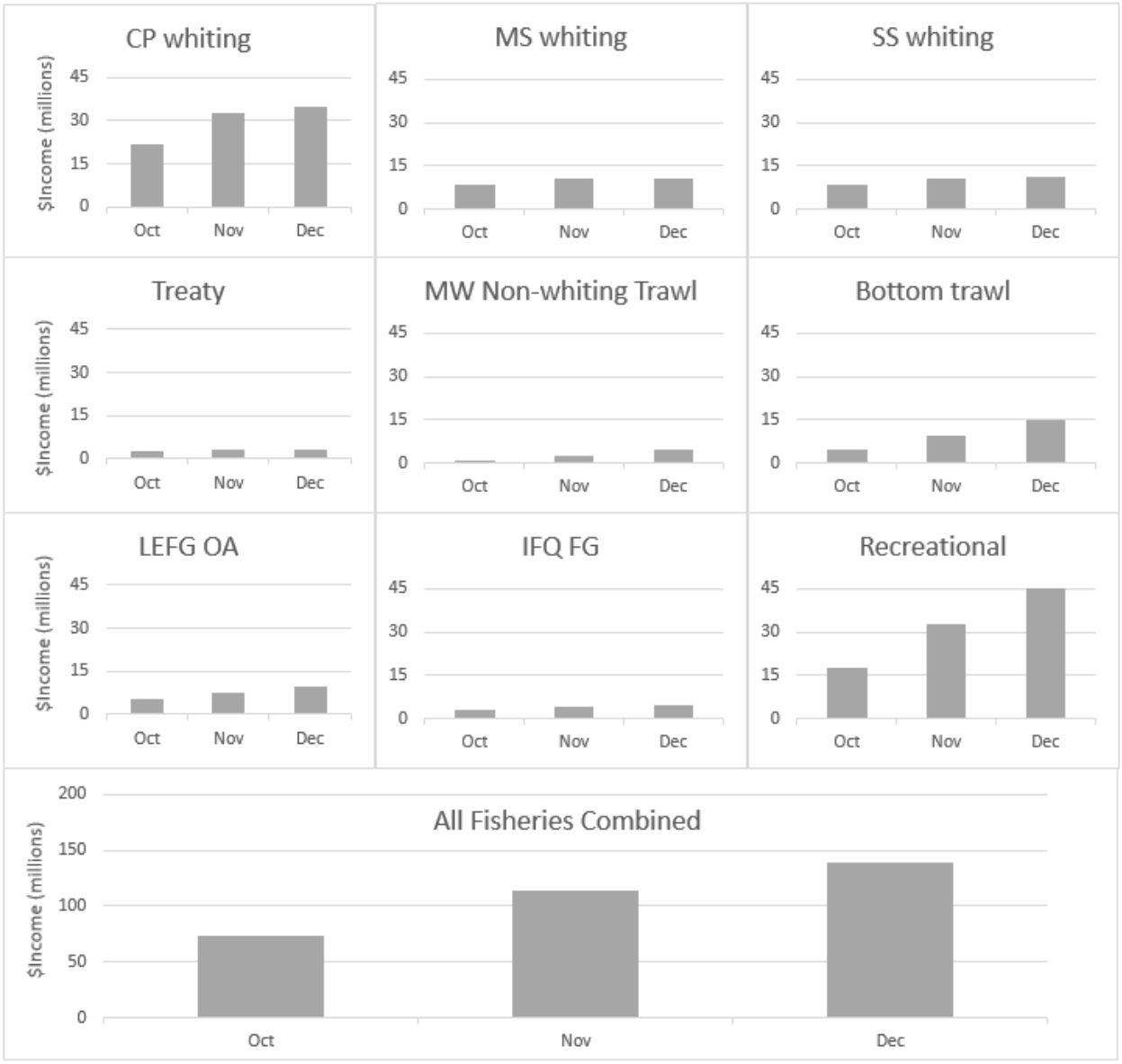


Figure C-1. Cumulative monthly estimated income loss (millions of $USD), for each individual fishery and all fisheries combined, for the high impact closure scenario of Oct-Dec. The grand total is $138.6 million in income. This is a maximum projection since it assumes there would be no substitution to other activities that could generate offsetting economic impacts.

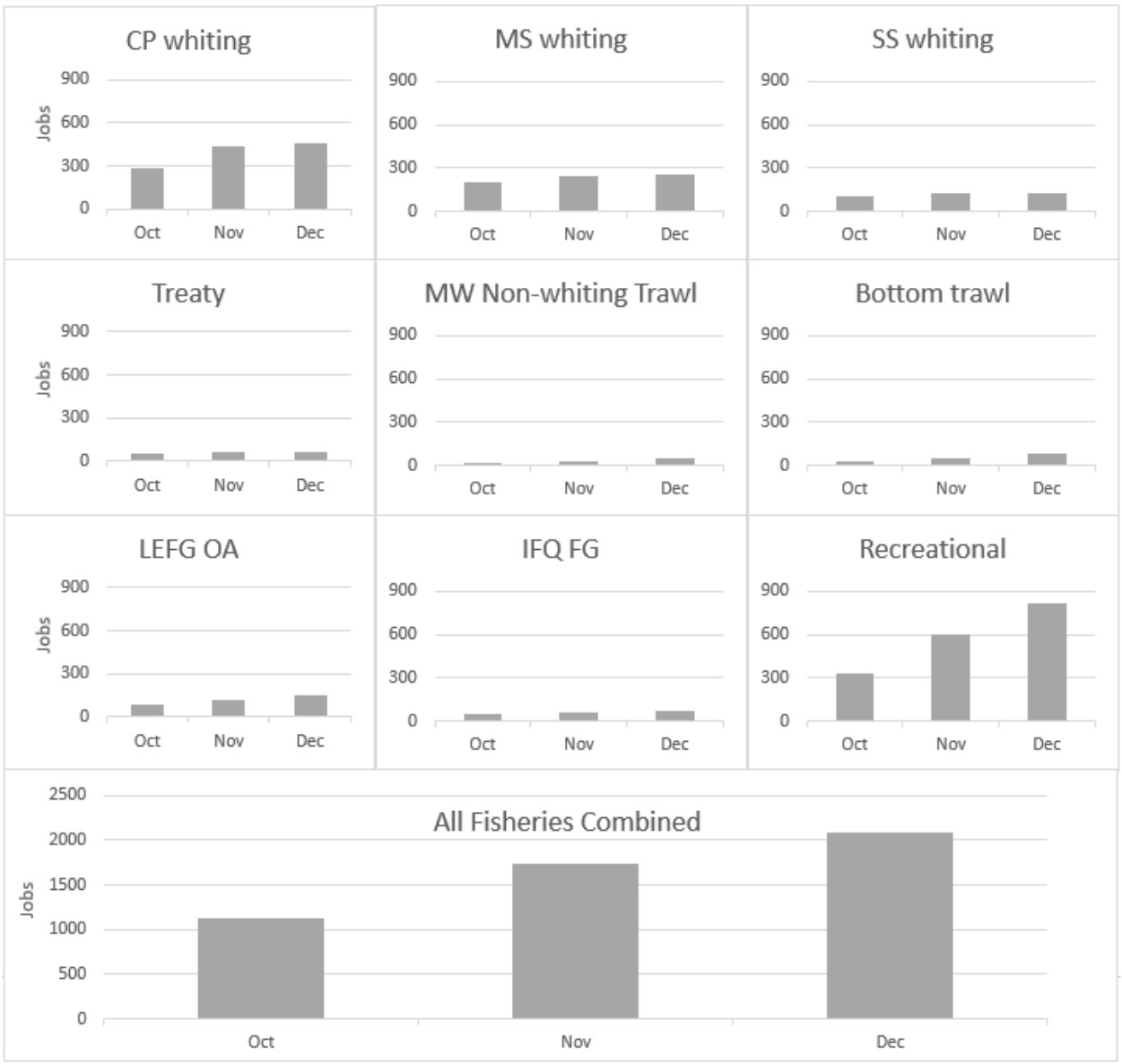


Figure C-2. Cumulative monthly estimated job loss, for each individual fishery and all fisheries combined, for the high impact closure scenario of Oct-Dec. The grand total is 2,083 jobs. This is a maximum projection since it assumes there would be no substitution to other activities that could generate offsetting economic impacts.

While the actual impacts would be difficult to pinpoint, the economic effects could be significant and cause long-lasting negative effects for the fleets, processors, and dependent communities. BRAs and closures could reduce market stability, and compromise contracts for West Coast groundfish products - especially for the high volume trawl fisheries of which dependable and stable markets are important for major distributors and retailers (e.g., grocery store and restaurant chains). For instance, processors have routinely provided public comment that instability of non-whiting trawl deliveries stemming from the groundfish disaster resulted in a loss of market share in major retail markets to the more consistent farm-raised tilapia and swai catfish products. While groundfish stocks have recovered, the markets have not. Therefore, the

West Coast continues to see low non-whiting IFQ attainments for all but sablefish and petrale sole. Instability is also problematic for smaller volume commercial buyers and for maintaining customer bases at charter businesses. Disruptions from one year could therefore have long lasting effects that could reduce landings, revenues, earnings, and jobs in future years.

Additionally, available recent data from the Five-Year Catch Shares Program Review Report (which is focused on the trawl program) indicates decreasing engagement in the trawl IFQ program (Table 3-120, pg. 3-258) paired with medium-high and high vulnerability to socioeconomic shocks in many of these communities. Closures therefore could have a considerable negative impact to coastal communities, especially those that have a higher dependency on groundfish fisheries such as Westport, Washington and Port Orford, Oregon.

b. Can the proposed action reasonably be expected to significantly affect public health or safety?

None of the proposed measures are expected to significantly affect public health or safety.

6. Cumulative effects

Past fishery and non-fishery actions have created the baseline conditions. For fishery management actions, consider current (put into place recently but the effects may not be visible) or "reasonably foreseeable future items (actions that the Council is moving forward with). For Specs, consider the 19/20 preferred alternative and the routine management measures.

Repeat each set of questions for affected resources (Groundfish, other fish, EFH, ecosystems, ESA species, marine mammals, social, and economic).

The removal of the OSCZ from regulation is not expected to have any non-negligible adverse effects on the resource and therefore is not discussed below. As described above in 1a, the OSCZ has only been triggered once and is therefore not effective in mitigating salmon bycatch. Removing the automatic authority from regulation has no adverse impacts to any resource.

Groundfish

a. Does the proposed management measure have non-negligible adverse effects to the resource? *If none then stop and proceed to the next resource.*

200 fathom BRA- As described above in 1a, there could be adverse impacts to certain stocks if a BRA of 200 fathoms was implemented. While there would be limited, if any, activity by the shoreside whiting and non-whiting midwater fisheries outside of 200 fathoms, there could be increased impacts to stocks like yellowtail rockfish, spiny dogfish, and widow rockfish in the at-sea sectors.

Neither the restrictions in the KRCZ or the CRCZ or the implementation of the closure provision are likely to have adverse impacts on groundfish as it would either maintain current effort levels (KRCZ/CRCZ) or cease fishing on groundfish stocks.

b. Is it likely that any current or future fishery management actions may have overlapping effects with this management measure on the resource?

Currently, yellowtail rockfish and spiny dogfish are managed via set asides. Widow rockfish is a formally allocated species for the at-sea sectors, and if the allocation is reached or projected to be reached, the sector is closed via automatic authority (50 CFR 660.60 (d)(1)(ii)). Annual catch limits (ACLs) for widow rockfish have been declining since the full stock assessment in 2015, which assumed full ACL removals in the ten-year projections (Hicks and Wetzel 2015). The Council is considering changing the management of widow rockfish for the at-sea sectors from allocations to set asides in the catch shares follow-on action process. However, until that time, implementing a 200 fathom BRA could force fishing activity, if feasible, into an area where widow rockfish bycatch could be higher, increasing the risk of closure due to exceeding the widow rockfish allocation.

c. Is it likely that any current or future non-fishery management actions may have overlapping effects with this management measure on the resource?

There are no non-fishery management actions that may have overlapping effects with this resource.

d. Qualitatively or quantitatively, add the effects in (a), (b), and (c) projected to the end of 2020. Can the sum of the effects be considered 'significant'? Consider both positive and negative effects.

As the Council's actions on changing the management of widow rockfish for the at-sea sector from an allocation to a set aside is likely not to be in effect until mid-late 2020, there could be adverse effects to groundfish resources of implementing a BRA of 200 fathoms on the at-sea sectors. As described above, there could be higher bycatch of widow rockfish outside of 200 fathoms. However, the significance is dependent on the amount of widow rockfish and whiting taken before the BRA is implemented, the length of the season remaining, and the ability to catch and process whiting outside of 200 fathoms.

e. Whether significant or not, what is the proposed new management measure's contribution to the total effect? E.g., the incremental impact from this management measure to the cumulative effects on groundfish is negligible/high/medium

The 200 fathom BRA's contribution to the total effect is dependent on the year, ocean conditions, and time of implementation. It is likely to range from negligible to medium.

Other Fish

a. Does the proposed management measure have non-negligible adverse effects to the resource? *If none then stop and proceed to the next resource.*

Unless the mitigation measure resulted in additional effort in other fisheries as described in 2, there would likely be negligible adverse impacts to other fish resources.

EFH

a. Does the proposed management measure have non-negligible adverse effects to the resource? *If none then stop and proceed to the next resource.*

None of the measures are expected to non-negligible adverse effects on EFH as described above in 3a.

Ecosystems

a. Does the proposed management measure have non-negligible adverse effects to the resource? *If none then stop and proceed to the next resource.*

None of the measures are expected to have non-negligible adverse effects on ecosystems as described above in 3a and 3b.

ESA Species

a. Does the proposed management measure have non-negligible adverse effects to the resource? *If none then stop and proceed to the next resource.*

None of the measures are expected to have non-negligible adverse effects to non-salmon ESA listed species because they would limit or cease fishing activity or maintain the current footprint of activity and gear interactions.

Marine Mammals

a. Does the proposed management measure have non-negligible adverse effects to the resource? *If none then stop and proceed to the next resource.*

None of the measures are likely to have non-negligible adverse effects on marine mammals as these measures would either limit or cease fishing activity (BRAs or closure provision) or maintain current activity inside the KRCZ and CRCZ.

Social

a. Does the proposed management measure have non-negligible adverse effects to the resource? *If none then stop and proceed to the next resource.*

200 fathom BRA- As described above, this measure could have non-negligible adverse effects to communities depending on the sector in which it was implemented and the time of year. If implemented for shoreside whiting, this would likely close the fishery, which would specifically impact communities that rely on shoreside whiting such as Westport, Astoria, and Newport. A 200 fathom BRA that would similarly represent a de facto closure of the midwater non-whiting trawl fishery would also negatively impact Westport, Astoria, and Newport. While the at-sea sectors do not rely on shoreside processing, there are nearly 2,000 jobs associated with their activities as described above.

KRCZ and CRCZ- Compared to the current baseline, this measure would not have any non-negligible adverse impacts to the industry. However, as discussed in part b below, the cumulative impacts with the

trawl gear rulemaking may be significant to those communities supported by bottom trawling near the CRCZ.

Closure- As described above in 5a, this measure could have considerable adverse effects to all sectors and the communities they support.

b. Is it likely that any current or future fishery management actions may have overlapping effects with this management measure on the resource?

In 2017, NMFS issued an EFP that providing participating bottom trawl vessels with an exemption to the requirement to use SFFT gear shoreward of the RCA and north of 42° N. lat., among other provisions, to help inform the trawl gear rulemaking package. In 2018, NMFS instituted a similar EFP with the addition of a year-round midwater fishery opportunity. Currently, NMFS is undergoing the rulemaking on the trawl gear package and the final rule is expected in winter 2018 (Agenda Item F.1.a, Supplemental NMFS Report, April 2018). While the prohibition of fishing midwater or non-SFFT bottom trawl within the KRCZ and CRCZ will likely have no impacts due to it being impractical to fish midwater in these areas even with no restrictions (Agenda Item F.5.a., Supplemental GAP Report 1, April 2018), there could be desire by industry to fish in these areas without SFFT gear to target rockfish or shelf flatfish with bottom trawl gear. Therefore, while the current level of activity could continue with SFFT as described in Agenda Item F.5.a., Supplemental GMT Report 3, April 2018, there could be some adverse effects to industry if there were interest in bottom trawling without SFFT in this area. As noted in the April 2018 GAP Report, bottom trawlers report that they do not encounter salmon bycatch in the CRCZ and therefore the requirement to fish with SFFT may limit some opportunity.

The rulemaking, along with the removal of the trawl RCA off Oregon and California, may also further magnify the impacts of the 200 fathom BRA or closure of the whiting or non-whiting sector. .

As described above, if the non-whiting sector were to close, only those recreational fisheries outside the salmon seasons (along with Oregon longleader) along with non-whiting commercial sectors (midwater, bottom trawl, and fixed gear) would be affected as those impacts within salmon seasons are covered in pre-season modeling. If salmon recreational seasons were to become shorter, there then would be more months of recreational bottomfish that would be affected by the closure.

c. Is it likely that any current or future non-fishery management actions may have overlapping effects with this management measure on the resource?

There are no non-fishery management actions that may have overlapping effects with this resource.

d. Qualitatively or quantitatively, add the effects in (a), (b), and (c) projected to the end of 2020. Can the sum of the effects be considered ‘significant’? Consider both positive and negative effects.

The sum of the effects would be considered significant if the 200 fathom BRA or closure were implemented early in the year. As described above, there are significant negative social impacts associated with these measures. For instance, the effects of a complete closure of all groundfish fisheries from Oct-Dec is projected to result in a maximum loss of $135 million in income and 2,020 jobs (see economics section

above). A December-only closure would be projected to result in a maximum loss of $24 million in income and 345 jobs. The market disruptions associated with these loses could result in fewer contracts for seafood products in future years, and therefore result in long-lasting negative impacts. These would be magnified by any additional contracts or community investment in the liberalizations that are expected through the EFP and gear rule. If the salmon seasons were shortened, there would also be greater impacts to the recreational sectors.

However, it is important to consider that the cumulative effects of these measures are contingent on the likelihood of either measure being implemented. In the GMT's March and April reports and during Council discussion, there was a significant amount of time considering the likelihood of needing to implement a 200 fathom BRA or a closure in either sector. A 200 fathom BRA would be assessed during the routine inseason action item at a Council meeting. Each of the sectors that could be subject to the BRA have bycatch information within 24 hours and location information is available within that time frame (at-sea whiting) to logbook information within a week for the shoreside whiting and non-whiting midwater fleets. If the Council were to implement a BRA, after assessing industry's response to high bycatch and the current situation (e.g., time of year, remaining allocations, etc.), it is likely that they would consider a shallower BRA, where bycatch rates may be higher, as opposed to immediately implementing a 200 fathom BRA.

Since 2002, there has never been a situation where both sectors exceeded their threshold in the same year. Both sectors have exceeded their thresholds twice in 15 years. With industry awareness of the need to mitigate salmon bycatch and the ability for the Council to act at each Council meetings to implement mitigation measures, such as BRAs, the likelihood of a closure for either sector is low.

Impacts of the closures to the CRCZ and KRCZ are likely to be not be significant given the small scale of the areas closed and the maintenance of the current footprint.

e. Whether significant or not, what is the proposed new management measure's contribution to the total effect? E.g., the incremental impact from this management measure to the cumulative effects on groundfish is negligible/high/medium

BRA restrictions and closures associated with this new management measure could have high contributions to negative social cumulative effects. The closures to the CRCZ and KRCZ likely have a small contribution to any effect.

Economic

a. Does the proposed management measure have non-negligible adverse effects to the resource? *If none then stop and proceed to the next resource.*

<u>200 fathom BRA</u>- If the Council were to implement a 200 fathom BRA to mitigate salmon bycatch inseason, this would likely have non-negligible adverse effects on any of the midwater sectors. For shoreside whiting and non-whiting midwater, there is a high probability that this would cease any fishing activity in that fleet due to operational constraints. For the at-sea sectors, this would likely cause some adverse effects to both CP and MS by forcing them to fish in areas with low whiting concentrations, thereby increasing operational costs associated with finding whiting or losing revenue due to unharvested whiting. Additionally, the MS sector does not operate as frequently outside of 200 fathoms as the CP sector (as described above) and

therefore may be more limited in their ability to prosecute their fishery. This is all in addition to other bycatch constraints (e.g., widow rockfish) that will drive the fishing locations outside of 200 fathoms.

KRCZ and CRCZ- Compared to the current baseline, this measure would not have any non-negligible adverse impacts to the industry. However, as discussed in part b, the cumulative impacts with the trawl gear rulemaking may be significant.

Closure- As described above in 5a, this measure would have significant adverse effects to all sectors.

b. Is it likely that any current or future fishery management actions may have overlapping effects with this management measure on the resource?

As described above under the social subsection, part b, the trawl gear EFP and rulemaking along with future salmon season settings may have overlapping effects.

c. Is it likely that any current or future non-fishery management actions may have overlapping effects with this management measure on the resource?

There are no non-fishery management actions that may have overlapping effects with this resource.

d. Qualitatively or quantitatively, add the effects in (a), (b), and (c) projected to the end of 2020. Can the sum of the effects be considered 'significant'? Consider both positive and negative effects.

As described above under the social subsection, part d, the cumulative impacts of these measures, specifically the 200 fathom BRA and the closure, would have considerable negative effects to the economies of the fishery.

e. Whether significant or not, what is the proposed new management measure's contribution to the total effect? E.g., the incremental impact from this management measure to the cumulative effects on groundfish is negligible/high/medium

The 200 fathom BRA and the closure would have a high contribution to the negative effect on the economy. This would be further magnified by any economic benefits expected through the EFP and trawl gear rulemaking.

7. Other

a. Are the proposed action's effects on the quality of the human environment likely to be highly controversial? (science of the effects, not the perception)

200 fathom BRA- The implementation of the 200 fathom BRA would be based on real-time data that would be assessed during the routine inseason agenda item at a Council meeting. As shown in Table 1 in Agenda Item H.5.a, GMT Report 1, March 2018, all of the fleets that could be subject to a BRA have bycatch data

within 24 hours with some location data available (coordinates for at-sea, catch area blocks for shoreside whiting and non-whiting).

Remove OSCZ- The removal of this provision from regulation is based on several years of high quality data (March report) and is therefore not controversial.

KRCZ, CRCZ- The removal of this provision from regulation is based on several years of high quality data (March report) and is therefore not controversial.

Closure- For the whiting sector, the amount of Chinook salmon taken would be known within 24 hours for the non-tribal fleet and seven days for the tribal fleet. If the fishery were to take the threshold of 11,000 Chinook salmon plus the reserve of 3,500, the fishery would close, the actual accounting of fish would not be controversial. However, for the non-whiting sector, while the data for the trawl sectors is available within 24 hours, the non-trawl sectors have a data lag of a couple months to a year. Therefore, the closure of the non-whiting sector would be based on a combination of real time data for the trawl sector and an estimate for the non-trawl sector. This could be seen as controversial as in reality, the estimated impacts for the non-trawl sector could be much higher than what is actually taken, and then the sector would have closed without actually reaching or exceeding the limits in the ITS.

Are the proposed action's effects on the human environment likely to be highly uncertain or involve unique or unknown risks?

No

8. MSA National Standards
    a. Describe how the management measure is consistent with the 10 MSA National Standards.

The four actions considered under this new management measure specifically relate to National Standard 9, which states that "Conservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch". The RPMs (and associated T&Cs) laid out in the 2017 ITS are" non-discretionary measures that are necessary or appropriate to minimize the impact of the amount of extent of incidental take" (Salmon ITS pg. 2-184). Including the 200 fathom curve as a routine BRA provides the Council an additional tool to reduce encounters with salmon in potentially high bycatch rate areas. Prohibiting the use of midwater and bottom trawl gear (except SFFT) in the CRCZ and KRCZ maintains the current footprint of activity within those areas thereby limiting bycatch. Ultimately, the closure of a sector or sectors once the threshold and the reserve are taken eliminates any additional bycatch mortality in the groundfish fisheries. The elimination of the OSCZ does not provide any benefits in minimizing bycatch, however, it does not increase bycatch either. Based on the analysis described above, the OSCZ does little to limit bycatch as few hauls occur shoreward of 100 fathoms during the time period when the restriction would likely be implemented.

C.5 *Additional Analysis*

Several measures are designated in the groundfish FMP and in regulation as routine. Routine in this context means those measures that have previously been analyzed and implemented in regulation. Additional analysis was requested for one routine measure that was proposed to be adjusted in the 2019-2020 biennium and is presented in Section B.1.1.

C.5.1 Updates to Rockfish Conservation Area Coordinates in California

Part A

1. Describe the new management measure.
    - What stocks will it affect? What fisheries will it affect? What is the geographic scope?

This management measure proposes to modify the current Rockfish Conservation Area (RCA) boundaries in California to correct areas of crossover or to better-align depth contours with actual depths. The current RCA lines specified in regulation at 50 CRF 660.71 – 660.73 are intended to approximate the fathom isobaths throughout the extent of the RCAs. A crossover is defined as an area where one RCA line deviates too much from the isobath it is supposed to approximate and crosses another RCA line into an area that is either too shallow or deep for the depth that the RCA line is supposed to represent. RCA lines will be modified to achieve better alignment with their corresponding isobaths and to correct a subset of crossovers. In doing so, the stocks and fisheries that will be affected would be those in the shelf, and slope rockfish complexes, as well as some flatfish. These RCA line modifications are proposed for seven areas along the California coast.

Crossovers associated with RCA lines currently or likely to be used in management have been identified. Charts delineating the subset of areas for proposed modifications are provided in Attachment 2, and proposed modified waypoint coordinate tables are provided in Attachment 3.

The 75 fm depth contour is proposed to be modified at Santa Cruz Island in southern California. The 100 fm depth contour is proposed to be modified in the following areas: 1) Spanish Canyon in northern California, and 2) Delgada Canyon in northern California. The 125 fm depth contour is proposed to be modified in the following areas: 1) Delgada Canyon in northern California, 2) Cordell Bank northwest of San Francisco, 3) Point Año Nuevo in central California, 4), San Miguel Island in southern California, and 5) Anacapa Island in southern California. The 150 fm depth contour is proposed to be modified in the following areas: 1) San Miguel Island in southern California, and 2) Anacapa Island in southern California.

2. What was considered in order to optimize the performance of this measure?

Geographic Information System (GIS) software was used to identify all RCA line crossovers in California. Due to the abundance of small crossovers, only modifications to the crossovers associated with RCA lines currently or likely to be used in management have been proposed at this time. Modifications range from adding waypoints, moving an existing waypoint, and/or deleting a waypoint. RCA lines were compared to depth contour lines generated from National Geophysical Data Center coastal relief models to ensure that RCA modifications approximated actual depths as closely as possible. California's Law Enforcement Division (LED) personnel reviewed the proposed depth contour modifications and agreed they were reasonable and enforceable.

3. What and when was the Council's decision made, and how did it arrive at the decision?

The Council regularly examines the appropriateness of the coordinates defining the boundary lines used to define closed areas through the harvest specifications and management measure process. The Council has endorsed these changes to improve fishing practices while reducing bycatch of overfished species. The need to protect these species is the main reason for the creation of the RCAs, and modifications improve data used in bycatch models, while at the same time establishing and providing fair and equitable opportunities for harvesters and their communities (see part B, question 1 below).

4. Is there any other background information that was important to the Council's decision? For example, has this measure been previously discussed by the Council, if so what was the outcome?

As stated above (#3), the Council regularly examines the appropriateness of the coordinates defining the boundary lines used to define closed areas through the harvest specifications and management measure process. When deemed appropriate, the Council has supported recommended modifications.

Part B

1. What is the objective of this management measure?
    - Does it have a conservation purpose? (e.g., managing catch within ACLs? mitigating impacts to habitat or protected species?) Does it have a social/economic purpose? (e.g., allowing increased opportunity to catch target species? Does it have a social benefit of making fishing opportunity among different user groups more equitable?)

The primary objective of this management measure is to eliminate issues caused by crossovers. Potential issues associated with crossovers include:

1. A change to the RCA depth used in management results in the opposite effect to that which was intended (i.e., localized reduction in fishing opportunity when the intent was to increase opportunity, or localized expansion in fishing opportunity when the intent was to protect a range of depths).
2. Confusion, on the part of all stakeholders, interpreting RCA closures when there are crossovers associated with the two lines that bound the RCA.

As part of the process of correcting crossovers, RCA lines will be modified to achieve better alignment with their corresponding isobaths. This will allow better access to target species by more accurately defining closed areas. By more accurately defining the depth contours, these proposed changes will increase the available fishing area in some areas by 6.3 mi^2, but decrease it in others by 4.6 mi^2, resulting in a net change of only 1.7 mi^2. In addition, mortality generated from fishing effort will better fit the bycatch model estimates since estimates assume that mortality is derived from specific fishing areas and the depths defining those areas.

The intent of the RCA is to protect overfished species by minimizing bycatch. Proposed modifications aim to maintain the intent of the RCA lines, while at the same time keeping the harvest levels of target species within acceptable harvest limits. These modifications are intended to allow improved access to target species by having specific latitude and longitude waypoint coordinates approximate depth contours as closely as possible. Achieving the described objectives will provide better opportunity to the fishing communities by helping participants to efficiently achieve their fishing harvest.

2. The following screening is intended to help NMFS understand the broad implications of the management measure and to determine the appropriate National Environmental Policy Act (NEPA) compliance strategy.
    a. How would you describe this new management measure (may select more than one)
        - ■ Technical correction or a change to a fishery management action or regulation, which does not result in a noticeable change in any of the following: fishing location, timing, effort, authorized gear types, or harvest levels.
        - ❑ Has potential for noticeable change to any of the following: fishing location, timing, effort, authorized gear types, or harvest levels.

- ❑ Designed to mitigate some other environmentally negative effect (e.g., cap, closed area, bag limit).
- ❑ Designed to mitigate a negative economic or social effect.
- ■ Applies to only a small area of the total EEZ.

b. What resource(s) would the management measure likely affect, either positively or negatively?

- ❑ Physical EFH or Ecosystems
- ■ Biological Resources (target, non-target species)
- ❑ Protected Resources (mammals, ESA-listed)
- ❑ Economic, social, cultural

c. If the management measure is mitigating or offsetting an effect on a resource, identify that resource.

- ❑ Physical EFH or Ecosystems
- ❑ Biological Resources (target, non-target species)
- ❑ Protected Resources (mammals, ESA-listed)
- ❑ Economic, social, cultural

Part C – Keeping in mind the responses provided in part 2 above, briefly answer the following questions. Please focus on the issues of importance; if there are no potential effects, say 'no anticipated effects.' Remember both positive and negative effects.

1. Groundfish
   a. How does any change in catch relate to harvest specifications and the risk that overfishing will occur? Can the proposed measure reasonably be expected to adversely affect managed fish species?

These changes are not expected to result in changes in catch of target groundfish stocks compared to past catches or any of the harvest specifications approved for 2019-2020. These changes are not expected to increase the risk of overfishing and managed species are expected to remain within the ACLs.

   b. Will this management measure change catch of groundfish stocks compared to past catches and management reference points? If no, describe in a few sentences why not. If yes, what stocks would be substantially affected?

These RCA boundary line changes may change the harvest patterns of the fishing community. However, any changes to the harvest patterns of the fishing community are expected to be very minor due to the fact that only small changes are being proposed for the boundary lines.

2. Other Fish
   a. Will this management measure affect catch of non-groundfish species? If no, describe in a few sentences why not. If yes, is the magnitude of the change substantial, and to what stocks? How is this catch monitored? Are the affected stocks managed under another Federal FMP or by a state? Do other management plans include harvest specifications? Is it possible to assess the contribution of the measure, if any, to overfishing risk of a non-groundfish stock?

It is not anticipated that the catch of non-groundfish species will change as a result of these modifications because these modifications will make very small changes to fishable areas, and those who fish these areas will probably not alter their fishing behavior to any marked degree since they will continue to target groundfish species as they have in the past.

3. EFH and Ecosystems
    a. Will this management measure change fishing activity so as to adversely affect EFH compared to no-action effects? If no, describe in a few sentences why not. If yes, is the magnitude of the change substantial and why? Describe the mechanism linking the management measure to adverse impacts. For example, changes in fishing gear or methods; changes in the temporal and/or geographic distribution fishing effort.

No anticipated effects are expected. Any EFH that is currently in effect or that may be adopted under amendment 28 to the Pacific Coast Groundfish FMP will remain in effect and not be affected by this action.

    b. Can the proposed measure reasonably be expected to adversely affect vulnerable marine or coastal ecosystems, including but not limited to, deep coral ecosystems?

No anticipated effects are expected. An evaluation of the NOAA Deep Sea Coral database reveals that these small area modifications do not open any fishing areas that overlap areas known to support deep sea coral ecosystems.

    c. Can the proposed measure reasonably be expected to adversely affect biodiversity or ecosystem functioning (e.g., benthic productivity, predator-prey relationships, etc.)?

No anticipated effects are expected. These small area modifications are not likely to result in increased fishing effort by local participants in a manner that would result in impacts to biodiversity of ecosystem functioning.

4. Marine Mammals and ESA Species
    a. Will this management measure result in adverse effects to ESA-listed species and/or non-listed marine mammals and seabirds? If no, describe in a few sentences why not. If yes, is the magnitude of change substantial and why? Describe the mechanism linking the management measure to adverse impacts. For example, changes in fishing gear or methods, changes in the temporal and/or geographic distribution fishing effort.

No anticipated effects are expected. These small area modifications are not likely to result in increased fishing effort by local participants in a manner that would result in impacts to ESA-listed species.

5. Social and Economic
    a. Will this management measure change the distribution of catch opportunity among user groups, fishing communities, states, or regions? If no, describe in a few sentences why not. If yes, is the magnitude of the change substantial? Why is it substantial? For example, which user groups are likely to see increased catch opportunity? Which may lose catch opportunity?

Since these modifications are identified on a localized area basis, no major changes among user groups and fishing communities are anticipated. These modifications have the potential to improve fishing operations and the fishing communities they serve to a very small degree by improving the alignment of RCA boundaries to depth contours and by reducing confusion in interpreting RCA boundaries. It is anticipated that no negative impacts will be experienced by other fishing groups as a result of these modifications.

    b. Can the proposed action reasonably be expected to significantly affect public health or safety?

No anticipated effects.

6. Cumulative effects

Past fishery and non-fishery actions have created the baseline conditions. For fishery management actions, consider current (put into place recently but the effects may not be visible) or "reasonably foreseeable future items (actions that the Council is moving forward with). For Specs, consider the 19/20 preferred alternative and the routine management measures.

Repeat each set of questions for affected resources (Groundfish, other fish, EFH, ecosystems, ESA species, marine mammals, social, and economic).

a. Does the proposed management measure have non-negligible adverse effects to the resource? *If none, then stop and proceed to the next resource.*
b. Is it likely that any current or future fishery management actions may have overlapping effects with this management measure on the resource?
c. Is it likely that any current or future non-fishery management actions may have overlapping effects with this management measure on the resource?
d. Qualitatively or quantitatively, add the effects in (a), (b), and (c) projected to the end of 2020. Can the sum of the effects be considered 'significant'? Consider both positive and negative effects.
e. Whether significant or not, what is the proposed new management measure's contribution to the total effect? E.g., the incremental impact from this management measure to the cumulative effects on groundfish is negligible/high/medium.

Groundfish – There are no cumulative effects to groundfish because these small area modifications are not likely to result in increased fishing effort by local participants in a manner that would result in impacts to groundfish. The incremental impact from this management measure to the total cumulative effects on groundfish is negligible.

Other Fish – There are no cumulative effects to state-managed species because these small area modifications are not likely to result in increased fishing effort that would result in impacts to other fish in this area. The incremental impact from this management measure to the total cumulative effects on other fish species is negligible.

EFH – There are no cumulative effects to EFH because no changes are proposed to existing EFH inside the RCA as part of this management measure. The incremental impact from this management measure to the total cumulative effects on EFH is negligible.

Ecosystem – There are no cumulative effects to ecosystems because the proposed management measure is not expected to adversely affect vulnerable marine or coastal ecosystems or adversely affect biodiversity. The incremental impact from this management measure to the total cumulative effects on the ecosystem is negligible.

ESA species – There are no cumulative effects to ESA species because these small area modifications are not likely to result in increased fishing effort that would result in impacts to ESA listed species in this area. The incremental impact from this management measure to the total cumulative effects on ESA species is negligible.

Marine mammals – There are no cumulative effects to marine mammals because these small area modifications are not likely to result in increased fishing effort that would result in impacts to marine mammals in this area. The incremental impact from this management measure to the total cumulative effects on marine mammals is negligible.

Social – There are no cumulative social effects because this management measure is not expected to change distribution of fishing effort among user groups. The incremental impact from this management measure to the total cumulative effects on social impacts is negligible.

Economic – There are no cumulative economic effects because these small area modifications are not likely to result in increased fishing effort that would impact the groundfish fishery in this area. The incremental impact from this management measure to the total cumulative effects on economic impacts is negligible.

7. Other
    a. Are the proposed action's effects on the quality of the human environment likely to be highly controversial? (science of the effects, not the perception)

These small area modifications are not likely to result in increased fishing effort. Therefore, anticipated effects are not expected to be highly controversial.

    b. Are the proposed action's effects on the human environment likely to be highly uncertain or involve unique or unknown risks?

Similar RCA line coordinate changes have been made numerous times in prior biennial specification processes. In addition, these small modifications are not likely to result in increased fishing effort. Therefore, the proposed action's effects on the human environment are not likely to be highly uncertain or involve unique or unknown risks.

8. MSA National Standards
    a. Describe how the management measure is consistent with the 10 MSA National Standards.

The intent of RCAs is to protect overfished species by preventing fishing in areas where these species of concern are more likely to be found. This management measure will not jeopardize the safeguards of the RCAs and will increase the clarity and accuracy of the boundaries that define these areas. Clear and accurate boundaries may increase the likelihood that participants will more efficiently reach their individual harvest targets, and fishery sectors' harvest limits while protecting overfished species. This would address National Standard 1.

Adjustments to RCA lines are necessary because discrepancies exist between the RCA lines and the depth contours that they are based on. Best available fathom isobaths were used to achieve better alignment of RCA boundary lines to isobaths, which is consistent with National Standard 2.

Improvements to the clarity of the RCA boundaries are consistent with National Standard 5 because improvements will reduce confusion, which will increase efficiency and reduce costs.

Inherent in the RCA system, the goals of promoting conservation and minimizing bycatch of species of concern and non-target species has been addressed. This management measure improves RCAs by providing slight modifications to better match depth contours, thus meeting National Standard 9.

Attachment 2: Maps of proposed modifications to 75, 100, 125, and 150 fm RCA line waypoints.

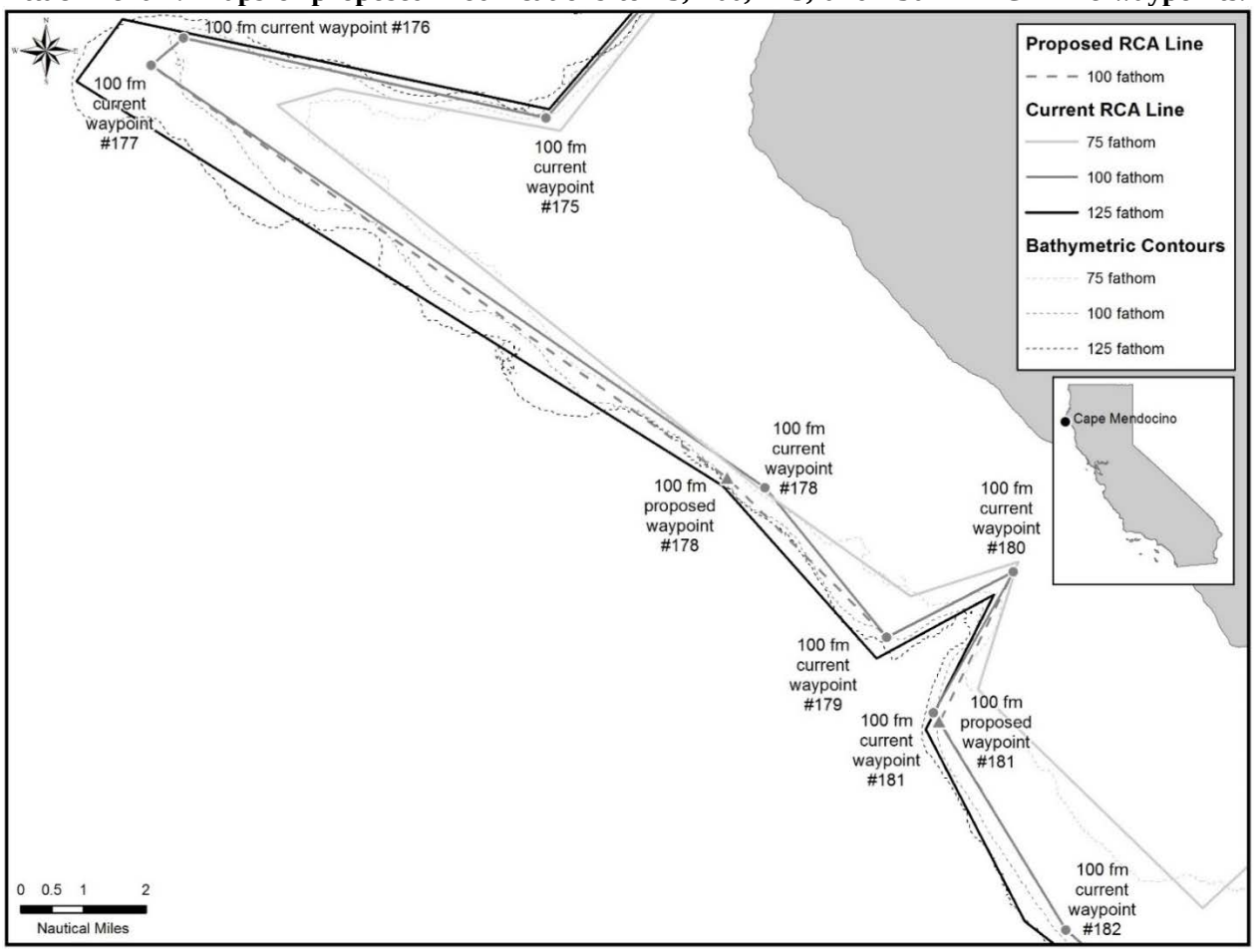


Figure C-3. Proposed 100 fm RCA line changes at Spanish Canyon. This proposed change would decrease the size of the limited entry trawl RCA by 2.7 mi² but increase the size of the non-trawl RCA north of 40°10' N. latitude by 1.7 mi².

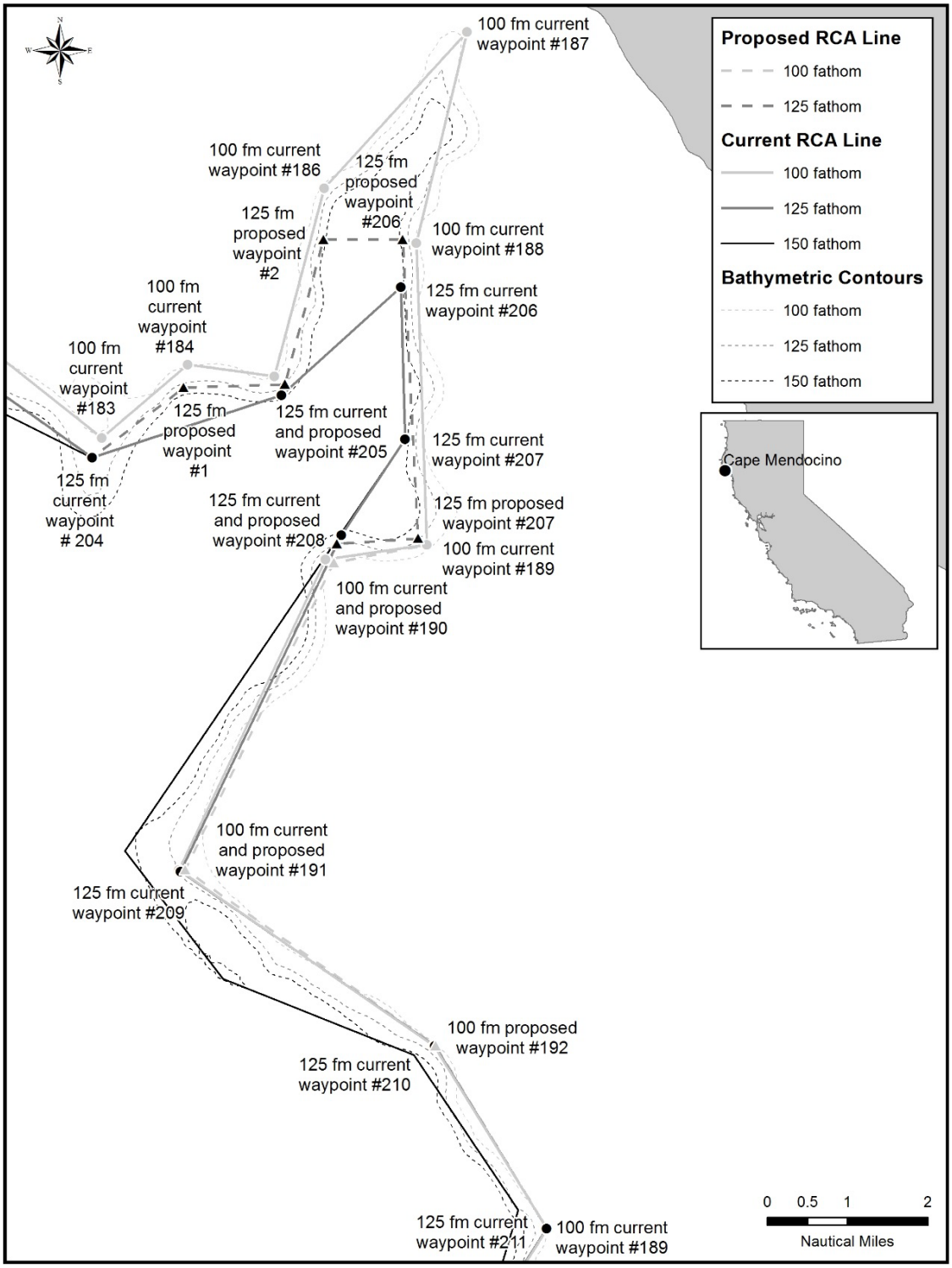


Figure C-4. Proposed 100 and 125 fm RCA line changes at Delgada Canyon. The proposed 100 fm change would increase the size of the limited entry trawl RCA by 0.4 mi². The proposed 125 fm change would decrease the size of the non-trawl RCA by 2.0 mi².

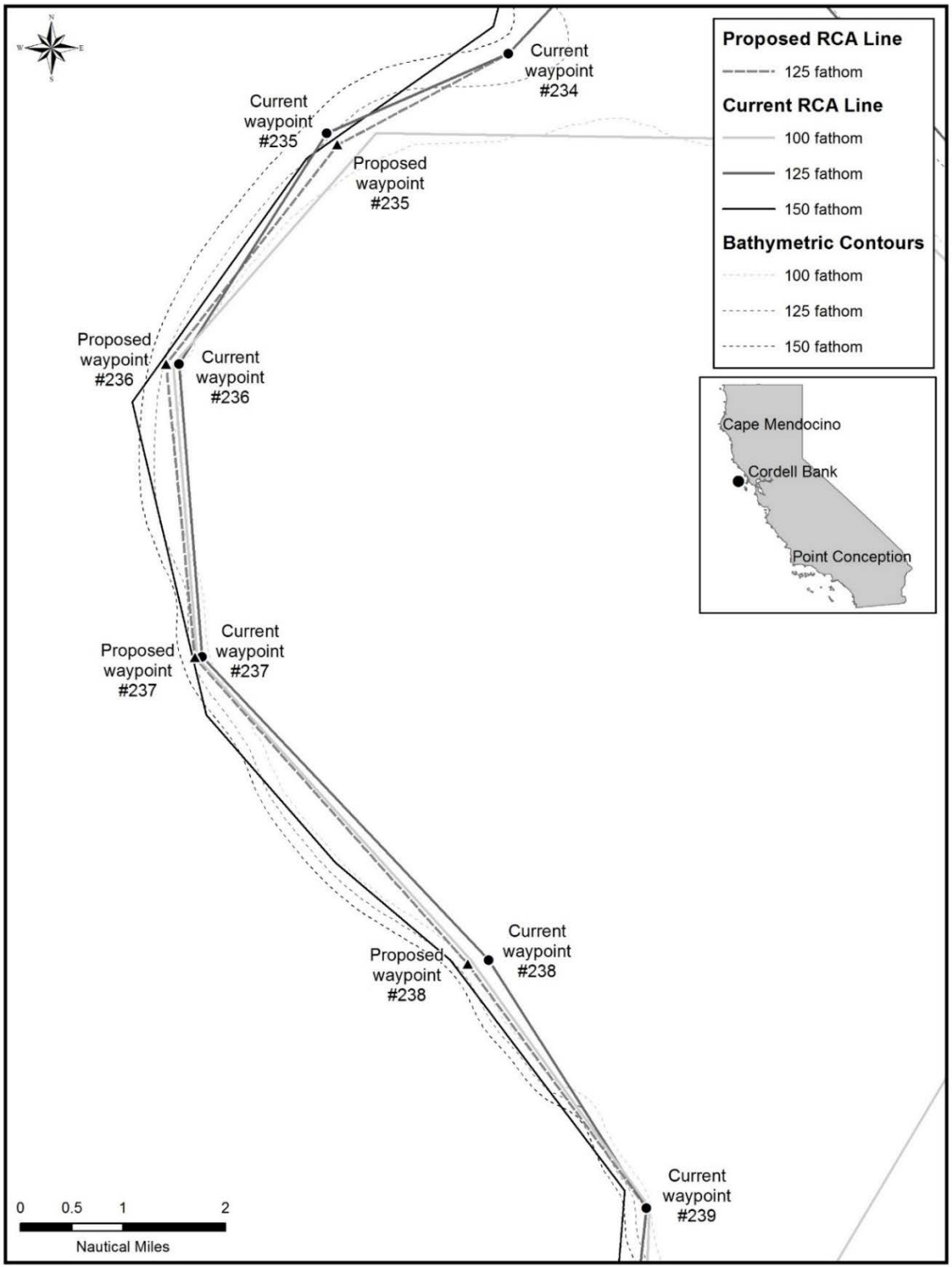


Figure C-5. Proposed 125 fm RCA line changes at Cordell Bank. The proposed 125 fm change would increase the size of the non-trawl RCA by 0.7 mi².

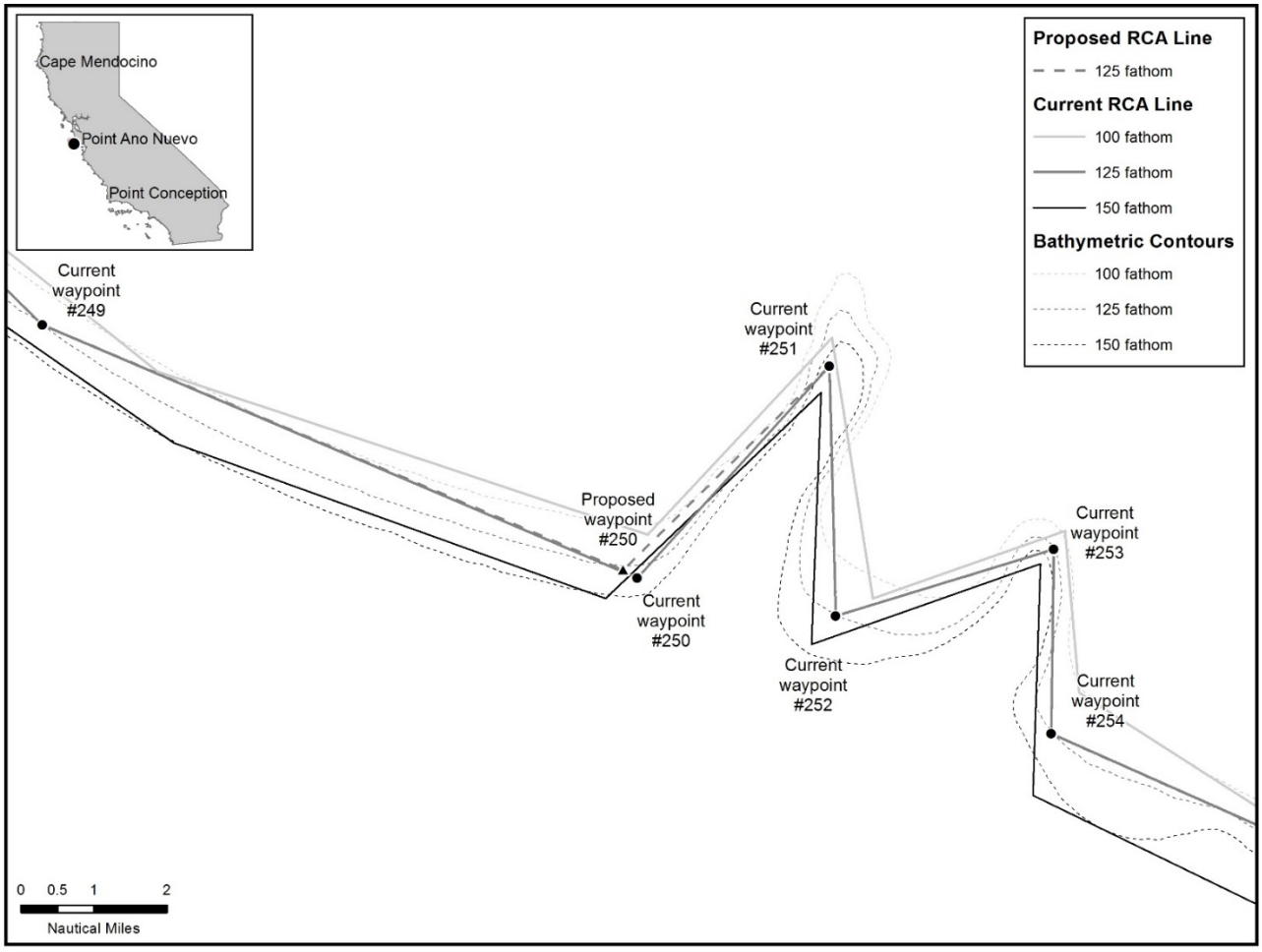


Figure C-6. Proposed 125 fm RCA line changes at Point Año Nuevo. The proposed 125 fm change would decrease the size of the non-trawl RCA by 0.4 mi².

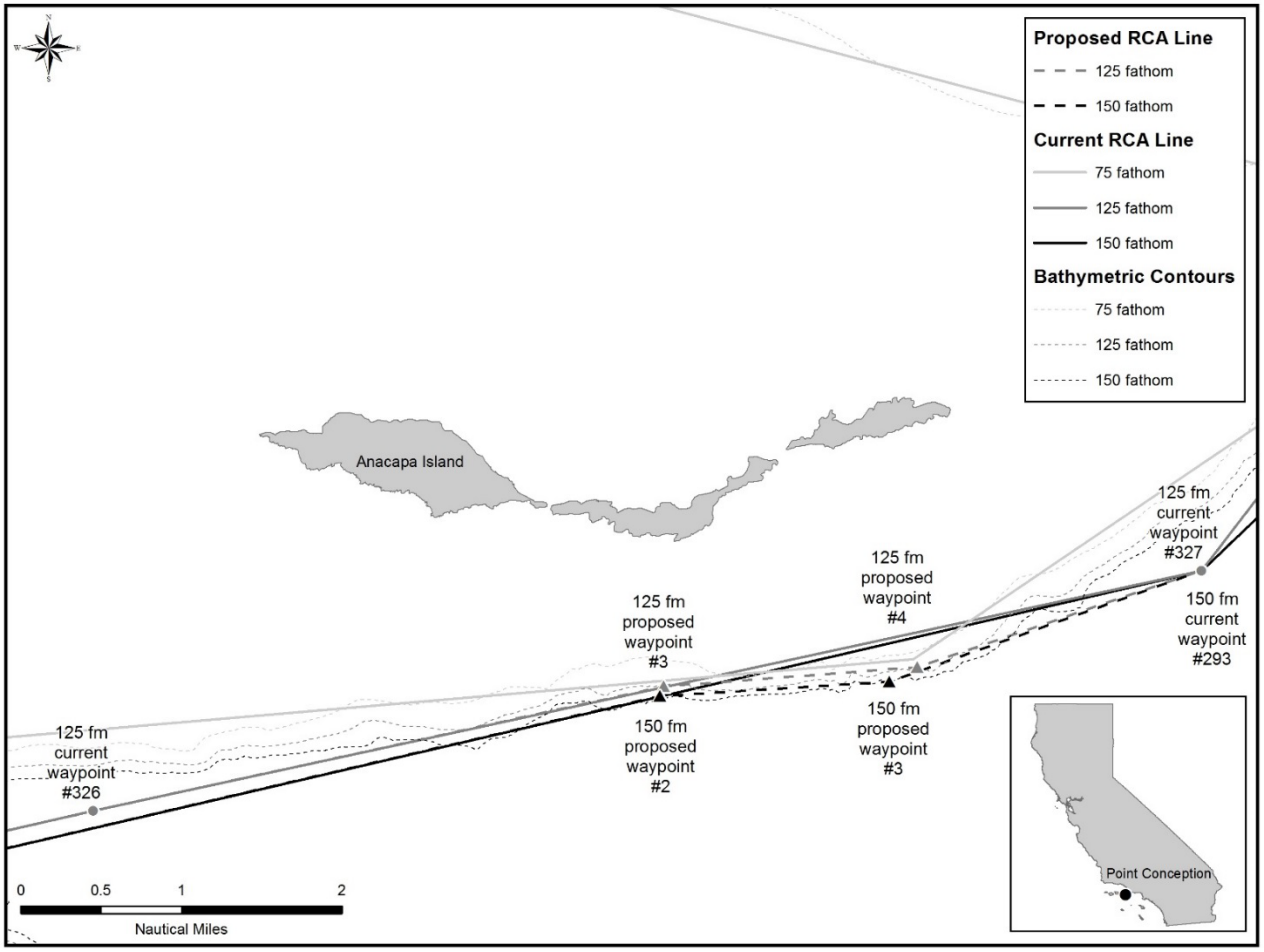


Figure C-7. Proposed 125 and 150 fm RCA line changes at Anacapa Island. The proposed 150 fm change would increase the size of the non-trawl RCA by 0.5 mi².

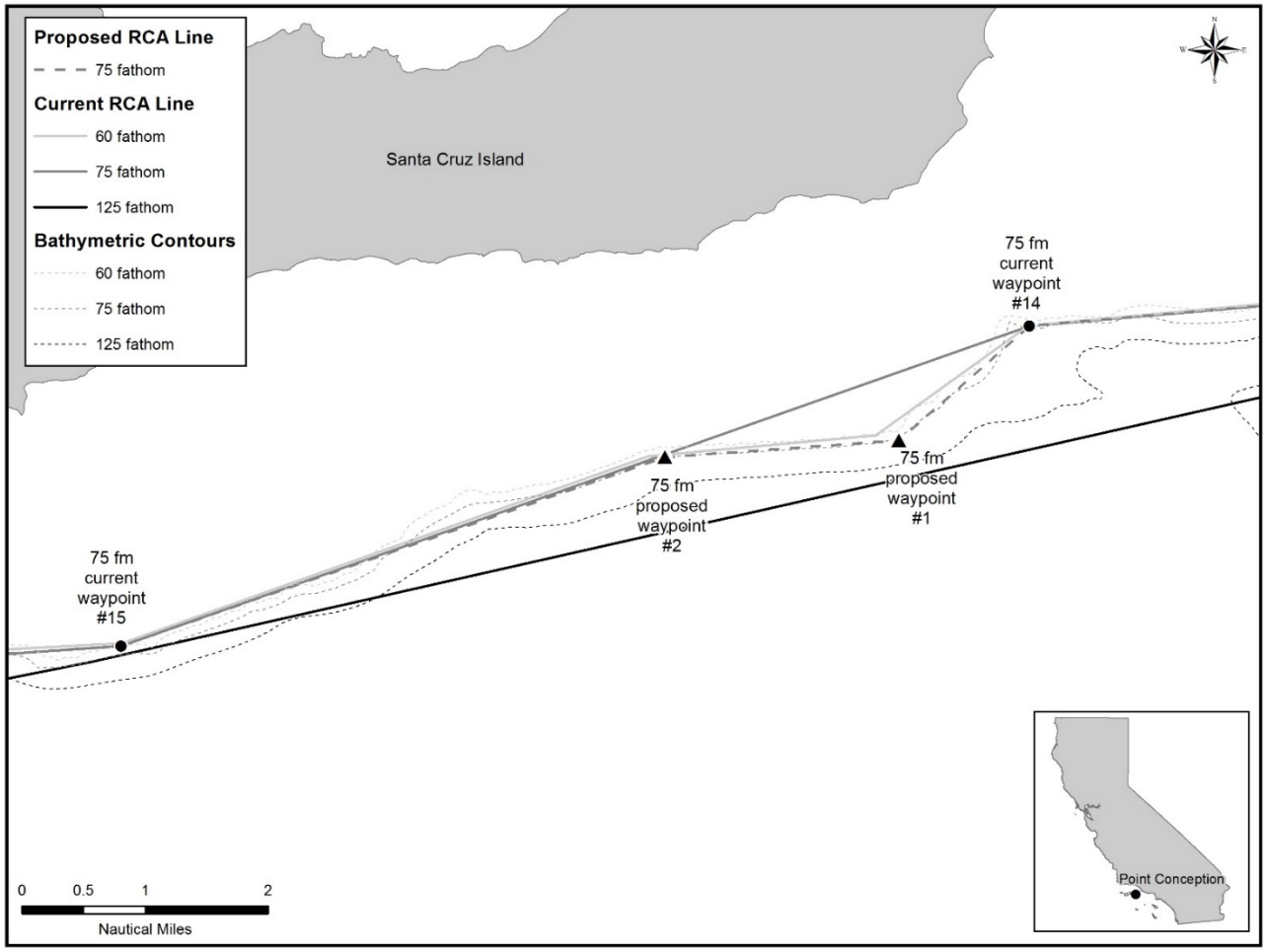


Figure C-8. Proposed 75 fm RCA line changes at Santa Cruz Island. The proposed 75 fm change would decrease the size of the non-trawl RCA by 1.2 mi².

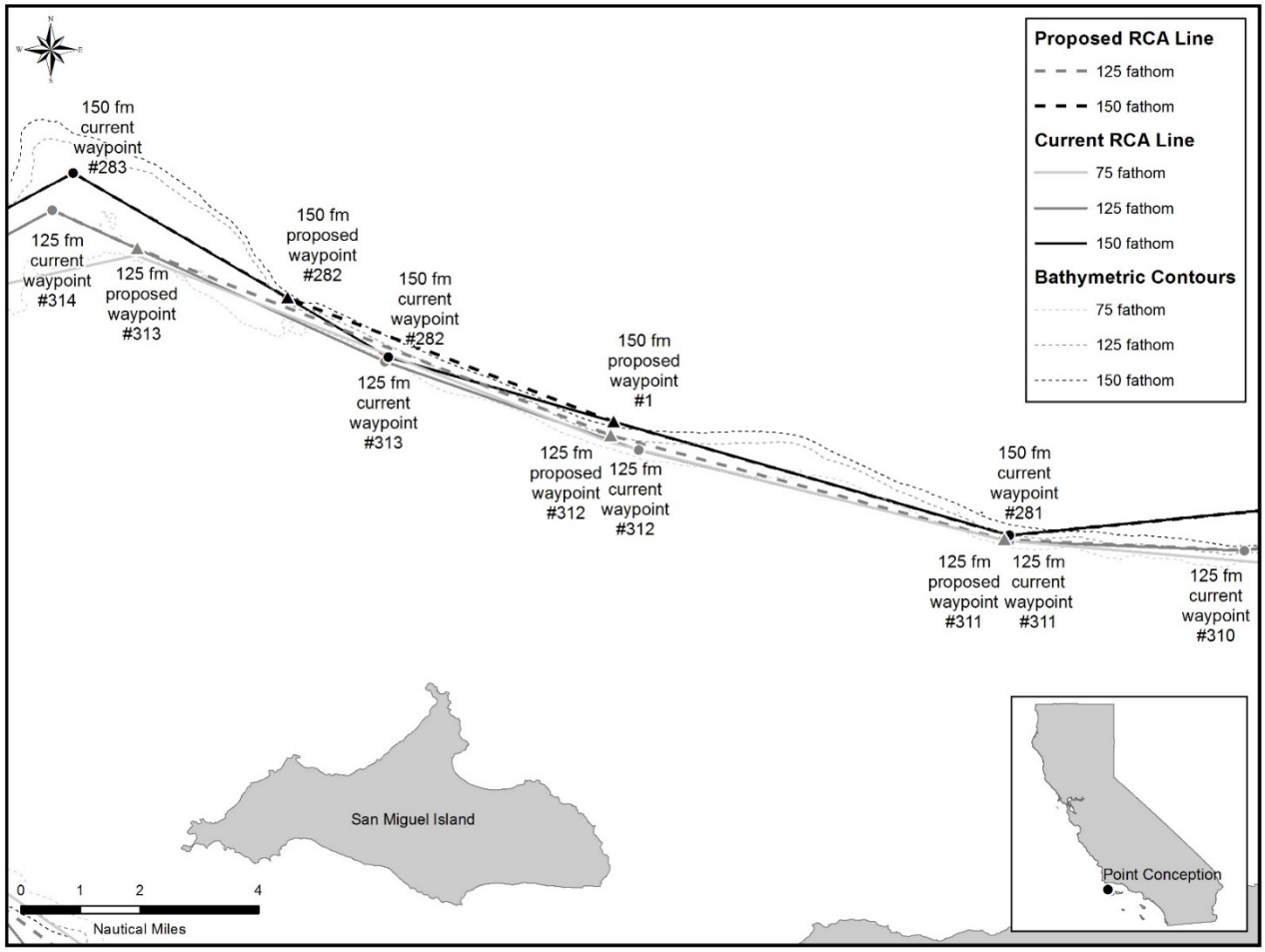


Figure C-9. Proposed 125 and 150 fm RCA line changes at San Miguel Island. The proposed 150 fm change would increase the size of the limited entry trawl and non-trawl RCAs by 1.3 mi².

Attachment 3. Coordinate tables for proposed changes to the 75 fm, 100 fm, 125 fm, and 150 fm RCA lines.

Table C-20. Coordinates for proposed modifications to the "75 fm (137 m) depth contour around the northern Channel Islands off the state of California" RCA line south of 34°27' N. latitude.

Waypoint Number	Action	LatDeg Old	LatMin Old	LongDeg Old	LongMin Old	LatDeg New	LatMin New	LongDeg New	LongMin New
Santa Cruz Island									
14	No change	33	58.7	119	32.21				
New #1	Add					33	57.77	119	33.49
New #2	Add					33	57.64	119	35.78
15	No change	33	56.12	119	41.1				

Table C-21. Coordinates for proposed modifications to the "100 fm (183 m) depth contour used between the U.S. border with Canada and the U.S. border with Mexico" RCA line between 42° N. latitude and 34°27' N. latitude.

Waypoint Number	Action	LatDeg Old	LatMin Old	LongDeg Old	LongMin Old	LatDeg New	LatMin New	LongDeg New	LongMin New
Spanish Canyon									
177	No change	40	16.29	124	34.36				
178	Move	40	10	124	21.12	40	10.13	124	21.92
179	No change	40	7.7	124	18.44				
180	No change	40	8.84	124	15.86				
181	Move	40	6.53	124	17.39	40	6.39	124	17.26
182	No change	40	3.15	124	14.43				
Delgada Canyon									
189	No change	40	1.17	124	8.8				
190	Move	40	1.03	124	10.06	40	1	124	9.96
191	Move	39	58.07	124	11.89	39	58.07	124	11.81
192	Move	39	56.39	124	8.71	39	56.39	124	8.69
193	No change	39	54.64	124	7.3				

Table C-22. Coordinates for proposed modifications to the "125 fm (229 m) depth contour used between the U.S. border with Canada and the U.S. border with Mexico" RCA line between 42° N. latitude and 33°50' N. latitude.

Waypoint Number	Action	LatDeg Old	LatMin Old	LongDeg Old	LongMin Old	LatDeg New	LatMin New	LongDeg New	LongMin New
Delgada Canyon									
204	No change	40	2	124	12.97				
New #1	Add					40	2.67	124	11.83
205	Move	40	2.6	124	10.61	40	2.7	124	10.57
New #2	Add					40	4.08	124	10.09
206	Move	40	3.63	124	9.12	40	4.08	124	9.1
207	Move	40	2.18	124	9.07	40	1.23	124	8.91
208	Move	40	1.26	124	9.86	40	1.18	124	9.92
209	No change	39	58.05	124	11.87				
Cordell Bank									
234	No change	38	6.95	123	28.03				
235	Move	38	6.34	123	29.80	38	6.25	123	29.70
236	Move	38	4.57	123	31.24	38	4.57	123	31.37
237	Move	38	2.33	123	31.02	38	2.32	123	31.09
238	Move	38	0.00	123	28.23	37	59.97	123	28.43
239	No change	37	58.10	123	26.69				
Point Ano Nuevo									
249	No change	37	0.99	122	35.51				
250	Move	36	58.23	122	27.36	36	58.31	122	27.56
251	No change	37	0.54	122	24.74				
San Miguel Island									
310	No change	34	6.85	120	5.60				
311	Move	34	6.99	120	10.37	34	7.03	120	10.47
312	Move	34	8.53	120	17.89	34	8.77	120	18.46
313	Move	34	10	120	23.05	34	11.89	120	28.09
314	No change	34	12.53	120	29.82				
Anacapa Island									
326	No change	33	58.48	119	27.9				
New #3	Add					33	59.24	119	23.61
New #4	Add					33	59.35	119	21.71
327	No change	33	59.94	119	19.57				

Table C-23. Coordinates for proposed modifications to the "150 fm (274 m) depth contour used between the U.S. border with Canada and the U.S. border with Mexico" RCA line around the northern Channel Islands.

Waypoint Number	Action	LatDeg Old	LatMin Old	LongDeg Old	LongMin Old	LatDeg New	LatMin New	LongDeg New	LongMin New
San Miguel Island									
281	No change	34	7.1	120	10.37				
282	Move	34	10.08	120	22.98	34	11.07	120	25.03
New #1	Add					34	9	120	18.4
283	No change	34	13.16	120	29.4				
Anacapa Island									
292	No change	33	55.88	119	41.05				
New #2	Add					33	59.18	119	23.64
New #3	Add					33	59.26	119	21.92
293	No change	33	59.94	119	19.57				

C.6 *New Management Measures Analysis*

New management measures may be adopted during the biennial specifications process and include those measures where the impacts have not yet been previously analyzed and/or have not been previously implemented in regulation. The Council has adopted several new management measures for analysis, as follows.

C.6.1 Stock Complex Restructuring

Part A

1. Describe the new management measure.
    - What stocks will it affect? What fisheries will it affect? What is the geographic scope?

This proposed new management measure is a reorganization of stock complexes based on requests and rationale from the Oregon Department of Fish and Wildlife (ODFW) and the Washington Department of Fish and Wildlife (WDFW) (Agenda Item E.9.a, Supplemental ODFW Report 1, September 2017 and Agenda Item F.6.a, WDFW Report 1, November 2017, respectively). There are two separate proposals being considered that affect several stocks that mainly occur in nearshore state waters.

In Stock Complex Proposal 1 (Table C-24), Oregon blue/deacon rockfish (BDR) could continue to be managed within the Nearshore Rockfish complex north of 40°10' N. latitude (status quo) or be removed from the complex and paired with Oregon black rockfish to form a new Oregon black/BDR Complex (Option 1). Note that blue and deacon rockfish are separate species, but are referred to collectively since they were assessed together and therefore have joint harvest specifications.

There are three new options within Stock Complex Proposal 2 that pertain to the Other Fish Complex (Table C-25). Option 1 is the ODFW proposal to remove Oregon kelp greenling from the Other Fish Complex and pair it with Oregon cabezon to form a new Oregon kelp greenling/cabezon complex. Option 2 is the WDFW proposal to remove Washington kelp greenling and Washington cabezon from the Other Fish Complex and pair both together to form a new Washington kelp greenling/cabezon complex. Option 3 includes both Option 1 and Option 2.

These complex proposals pertain primarily to the commercial nearshore and recreational fisheries, as these are shallow water stocks infrequently encountered by the trawl sectors or other fisheries (< 1 mt removal each of each per year). The one exception is that removals of leopard shark have been as high as 5-10 mt for shoreside trawl, California halibut, and incidental OA fisheries each; however, these removals are not noteworthy since total removals from all fisheries have been 15 percent or less of the leopard shark component of the Other Fish Complex ACL.

Although the geographic scope of these complex proposals primarily pertains to Oregon and Washington, possible implications to California are also discussed, as the proposals would affect harvest specifications that include California (e.g., Other Fish Complex is coastwide).

Table C-24. Stock Complex Proposal 1. Alternative stock or stock complex harvest specifications for Oregon black rockfish (RF), Oregon blue/Deacon (BDR), and the Nearshore RF North of 40°10' N. lat. complex.

Option	Stock or Complex	2019			2020		
		OFL	ABC	ACL	OFL	ABC	ACL
Status Quo	Black RF (OR)	565.0	515.8	515.8	561.0	512.2	512.2
	Nearshore RF North Complex	203.2	182.9	182.9	200.4	180.5	180.5
	---*BDR (OR) a/*	112.3	101.5	101.5	108.8	98.4	98.4
Option 1	**New:** Black RF/BDR Complex (OR)	677.3	617.4	617.4	669.8	610.5	610.5
	Nearshore RF North Complex	90.9	81.4	81.4	91.6	82.1	82.1

a/ Values contribute to the Nearshore RF North Complex.

Table C-25. Stock Complex Proposal 2. Alternative stock or stock complex harvest specifications for the stock complex proposal that pertains to Other Fish complex, kelp greenling, and cabezon.

Option	Stock or Complex	2019			2020		
		OFL	ABC	ACL	OFL	ABC	ACL
Status Quo	Cabezon (OR)	49.0	46.8	46.8	49.0	46.8	46.8
	Other Fish	479.5	420.2	420.2	465.0	406.4	406.4
	---*Cabezon (WA) a/*	5.5	4.6	4.6	5.4	4.5	4.5
	---*Kelp Greenling (CA) a/*	118.9	99.2	99.2	118.9	99.2	99.2
	---*Kelp Greenling (OR) a/*	180.9	171.1	171.1	166.5	157.5	157.5
	---*Kelp Greenling (WA) a/*	7.1	5.9	5.9	7.1	5.9	5.9
	---*Leopard Shark a/*	167.1	139.4	139.4	167.1	139.4	139.4
Option 1 (ODFW only)	Other Fish	298.6	249.1	249.1	298.5	248.9	248.9
	New: Cabezon/K. Greenling (OR)	229.9	217.9	217.9	215.5	204.3	204.3
Option 2 (WDFW only)	Other Fish	466.9	409.7	409.7	452.5	396.0	396.0
	New: Cabezon/K. Greenling (WA)	12.6	10.5	10.5	12.5	10.4	10.4
Option 3 (Both)	Other Fish	286.0	238.5	238.5	286.0	238.5	238.5
	New: Cabezon/K. Greenling (OR)	229.9	217.9	217.9	215.5	204.3	204.3
	New: Cabezon/K. Greenling (WA)	12.6	10.5	10.5	12.5	10.4	10.4

a/ Values contribute to the Other Fish Complex.

2. What was considered in order to optimize the performance of this measure?

Optimal performance of the stock complex proposals focused on four factors: (1) improving the purpose and benefits of stock complex management (e.g., better meeting stock complex criteria in the FMP (Section 4.7.3) and National Standards and enhanced management flexibility; (2) changes to fishery allocations based on the alternative ACL structures (noting no FMP complications since none have formal Amendment 21 allocations); (3) and ability to meet conservation objectives (e.g., ODFW indicated they would set their state HGs to the component stocks' ACL contributions regardless of whether they are for individually managed stocks or as contributions to the complex, to prevent use of "inflators").

In addition, the GMT showed that Stock Complex Proposal 1 would not be of detriment to either Washington or California, as their state HGs (federally established) of the Nearshore Rockfish North

Complex would be the same for both options (i.e., OR blue/deacon left in the complex or taken out) (Agenda Item F.9.a, Supplemental GMT Report 3, November 2017).

3. What and when was the Council's decision, and how did it arrive at the decision?

The Council decided to further investigate the stock complex proposals as a new management measure for the 2019-2020 biennium during the November 2017 PFMC meeting. The decision was presumably based in large part due to the ODFW (Agenda Item E.9.a, Supplemental ODFW Report 1, September 2017) and WDFW (Agenda Item F.9.a, WDFW Report 1, November 2017) reports supporting complex reorganization.

4. Is there any other background information that was important to the Council's decision? For example, has this measure been previously discussed by the Council, if so what was the outcome?

Reconfiguration of stock complexes is a fairly routine action, with the last major overhaul occurring during the 2015-2016 biennium (Agenda Item H.4, Situation Summary, November 2013). Note that the majority of groundfish stocks are managed within complexes and not individually (77 percent; 114 of 148). These tallies include the same species from different management areas (e.g., OR black rockfish vs. WA black rockfish).

As mentioned in the WDFW report (Agenda Item F.9.a, WDFW Report 1, November 2017), the current composition of the Other Fish Complex pertaining to Proposal 2 has not been given much thought in regards to the practicality of management of the contributor stocks. The Other Fish Complex originated as a compilation of stocks that did not match well with other complexes, and consisted of very dissimilar species (e.g., ratfish, skates, sharks, grenadier, greenling, cabezon, and codling). The current configuration of the Other Fish Complex is a result of some of these stocks being removed from the complex, as ecosystem component species, and big skate being removed to be managed with its own stock-specific harvest specifications. In summary, the WDFW report is correct that the current Other Fish Complex configuration of cabezon, greenlings, and leopard shark is an artifact from the past that likely warrants further consideration.

NMFS was supportive of further analysis of both stock complex proposals in the harvest specifications package (Agenda Item F.9.a, Supplemental NMFS Report 1, November 2017). As a component of this measure, NMFS recommends specific sideboards to prevent harvest of Oregon cabezon or Oregon black rockfish to exceed their overfishing limit (OFL) contributions within any new stock complex. These sideboards would help alleviate some of the concerns raised during the November 2017 Council discussion to ensure that inflator stocks could not be used as means to breach component OFLs of other stocks (concept described below).

Finally, the SSC notes "that OFLs endorsed from stock assessments can be used as stand-alone OFLs or as OFL contributions to stock complexes, including these stock complex proposals" (Agenda Item F.6.a, Supplemental SSC Report 1, November 2017). In short, all of the proposed complex options would be scientifically justified for Council consideration.

Table C-26 contains the recent historical mortality of species under the proposed stock complex re-configurations. Note that the 2017 Oregon black rockfish ACL and the 2017 Oregon cabezon ACL and OFL have been exceeded based on preliminary data (Agenda Item H.8.a, Supplemental ODFW Report 1, March 2018). As described in the sections below, the ODFW proposals would provide less protection for these stocks but would provide more management flexibility to increase fishery stability.

Table C-26. Historical mortality of species under stock complex re-configurations.

Other Fish Species	2012	2013	2014	2015	2016	2017
Cabezon (WA)	7.048	6.051	5.013	4.678	5.192	5.172
Kelp greenling (WA)	2.145	2.672	2.27	1.47	1.956	1.159
Grand Total	**9.193**	**8.723**	**7.283**	**6.148**	**7.148**	**6.331**

Oregon Kelp Greenling

Year	Commercial GF landings	Commercial GF Disc mort	Rec. Ocean Boat TM	Rec. Shore + Estuary TM	P shrimp TM	IOA	Research	Total Mort	ACL	OFL
2013	21.8	2.4	8.0	19.5	0.0	0.0	<.1	51.7	NA	NA
2014	15.4	6.2	3.8	19.5	0.0	0.0	<.1	44.9	NA	NA
2015	12.9	1.0	4.0	19.5	0.0	0.0	<.1	37.4	NA	NA
2016	8.4	0.6	2.7	19.5	0.0	0.0	<.1	31.2	NA	NA
2017 b/	10.5	**2.6**	3.1	14.6	**0.0**	0.0	<.1	30.8	NA	NA

a/ Not recent estimates, but based on historical MRFSS sampling...reduced in 2017 to account for season closure

b/ Discard mortality estimates not finalized until Aug 2018 - based on average

Oregon Cabezon

Year	Commercial GF landings	Commercial GF Disc mort	Rec. Ocean Boat TM	Rec. Shore + Est TM a/	P shrimp TM	IOA	Research	Total Mort	ACL	OFL
2013	19.8	0.8	12.4	1.4	0.0	0.0	<.1	34.4	47.0	49.0
2014	15.4	0.9	9.1	1.4	0.0	0.0	<.1	26.8	47.0	49.0
2015	16.3	2.3	10.3	1.4	0.0	0.0	<.1	30.3	47.0	49.0
2016	15.9	1.2	11.4	1.4	0.0	0.0	<.1	29.9	47.0	49.0
2017 b/	28.5	1.3	22.0	0.3	0.0	0.0	<.1	52.1	47.0	49.0

a/ Not recent estimates, but based on historical MRFSS sampling...0.3 is result of prime S+E catch month closed in only 2017

b/ Discard mortality estimates not finalized until Aug 2018 - based on average

Oregon Black Rockfish

Year	Commercial GF landings	Commercial GF Disc mort	Rec. Ocean Boat TM	Rec. Shore + Estuary TM a/	P shrimp TM	IOA	Research	Total Mort	ACL	OFL
2013	106.4	1.6	315.7	13.7	NA	NA	<.1	437.3	NA	NA
2014	122.5	1.8	349.6	13.7	NA	NA	<.1	487.6	NA	NA
2015	121.3	1.8	462.9	13.7	NA	NA	<.1	599.7	NA	NA
2016	105.2	1.6	417.2	13.7	NA	NA	<.1	537.6	NA	NA
2017 b/	124.0	1.9	407.0	10.3	NA	NA	<.1	543.1	527	577

a/ Not recent estimates, but based on historical MRFSS sampling...reduction in 2017 reflects fishery closure

b/ Preliminary projection. Final estimates provide by WCGOP in late summer 2018.

c/ Not available in WCGOP total mortality reports since OR black and CA black were estimated together, although negligble for both

d/ Nearshore model based estimate based on WCGOP observed hauls - is not an official WCGOP estimate since those only n4010

Oregon BDR (blue/deacon										
Year	Commercial GF landings	Commercial GF Disc mort	Rec. Ocean Boat TM	Rec. Shore + Estuary TM a/	P shrimp TM	IOA	Research	Total Mort	ACL	OFL
2013	5.0	1.7	23.7	0.0	NA	NA	<.1	30.4	NA	NA
2014	3.9	1.3	18.2	0.0	NA	NA	<.1	23.5	NA	NA
2015	1.5	0.5	29.7	0.0	NA	NA	<.1	31.7	NA	NA
2016	2.1	0.7	21.2	0.0	NA	NA	<.1	23.9	NA	NA
2017 b/	5.1	**1.7**	24.4	0.0	**NA**	NA	<.1	31.2	NA	NA

a/ Not recent estimates, but based on historical MRFSS sampling...0.3 is result of prime S+E catch month closed in only 2017
b/ Preliminary projection. Final estimates provide by WCGOP in late summer 2018.
c/ Not available in WCGOP total mortality reports for OR BDR (only for entire area north of 4010 since in complex)
d/ Nearshore model based estimate based on WCGOP observed hauls - is not an official WCGOP estimate since those only n4010

Part B

3. What is the objective of this management measure?
    - Does it have a conservation purpose? (e.g., managing catch within ACLs? mitigating impacts to habitat or protected species?) Does it have a social/economic purpose? (e.g., allowing increased opportunity to catch target species? Does it have a social benefit of making fishing opportunity among different user groups more equitable?)

The primary objectives of the stock complex proposals are: (1) better alignment of stocks per the complex goals and definitions as defined in the FMP and National Standard 1; (2) reduced management complexity; and (3) enhanced management flexibility (e.g., "easier ability to implement inseason actions").

The stocks being considered in the stock complex proposals (i.e., kelp greenling, cabezon, black rockfish, blue rockfish, and deacon rockfish) are predominately shallow water nearshore stocks that occur primarily within state waters, and thus nearly all the removals (>99 percent for all) are attributed to the recreational and commercial nearshore fisheries that are subject to joint state and Federal management. More conservative state regulations exist for these fisheries (e.g., bag limits, trip limits, and limited entry state permitting for the nearshore), and the WDFW and ODFW reports speak to these complex proposals as a means to improve their management capabilities. In summary, the primary objectives and benefits are social (e.g., enhanced management ability and flexibility).

4. The following screening is intended to help NMFS understand the broad implications of the management measure and to determine the appropriate NEPA compliance strategy.

d. How would you describe this new management measure (may select more than one)
    - ❑ X Technical correction or a change to a fishery management action or regulation, which does not result in a noticeable change in any of the following: fishing location, timing, effort, authorized gear types, or harvest levels.
    - ❑ Has potential for noticeable change to any of the following: fishing location, timing, effort, authorized gear types, or harvest levels.
    - ❑ Designed to mitigate some other environmentally negative effect (e.g., cap, closed area, bag limit).
    - ❑ X Designed to mitigate a negative economic or social effect.
    - ❑ X Applies to only a small area of the total EEZ.

e. What resource(s) would the management measure likely affect, either positively or negatively?
    - ❑ Physical EFH or Ecosystems

- ❑ Biological Resources (target, non-target species)
- ❑ Protected Resources (mammals, ESA-listed)
- ❑ X Economic, social, cultural

f. If the management measure is mitigating or offsetting an effect on a resource, identify that resource. NA

- ❑ Physical EFH or Ecosystems
- ❑ Biological Resources (target, non-target species)
- ❑ Protected Resources (mammals, ESA-listed)
- ❑ Economic, social, cultural

Part C - Keeping in mind the responses provided in part 2 above, briefly answer the following questions. Please focus on the issues of importance; if there are no potential effects, say 'no anticipated effects.' Remember both positive and negative effects.

9. Groundfish
    a. How does any change in catch relate to harvest specifications and the risk that overfishing will occur? Can the proposed measure reasonably be expected to adversely affect managed fish species?

Risk of overfishing

As mentioned above, the majority of groundfish stocks on the US West Coast are managed within complexes. The proposed reconfigurations do result in changes to harvest specifications based on how the OFL, acceptable biological catch (ABC), and ACL contributions of individual stocks are combined within a complex. For example, if OR blue/deacon were removed from the Nearshore Rockfish North Complex, then it would reduce the harvest specifications of the complex which are based on the sum of all the contributors.

The Groundfish FMP defines that "overfishing" is used to denote situations where catch exceeds, or is expected to exceed, the established OFL. For complexes, the OFL established in regulation is the sum of the OFL contributions from each contributor (Table 1a to Part 660, Subpart C of the West Coast Groundfish Regulations). None of the candidate stocks or stock complexes of the proposals have been overfished in the past (WCGOP Total Mortality Reports).

Risks of overfishing by definition are greater for individually managed stocks than for stocks managed within complexes. For example, it would be considered overfishing if the OFL of stock A were exceeded if managed individually but not if the OFL contribution of stock A were exceeded as part of a complex (as long as the complex OFL were not exceeded). Therefore, by definition, the complex proposals reduce the risk of overfishing since there would be a greater shift towards complex management (i.e., Oregon black rockfish and Oregon cabezon which are currently managed individually would be managed within complexes).

Impacts to managed stocks

Shifting to complex management does introduce the potential to adversely affect managed stocks, since stocks managed with stock-specific harvest specifications are provided greater protection that those managed in complexes. That is because management measures are structured not to exceed ACLs of individual stocks, and ACLs of complexes as a whole, whereas the same regulatory rigor does not extend to managing the individual ACL contributions of stocks within a complex except in rare cases (e.g., a Federal HG is currently used for blue/deacon rockfish within the Nearshore Rockfish South Complex).

Accordingly, one of the main concerns with stocks complexes is the use of "inflator" stocks, which means that harvest specifications of a contributing stock (e.g., component OFL or ACL) could be exceeded via coverage from residual from other stocks with low attainment (as long as the total complex OFL or ACL is not exceeded). Concerns with inflator stocks are heightened when there are large differentials in the contributions amongst stocks since residual of a more prolific stock could be similar or greater than the total OFL of lesser stocks.

Note that Proposal 2, Option 2 ("WDFW only") would decrease concerns with "inflator" stocks and instead would provide enhanced protection. That is because WA kelp greenling and WA cabezon would be removed from the Other Fish Complex and managed together as new complex, and in the process, they would be severed from two potential inflators from the Other Fish Complex. Oregon kelp greenling and leopard shark are the potential inflators since they have much higher relative OFLs contributions (>150 mt for each) than WA kelp greenling and WA cabezon (<10 mt for each) and because they are low attainment stocks (<25 percent per year for each) of which the residual could provide inflator cushion. There remains some potential that WA kelp greenling could act as an inflator stock to WA cabezon as recent catch of WA cabezon has been higher than the component ACL, and sufficient residual exists with WA kelp greenling. Management under a state-specific stock complex, however, provides more flexibility to implement management measures needed to keep catch within not only the stock complex ACL but individual stock ACL contributions through state rulemaking.

Conversely, the ODFW proposals create inflator potential that does not currently exist. In Proposal 1, there is currently no inflator potential with Oregon black rockfish since they are managed individually. If paired with Oregon blue/deacon rockfish to form a new Oregon black/blue/deacon complex as proposed (Option 1 of Proposal 1), then blue/deacon rockfish could be used as an inflator for black rockfish, or vice versa.

Similarly, there is currently no inflator potential with Oregon cabezon since they are managed individually. If Oregon kelp greenling are removed from the Other Fish Complex and paired with Oregon cabezon to form a new complex as proposed (Options 1 and 3 of Proposal 2), then Oregon kelp greenling, which are a current potential inflator to the Other Fish Complex (described above), could be used a potential inflator for Oregon cabezon, or vice versa.

There could consequently be concerns with the ODFW proposals due to the 2017 overages of the Oregon black rockfish ACL and the 2017 Oregon cabezon ACL and OFL; however, the March 2018 inseason ODFW report (Agenda Item H.8.a, Supplemental ODFW Report 1, March 2018) documents that there is little conservation risk to the cabezon stock despite the overage:

"A review of recent catch history and the 2009 stock assessment, which informed harvest specifications through 2020, suggests that there is little conservation concern associated with the 2017 overage. The assessment found the stock to be at 52 percent depletion, and included 12-year

forward projections of yield and depletion. These projections assumed that the full OFL would be caught in each year, under the base case catch scenario. From 2009 through 2017, this would have resulted in cumulative total mortality of 441 mt, with the depletion level gradually coming down to the target reference point of 40 percent at the end of 2017.

However, actual cabezon catches in Oregon over this time period have been much lower, totaling 346.1 mt (cumulative), which is closer to the alternative low-catch scenario in the 2009 assessment's decision table (Figure 1). This has left 94.9 mt more biomass in the water than was anticipated by the 2009 assessment, despite the 5.1 mt ACL overage in 2017. In theory, this would put the stock at a higher depletion level today than 40 percent; for reference, under the low-catch scenario, depletion was projected to be 54 percent at the end of 2017."

The ODFW inseason report primarily focuses on cabezon presumably due to the OFL overage, but also speaks briefly to the 2017 overage of the Oregon black rockfish ACL. While Oregon cabezon has been managed with stock-specific harvest specifications since 2009, Oregon black rockfish was previously managed (before 2017) as single stock south of 46°16' north latitude).

There was however an Oregon black rockfish HG before 2017 that ODFW successfully managed to. As shown in Table 1 from the ODFW inseason report, the multi-year total mortality from 2012-2016 (2,062 mt) was 88.9 percent of the multi-year total HGs (2,320 mt). Although the 2015 Oregon black rockfish HG was exceeded by 20 mt, this was offset by 278 mt that was not utilized in the other years (i.e., 2013, 2014, and 2016).

Note that if the proposal to lump Oregon black rockfish with Oregon blue/deacon were approved, it would represent a shift back to the pre-2017 management structure for Oregon black rockfish (i.e., ODFW specified each would be managed with a HG set equal to the component ACL). Again, this would provide less protection, but ODFW has a demonstrated a recent history of being able to manage to their black rockfish HGs.

This also underscores some of the advantages with the complex proposals. If multi-year mortality is tracking well within the multi-year harvest specifications, then there is little conservation-based need for drastic inseason actions for periodic and minor overages. For example, ODFW had to close their 2017 recreational fisheries due to the ACL overage (due to requirement to managed to ACLs), but did not have to close their 2015 fisheries despite going over the HG since the overall multi-year mortality was within limits.

In conclusion, the ODFW complex proposals provide less protection to stocks but provide greater management flexibility to enhance fishery stability. If adopted, it would be detrimental if the enhanced flexibility resulted in chronic ACL/OFL contribution overages. If this were to happen, the Council could consider revoking the complexes at a later date.

Sidebars to prevent harvests in excess of OFL contributions

Again, note that the WDFW proposal would improve protections of managed stocks compared to management in the status quo Other Fish Complex.

Given that the ODFW proposals introduce the potential for use of inflator stocks that could adversely affect Oregon cabezon and Oregon black rockfish, this is presumably the main reason why NMFS recommended that appropriate sideboards be included in the analysis to prevent harvests in excess OFL contributions.

ODFW notes that the 2017 recreational overage issue was the result of unanticipated record high effort during the month of August that overrode the anticipated savings from a 2017 preseason reduction in the state-specified bag limit of black rockfish (Agenda Item E.10.a, Supplemental REVISED ODFW Report 1, September 2017).

To reduce the risk of future overages, Oregon has proposed the following "side-bars":

(1) specified that "if an Oregon black/blue/deacon complex is created, the state of Oregon would then set the harvest guidelines (of total mortality) for black rockfish and for blue/deacon rockfish based on their component ACL contributions, and would monitor and track catch to enable management to these harvest guidelines" Agenda Item E.9.a, Supplemental ODFW Report 1, September 2017. The same was said for Oregon kelp greenling and Oregon cabezon during Council discussion in November 2017 (i.e., managed to ACL contributions).

(2) committed to a more responsive inseason catch monitoring that involves review of preliminary estimates based on a one-week lag instead of the current approach based on a one-month lag (Agenda Item F.13.a, Supplemental ODFW Report 1, November 2017).

(3) reduced their aggregate recreational groundfish bag limit as specified in state regulations from seven to five fish per day for 2018 to prevent quota breaches and better sustain year-round fisheries (http://www.dfw.state.or.us/news/2017/12_dec/120817.asp).

(4) improved their inseason modeling capabilities to account and plan for the volatile nature of the fishery such as the 2017 overage that was based on unexpected record effort. The previous modeling approach only used point estimates, which are sufficient for ball-park estimates if catch and effort remain similar to past years, but do not describe what the plausible outcome of future catch could be based on atypically high or low catch rates or effort. The new modeling do exactly that by providing risks of quota overages that encapsulate the volatility catch rates and effort in the fisheries even for situations that have never occurred before (e.g., possibility that effort in 2019 could break all-time records). The reduction in the state bag limit for 2018 was based in large-part to keep catch within quotas even under higher than normal catch rates and/or efforts (Lynn Mattes, ODFW sport groundfish project leader, personal communication).

(5) promoted development of the sport offshore midwater (longleader) fishery via state and Federal rule in order to increase opportunity for healthy underutilized shelf stocks (e.g., widow and yellowtail rockfishes) that in turn reduces impacts and dependency on shallow water nearshore stocks such as cabezon and black rockfish.

In conclusion, the ODFW proposals do introduce inflator concerns that do not currently exist since their proposed state HGs (state-specified) could be exceeded. However, Oregon has given a commitment that they would manage to the state HGs set equal to the component ACLs if the ODFW complex proposals were adopted and have already taken the above actions to reduce the chance of future overages. Another sideboard that could be used are Federal HGs for stocks managed within the complexes, such as currently used for blue/deacon rockfish in the Nearshore Rockfish South complex. Use of Federal HGs could provide greater justification for the Council to consider Federal inseason reductions.

Potential benefits

In the worst case, there would likely be only rare and minor overages of the Oregon state HGs (set to component ACLs) or component OFLs based on past history and the future commitments. This would not be problematic from a conservation perspective as long as any overages were "paid back" over the span of the ten-year OFL projection period based on the stock assessment output. Note that stock assessments and the resulting OFLs from the projection tables are structured to obtain long-term maximum sustainable yield (MSY); however, this requires that the OFLs be fully removed over the long term (see section 4.4 of the FMP). For individually managed stocks, it is difficult to obtain the ACL in a given year, let alone a multi-year period, since the ACLs are treated as a cap. For stocks managed in a complex, there is greater leeway to manage to ACL or OFL contributions as a target without the need for dire management responses for slight overages.

Complex management therefore provides a more flexible, and holistic, approach to meet long-term MSY and conservation objectives, while enhancing fishery stability. This longer-term, and more holistic, way of thinking is gaining attention at the national level via alternative approaches such as the revised National Standard 1 guidelines that allow consideration for two new carryover provisions (e.g., ACLs) that would allow "paying it forward" and the multi-year catch policy for determining overfishing. While the ODFW proposals introduce inflator concerns that do not currently exist since the Oregon state HGs could be exceeded, the Oregon state HGs and stated courses of proposed state actions would create an extra level of protection compared to the majority of other Federal stocks managed in complexes that are without HGs (state or Federal) or protections.

C.6.2 Remove automatic authority established in conjunction with Amendment 21-3 for darkblotched rockfish and POP in the at-sea sector

Part A

1. Describe the new management measure.
    - What stocks will it affect? What fisheries will it affect? What is the geographic scope?

Under Amendment 21-3, POP and darkblotched rockfish are managed as sector-specific set-asides for the at-sea sectors based on the percentages outlined in section 6.3.2.3 of the FMP and regulations at 660.55. Set-asides will be managed on an annual basis unless there is a risk of a harvest specification being exceeded, unforeseen impact on another fishery, or conservation concerns, in which case inseason action may be taken. However, NMFS has the automatic authority to close either at-sea sector if a sector were projected to exceed their set-aside value for either species and the buffer. There is currently no buffer proposed for analysis in 2019-2020, and therefore, in essence, darkblotched rockfish and POP would be managed as allocations for the at-sea sectors. Under this new management measure, the Council is considering removing the automatic authority for these species so that they are managed like all other at-sea set-asides.

2. What was considered in order to optimize the performance of this measure?

In addition to the original analysis shown in Agenda Item G.2.a, Supplemental WDFW Report 2, June 2016 and Agenda Item F.7.a, WDFW Report, September 2016, the GMT examined the risk of the at-sea sector exceeding the No Action set-asides values using the bootstrap methodology, and the likelihood of exceeding the ACL or impacting another sector. In Section A.2.5, Table A-51 through A-54 showed the risk of the at-sea sectors exceeding the set-aside values for darkblotched rockfish and POP and the allocation values for widow and canary rockfish and the likelihood of closure (i.e., not attaining whiting allocation). The validity of results from this bootstrap methodology is dependent on conditions in the coming years being similar to those in the baseline used for the bootstrap (2000-2017). While darkblotched rockfish and POP would be managed as set-asides, the lack of a buffer and the presence of the automatic authority described above would make the values act as allocations. Under these conditions, the CP sector would have a ~1 in 20 chance of exceeding the darkblotched rockfish set aside in 2019 and 2020. For the MS sector, the risk is ~1 in 100. There is no perceived risk for either sector in exceeding the POP set-aside due to ~15x magnitude higher ACL proposed for 2019-2020.

However, with the automatic authority provision removed from regulation, the at-sea sectors could increase their likelihood in attaining their whiting allocation. Table C-27 through Table C-30 below show the risk of each sector exceeding the set-aside value for darkblotched rockfish and POP, assuming that the only "triggers" for a simulated season being closed are the whiting, widow rockfish, and canary rockfish allocations for 2019. Similar to No Action, these projections are based on past conditions and behaviors being representative of the future. If the fleet were to modify its move-on rules based on the reduced chance of being shut down by an overage, the bootstrap results might underestimate the likelihood of an overage. Furthermore, with widow and canary rockfishes remaining as allocations, there could be some additional incentive to avoid those species in favor of additional bycatch of darkblotched. (With POP's ACL being significantly higher in 2019-2020, any additional catch due to avoiding widow and canary is likely to be well within the higher proposed allocations.) From 2009-2017, a majority of the years had more hauls that were positive for both darkblotched and widow rockfish compared to hauls with only darkblotched or darkblotched and canary rockfish. However, the percentage of the total amount of hauls with both darkblotched and widow present ranged from 1.2 to 32.8 percent in the CP sector and 2.4 to 29 percent in

the MS sector. Based on the variation and the unknown future ocean conditions (e.g., whiting school location), it is uncertain whether there would be a change in the catch of darkblotched if the fleets were avoiding widow (i.e., more darkblotched-only hauls or fewer widow and darkblotched hauls).

As shown, both sectors increase the likelihood of attaining their whiting allocations than under the current at-sea set-aside management regulations. The CP sector increases the chance of attaining the whiting allocation from ~87 percent to 93.2 percent in 2019 and 91.9 percent in 2020, and the MS sector increases their chances by ~2 percent.

Table C-27: Landing projections for the CP sector under the No Action Alternative for 2019 using the bootstrap methodology assuming the automatic authority provision is removed from regulation. No Action allocations are provided on the left for reference. Bolded text indicates values that are higher than the allocations or set-asides.

Stock	CP All./Set-Aside (mt)	Percentage of Simulated Seasons									
		1%	5%	10%	25%	50%	75%	90%	95%	99%	99.99%
Whiting	123,312	72,462	113,350	123,312	123,312	123,312	123,312	123,312	123,312	123,312	123,312
Canary rockfish	16	0.1	0.1	0.1	0.3	0.6	1.2	2.1	4.1	5.8	8.4
Darkblotched rockfish	21.8	0.4	0.7	2.7	3.9	7.2	11	20.2	**24.5**	**34.1**	**56.6**
POP	237.1	0.2	0.3	0.4	1.6	6.4	12	18.8	31.4	46.2	61.4
Widow rockfish	358.3	4.8	6.9	11.6	22.1	62.2	127.1	308.4	**360**	**407.7**	**436.7**

Table C-28: Landing projections for the CP sector under the No Action Alternative for 2020 using the bootstrap methodology assuming the automatic authority provision is removed from regulation. No Action allocations are provided on the left for reference. Bolded text indicates values that are higher than the allocations or set-asides.

Stock	CP All./Set-Aside (mt)	Percentage of Simulated Seasons									
		1%	5%	10%	25%	50%	75%	90%	95%	99%	99.99%
Whiting	123,312	69,229	105,421	123,312	123,312	123,312	123,312	123,312	123,312	123,312	123,312
Canary rockfish	16	0.1	0.1	0.1	0.3	0.6	1.2	2	3.9	5.7	7.8
Darkblotched rockfish	23.2	0.4	0.7	2.6	3.8	7.1	11.1	20.3	**24.5**	**32.1**	**54.2**
POP	231	0.2	0.3	0.4	1.7	6.5	12.3	18.7	31.5	46	63.5
Widow rockfish	338.8	4.9	7	11.6	22.1	62.5	128.5	311.7	**342.5**	**391.4**	**417.4**

Table C-29: Landing projections for the MS sector under the No Action Alternative for 2019 using the bootstrap methodology assuming the automatic authority provision is removed from regulation. No Action allocations are provided on the left for reference. Bolded text indicates values that are higher than the allocations or set-asides.

Stock	MS All./Set-Aside (mt)	Percentage of Simulated Seasons									
		1%	5%	10%	25%	50%	75%	90%	95%	99%	99.99%
Whiting	87,044	76,799	87,044	87,044	87,044	87,044	87,044	87,044	87,044	87,044	87,044
Canary rockfish	30	0.1	0.2	0.3	0.5	1.1	2.3	4	8.4	20.4	**32.2**
Darkblotched rockfish	15.4	0.3	0.4	0.7	2.6	6.3	9.6	12.5	13.7	**16.9**	**24.4**
POP	167.4	0.1	0.2	0.3	1.3	3.6	6.4	9.2	25.8	35.4	45.7
Widow rockfish	253	2.2	2.5	23.1	49.3	72.9	95.7	135	217.6	**255.2**	**263.4**

Table C-30: Landing projections for the MS sector under the No Action Alternative for 2020 using the bootstrap methodology assuming the automatic authority provision is removed from regulation. No Action allocations are provided on the right for reference. Bolded text indicates values that are higher than the allocations or set-asides.

Stock	MS All./Set-Aside (mt)	Percentage of Simulated Seasons									
		1%	5%	10%	25%	50%	75%	90%	95%	99%	99.99%
Whiting	87,044	72,374	87,044	87,044	87,044	87,044	87,044	87,044	87,044	87,044	87,044
Canary rockfish	30	0.1	0.2	0.3	0.5	1.1	2.3	4.4	8.5	20.4	**32.2**
Darkblotched rockfish	16.4	0.3	0.4	0.7	2.6	6.4	9.5	12.5	13.7	**16.9**	**24.3**
POP	163.0	0.1	0.2	0.3	1.3	3.6	6.3	9	24.7	35.6	45.8
Widow rockfish	239.1	2.2	2.6	22.9	48.5	72.7	95.7	135.9	222.5	**241.8**	**249.5**

In addition, while darkblotched rockfish and POP would be managed as sector-specific set-asides, all other at-sea set-asides are managed for the at-sea sector as a whole (i.e., CP and MS combined). As examined in Agenda Item F.7.a, WDFW Report, September 2016, the likelihood of both sectors exceeding the combined set-aside values can be looked at to determine the contribution of the at-sea sector to the overall risk to the trawl allocation and ACL. Due to the fact that there are no simulated seasons that project either sector exceeds their set-aside amount for POP, only darkblotched rockfish is examined below.

Table C-31: Simulated projected combined catch of darkblotched rockfish in the at-sea sectors. Bolded text indicates values higher than the combined set-aside value.

Year	Combined Set Aside Amount (mt)	Percentage of Simulated Seasons									
		1%	5%	10%	25%	50%	75%	90%	95%	99%	99.99%
2019	37.2	1.1	1.4	5.8	9.2	15.5	20.1	24.6	28.6	**44.4**	**67.8**
2020	39.6	1.1	1.4	5.8	9.1	15.5	20.2	24.6	28.4	**42.3**	**67**

As shown in Table C-31, there is a 1:100 chance that the at-sea sectors combined would catch in excess of their combined darkblotched set-aside amounts. However, even if they were to catch ~67 mt in that 1 in 10,000 chance, there would be minimal risk to the trawl allocation or the ACL unless attainment in the IFQ sector increases substantially. Since 2011, the IFQ sector has taken an average of 38.4 percent of their allocation, and as shown in of Section A.2.4, Table A-47 and Table 4-48, the shorebased IFQ sector is projected to take 37 percent of their allocations in 2019 and 2020. That is a residual of over 500 mt that would be able to compensate for any overage in the at-sea sectors. Furthermore, the non-trawl allocation of 37.4 and 39.9 mt for 2019 and 2020 is likely to have little if any removals resulting in no risk to the ACL.

3. What and when was the Council's decision and how did it arrive at the decision?

When the Council developed Amendment 21, the thought behind the within trawl formula for the three overfished trawl species (darkblotched rockfish, POP, and widow rockfish) was to set values high enough for the at-sea sectors recent bycatch but then the EIS stated that "vessels in these sectors are very mobile when fishing whiting and could move to other areas and depths to avoid attaining their respective total catch limits." Furthermore, set-asides were designed to "accommodate the projected bycatch in these fisheries…[and] are needed for those species incidentally caught in the at-sea whiting fisheries that are not managed with a bycatch limit" (Amendment 21 EIS). At the time that Amendments 20 and 21 were developed, there was a need to have allocations, and a closure mechanism, for the four trawl dominant overfished species (canary, darkblotched, and widow rockfish, and POP). These species had very low ACLs and the Council didn't want to unnecessarily strand fish in the at-sea allocations, but also wanted to allow the IFQ sector to operate as effectively as possible.

While the at-sea sector is mobile, the fleets have been constantly moving (resulting in large operational costs) to avoid bycatch of POP or darkblotched rockfish and the possible shutdown of the fishery, while also trying to find whiting schools, which vary by year in location and magnitude. The Council has spent time during several inseason agenda items, and had an emergency Council meeting in October 2014, to find available additional allocation of POP or darkblotched rockfish for the at-sea sectors. On top of that avoidance, the 2017 salmon situation put a bigger burden on the fleet to avoid salmon bycatch.

The Council originally took action on Amendment 21-3 in September 2016[3]. At that time, the ACLs for darkblotched rockfish and POP were significantly lower than the proposed No Action ACLs for 2019-2020. There were concerns that the at-sea sectors would exceed their set-aside values and the buffer (25 mt for POP in 2017 and 2018, 50 mt for darkblotched rockfish). While there would likely be no risk to the ACLs, the Council did not want to create an inequitable opportunity. Therefore, in the motion, the Council directed NMFS to close the at-sea sectors if the set-aside plus the buffer were projected to be exceeded.

With the new assessments for darkblotched rockfish and POP in 2017 showing that both stocks are rebuilt, and POP being several times greater in magnitude than expected, the Council did not see a need in November 2017 to establish a buffer for the 2019-2020 biennium. Furthermore, the IFQ sector, which is the primary fleet targeting both species, and would have been the most impacted by the at-sea fleet taking more than their set-asides and the buffer amount combined, would have increased allocations compared to 2017 and 2018. Corresponding vessel limits would increase (lowering the risk of lightning strikes) and more quota pounds would be available on the market. Plus, as described above, the IFQ sector has averaged an attainment of 38.4 percent for darkblotched rockfish and 42.6 percent for POP. Even with the proposed removal of the RCA off Oregon and California, it is unlikely that the IFQ sector would take a majority of their allocation with other constraining species (e.g., sablefish) or market constraints. Finally, there is relatively little catch of either species in the non-trawl sector, resulting in the non-trawl allocation being a kind of "buffer" against exceeding the ACL.

4. Is there any other background information that was important to the Council's decision? For example, has this measure been previously discussed by the Council, if so what was the outcome?

As described under Part 3, the use of an automatic closure for exceeding the set-aside plus a buffer was discussed at length by the Council when considering Amendment 21-3 and when proposing this

[3] http://www.pcouncil.org/wp-content/uploads/2016/09/0916decisions.pdf

management measure. Even with the removal of this provision, NMFS can still take routine inseason action as described in CFR 660.150 and 660.160 (excerpt below).

> (ii) Groundfish species with at-sea sector set asides will be managed on an annual basis unless there is a risk of a harvest specification being exceeded, unforeseen impact on another fishery, or conservation concerns in which case inseason action may be taken. Set asides may be adjusted through biennial specifications and management measures process as necessary.

Bycatch Reduction Areas (BRAs), are available through routine inseason action for midwater trawl gear for three conservation purposes, including "preventing the overfishing of any groundfish species by minimizing the direct or indirect catch of the species" (660.60 (c)(3)(i). BRAs are currently available in regulation at 75, 100, or 150 fathom depth contours, and close the area shoreward of that depth contour to fishing. Additionally, if NMFS projects that a whiting sector will exceed an *allocation* for a non-whiting groundfish species before taking their whiting allocation, NMFS can implement a BRA through automatic action. The Council is currently considering making darkblotched rockfish and POP, as well as canary and widow rockfish, permanent set-asides with amounts established through the biennial specifications process as part of the catch shares review follow-on actions (November 2017 Council Decision Summary). All other set-asides for the at-sea sector are set biennially, and are generally set high enough to cover the recent year period's maximum mortality. The current formula for establishing set-aside amounts for darkblotched and POP would give the sectors more darkblotched and POP than they have historically caught. However, those catch amounts have come at a high operational cost to the at-sea sectors.

During the follow on process, the Council may want to consider amending the regulations to allow BRAs to be used to control catch of set-aside species through automatic action. If the IFQ sector were to increase attainments of these stocks, or any other set-aside stocks (e.g., sablefish), it may warrant having a mechanism available to control catch in the at-sea sector between Council meetings (i.e., before routine inseason action could occur). The at-sea sectors want to be able to maintain the ability to manage themselves, and have stated that they are committed to move-along rules or protocols to limit bycatch of rockfish.

Part B

1. What is the objective of this management measure?
    - Does it have a conservation purpose? (e.g., managing catch within ACLs? mitigating impacts to habitat or protected species?) Does it have a social/economic purpose? (e.g., allowing increased opportunity to catch target species? Does it have a social benefit of making fishing opportunity among different user groups more equitable?)

This management measure is intended to provide economic relief to the at-sea sectors in their ability to target their whiting allocation. Currently, the at-sea sectors move constantly to avoid potential shut down of the fishery because of the possibility of exceeding a set-aside, or allocation, of bycatch species. Whiting school size and location vary year to year, and therefore the fleet's fishing activity is dependent on the ability to fish when and where the whiting are. If darkblotched rockfish and POP are managed similar to all other set-asides, the at-sea sectors could catch their whiting allocations without additional burden or risk to exceeding the ACL, each other, or another sector.

2. The following screening is intended to help NMFS understand the broad implications of the management measure and to determine the appropriate NEPA compliance strategy.

    a. How would you describe this new management measure (may select more than one)
        - ❑ Technical correction or a change to a fishery management action or regulation, which does not result in a noticeable change in any of the following: fishing location, timing, effort, authorized gear types, or harvest levels.
        - ■ Has potential for noticeable change to any of the following: fishing location, timing, effort, authorized gear types, or harvest levels.
        - ❑ Designed to mitigate some other environmentally negative effect (e.g., cap, closed area, bag limit).
        - ■ Designed to mitigate a negative economic or social effect.
        - ❑ Applies to only a small area of the total EEZ.

    b. What resource(s) would the management measure likely effect, either positively or negatively?
        - ❑ Physical EFH or Ecosystems
        - ■ Biological Resources (target, non-target species)
        - ❑ Protected Resources (mammals, ESA-listed)
        - ■ Economic, social, cultural

    c. If the management measure is mitigating or offsetting an effect on a resource, identify that resource.
        - ❑ Physical EFH or Ecosystems
        - ❑ Biological Resources (target, non-target species)
        - ❑ Protected Resources (mammals, ESA-listed)
        - ❑ Economic, social, cultural

Part C – Keeping in mind the responses provided in part 2 above, briefly answer the following questions. Please focus on the issues of importance; if there are no potential effects, say 'no anticipated effects'. Remember both positive and negative effects.

1. Groundfish
    a. How does any change in catch relate to harvest specifications and the risk that overfishing will occur? Can the proposed measure reasonably be expected to adversely affect managed fish species?

With the removal of the automatic authority, the at-sea sectors may be able to increase their attainment of their respective whiting allocations with little to no risk of overfishing the whiting, darkblotched rockfish, or POP stocks. As shown above, there is an increase in the likelihood of attaining the whiting allocation (Table C-27 through Table C-30) compared to those under the default harvest control rule. As described above, there could be an increase in catch of darkblotched rockfish and POP with the removal of the automatic authority (i.e., exceed the set-aside), although the risk to the allocations and ACLs is low given the low attainment in the trawl sector in recent years. Consequently, there is little risk of overfishing, so long as attainment by non-at-sea sectors is low. If attainment by these sectors increases in the future, the at-sea sector could be restricted if necessary to stay within ACLs. Overall, it is not expected to adversely affect managed species.

    b. Will this management measure change catch of groundfish stocks compared to past catches and management reference points? If no, describe in a few sentences why not. If yes, what stocks would be substantially affected?

By removing the automatic authority, the at-sea sector could see increases in catch of whiting, and potentially darkblotched rockfish and POP as well as other groundfish species that co-occur on whiting targeted trips. Managing darkblotched rockfish and POP, which have been the most constraining species to the at-sea fleet in recent years, as regular set-asides (i.e., no closure when exceeded, except for certain cases) would allow vessels to fish for whiting without having to move immediately after catching only a small number of fish of either bycatch species. Other set-aside species catch may change with changes in fishing behavior based on relaxed co-op rules for darkblotched and POP.

2. Other Fish
    a. Will this management measure affect catch of non-groundfish species? If no, describe in a few sentences why not. If yes, is the magnitude of the change substantial and to what stocks? How is this catch monitored? Are the affected stocks managed under another federal FMP or by a state? Do other management plans include harvest specifications? Is it possible to assess the contribution of the measure, if any, to overfishing risk of a non-groundfish stock?

The removal of the automatic authority and management of darkblotched rockfish and POP like other set-asides may lead to a change in fishing behavior and therefore could impact non-groundfish species. As written, NMFS could take automatic authority to close the sector if the set-aside for darkblotched rockfish or POP were exceeded, similar to an allocation. Vessels may be able to fish longer in an area, even if they encounter POP and darkblotched rockfish, with the removal of the automatic authority (i.e., managed like all other set-asides). Table C-32 below shows the recent catch of species by management group from 2009-2017 in the at-sea sectors. This range is intended to provide a perspective of pre and post IFQ years. There is currently no model to predict non-groundfish landings, but catch is evaluated every biennium. As shown, catches have varied, with the largest variation in coastal pelagic species. In 2009, there was over 3,000 mt of Humboldt squid caught, and most recently spiked in 2017 with jack mackerel. While catches may vary with this management measure if vessels alter their fishing behavior, the impacts are likely to be within the normal range of bycatch of non-groundfish species.

Table C-32: Total catch of non-groundfish by management group in the at-sea sectors, 2009-2017. All catch in mt except for salmon (in numbers of fish).

Year	Coastal Pelagic Species	Crab	Highly Migratory Species	Unidentified	Other (EC species, halibut, unspecified sharks)	Shrimp	Salmon
2009	3845.85	0.00	0.36	0.13	56.51	0.00	374
2010	148.33	0.00	1.02	0.11	171.08	0.00	728
2011	14.36	0.00	0.95	0.60	303.56	0.02	4,060
2012	17.20	0.00	0.11	0.27	137.49	0.01	4,327
2013	89.75	0.04	0.68	0.16	307.13	0.00	3,810
2014	109.94	0.00	2.08	1.54	273.58	0.00	6,798
2015	131.85	0.00	2.36	6.04	396.21	0.00	1,841
2016	256.30	0.00	4.37	2.96	501.37	0.00	3,099
2017	644.52	0.00	4.44	16.36	371.52	0.00	3,788

3. EFH and Ecosystems

a. Will this management measure change fishing activity so as to adversely affect essential fish habitat compared to no-action effects? If no, describe in a few sentences why not. If yes, is the magnitude of the change substantial and why? Describe the mechanism linking the management measure to adverse impacts. For example, changes in fishing gear or methods; changes in the temporal and/or geographic distribution fishing effort.

There are likely no adverse impacts to EFH compared to No Action since there are no anticipated changes in gear, methods, or overall distribution of fishing effort, and midwater gear has little to no interactions with EFH. Fishing effort varies by year in the at-sea fleet currently, as it is dependent on the movement and availability of whiting schools. Therefore, while the fleets may be more relaxed in their bycatch rules compared to status quo and fish longer in certain spots, the overall impact on EFH will be minimal.

b. Can the proposed measure reasonably be expected to adversely affect vulnerable marine or coastal ecosystems, including but not limited to, deep coral ecosystems?

No.

c. Can the proposed measure reasonably be expected to adversely affect biodiversity or ecosystem functioning (e.g., benthic productivity, predator-prey relationships, etc.)?

No.

4. Marine Mammals and ESA Species
   a. Will this management measure result in adverse effects to ESA-listed species and/or non-listed marine mammals and seabirds? If no, describe in a few sentences why not. If yes, is the magnitude of change substantial and why? Describe the mechanism linking the management measure to adverse impacts. For example, changes in fishing gear or methods; changes in the temporal and/or geographic distribution fishing effort.

The removal of the automatic authority provision may result in adverse effects to ESA-listed species and/or non-listed seabirds. However, whether or not a given year's impacts are due to this action versus the normal variation in interaction is uncertain. The at-sea sectors have historically interacted with Chinook salmon (and other species of salmonids), eulachon, and a variety of birds and marine mammals. Data from the Northwest Fisheries Science Center's reports on protected species (2002-2014) was used in the following summary (Jannot, *et al.* 2016). This span of years covers a range of at-sea management, with sector-specific whiting allocations going into place in 2007, sector-specific groundfish allocations in 2009, and the IFQ program beginning in 2011.

With regard to marine mammals, the at-sea sectors have most frequently interacted with stellar sea lions followed by California sea lions. From 2002-2014, there were 161 recorded interactions with marine mammals, with the majority being individuals observed feeding on catch (87) and killed by gear (65). However, the number and type of interactions vary by year, with 2014 having 31 recorded interactions (22 of which were feeding on catch), and 2010 having the highest amount of marine mammals killed (13). Based on the variation in these catches and the management regime over that time, it is unlikely that the removal authority will have any additional impact on marine mammals.

Eulachon bycatch has typically been zero since 2002, with a prominent spike in 2011 for the CP sector of 1,268 observed individuals. This exceeded the expected take for the entire groundfish fishery of 1,004 eulachon. Again, the removal of the automatic authority is likely to not cause any adverse effects to eulachon because there is likely a relationship between bycatch and the abundance level. Re-consultation is still ongoing, and the new threshold has yet to be determined. However, the Council's non-salmon ESA

working group has stated that the current ITS take amount may not be appropriate, and recommended that the threshold include a large variation to account for fluctuations in abundance (Agenda Item F.5.a, GESW Report, April 2017).

There were almost 2,200 interactions with seabirds in the at-sea sector from 2002-2014, with the vast majority being northern fulmars boarding vessels (1650). Of greatest concern though, is the interaction with short-tailed albatross. There has been only one sighting of a short-tailed albatross feeding on catch on a MS catcher vessel in 2011. However, short-tailed albatross are rare, and black footed albatross are used as a proxy for informing interactions. Based on black-footed albatross observations, it is believed that there are additional impacts for short-tailed albatross, particularly for CPs, when they are releasing fish processing waste and have trawl gear deployed (Agenda Item F.5.a, NMFS Report 6, April 2017). Again, there are likely no adverse effects from this action (i.e., removing the automatic authority provision).

For salmon, there may be additional impacts depending on the change in fishing behavior. With the removal of the automatic authority provision, vessels may extend fishing time in an area with a higher bycatch rate compared to the status quo. However, preliminary analysis suggests that there is not a clear relationship between salmon, darkblotched, and POP bycatch. For example, in 2014, the MS sector had high bycatch of darkblotched resulting in the shutdown of the fishery and an emergency Council meeting to reopen the fishery in October. In that year, the whiting sector also exceeded the 11,000 Chinook salmon threshold. The MS sector had over 1,300 hauls that year, with 12.71 percent being positive for darkblotched and no Chinook and 13.94 percent being positive for Chinook with no darkblotched (or POP) present. Only 6.2 percent of hauls had both. It is uncertain whether there would be a specific adverse impact on salmon with this action, as there are many factors (e.g., location of whiting schools, time of year, other constraining species) that result in increased salmon interactions.

5. Social and Economic
    a. Will this management measure change the distribution of catch opportunity among user groups, fishing communities, states, or regions? If no, describe in a few sentences why not. If yes, is the magnitude of the change substantial? Why is it substantial? For example, which user groups are likely to see increased catch opportunity? Which may lose catch opportunity?

This management measure would not change the distribution of catch opportunity among user groups, but is intended to give the at-sea sectors increased opportunities to harvest their whiting allocation by eliminating the fear of automatic closure due to the exceedance of a set-aside value for an incidentally caught species, and allowing them to fish longer for whiting in spots that previously would have been vacated if one or two darkblotched rockfish or POP were caught.

    b. Can the proposed action reasonably be expected to significantly affect public health or safety?

No.

6. Cumulative effects

Past fishery and non-fishery actions have created the baseline conditions. For fishery management actions, consider current (put into place recently but the effects may not be visible) or "reasonably foreseeable future items (actions that the Council is moving forward with). For Specs, consider the 19/20 preferred alternative and the routine management measures.

The proposed action will have negligible adverse effects on all resources other than economics, which will see positive impacts. For economic effects, the benefits, which cannot be explicitly quantified, are expected to be limited to the at-sea sectors as a whole, as the removal of the automatic authority would affect the at-sea sectors primarily. There may be some associated cumulative impacts with the development of the mitigation measures for meeting the terms and conditions of the salmon biological opinion released in 2017. The Council and NMFS are considering developing BRAs for salmon mitigation. If the Council were to implement a BRA to shift effort off salmon, it could increase effort on the slope, thereby increasing the probability of catch.

7. Other
    a. Are the proposed action's effects on the quality of the human environment likely to be highly controversial? (science of the effects, not the perception)

No.

    b. Are the proposed action's effects on the human environment likely to be highly uncertain or involve unique or unknown risks?

No.

8. MSA National Standards
    a. Describe how the management measure is consistent with the 10 MSA National Standards.

As described in Agenda Item F.7.a, WDFW Report, September 2016, the management of darkblotched rockfish and POP as set-asides for the at-sea sectors primarily deals with National Standards 7 and 8.

National Standard 7 (NS7) and National Standard 8 (NS8), read as follows:

(7) Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.

(8) Conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities by utilizing economic and social data that meet [National Standard 2], in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities.

Under the automatic authority for set-aside management and the absence of a buffer for darkblotched rockfish and POP results in the set-asides acting as allocations thereby eliminating the flexibility that was one of the core drivers of the original action. Darkblotched rockfish and POP bycatch can accumulate quickly, resulting in the fleets not being able to respond in a timely manner. Set-asides are intended to provide a way to account for incidental catch, but provide some flexibility if a high bycatch ("lightning strike") type event or a number of smaller bycatch events, were to occur. Removal of the automatic authority from regulation would be expected to reduce costs and adverse impacts related to No Action. The at-sea sectors would not only be able to increase the likelihood of attaining their whiting allocation (and lower the risk of foregone yield and economic benefits), but also would allow the fleets to relax their co-op management measures. In other words, the concern of being closed due to exceeding an allocation has resulted in the fleets constantly moving to avoid bycatch of darkblotched and POP in recent years. This could result in fishing on other set-aside stocks, like sablefish, or non-groundfish species, like salmon.

Finally, there is some consideration of NS 5, which states:

(5) Conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose.

When assessing the efficiency of a regulation, the guidelines state that

(ii) Management regimes that allow a fishery to operate at the lowest possible cost (e.g., fishing effort, administration, and enforcement) for a particular level of catch and initial stock size are considered efficient. Restrictive measures that unnecessarily raise any of those costs move the regime toward inefficiency.

In recent years, the Council, its advisory bodies, and NMFS have spent a large amount of time and resources (including an emergency Council meeting in October 2014) on finding additional allocation to shift to the at-sea sectors. By keeping the automatic authority provision, the management of the at-sea sectors remains inefficient and takes resources away from other actions and sectors. If darkblotched rockfish and POP were managed with no automatic authority provision (like all other set-asides), action would only be needed if there was a conservation concern, risk to a harvest specification, or an unforeseen impact to another sector. The co-op system has proven to be effective at managing bycatch within restrictive limits, and there is an incentive to continue to have the flexibility to construct their seasons in a way that is most beneficial to their operations.

C.6.3 Lingcod and Sablefish Discard Mortality Rates in the Shorebased IFQ Program

Part A

1. Describe the new management measure.
    - What stocks will it affect? What fisheries will it affect? What is the geographic scope?

This new management measure would result in quota pounds (QPs) for sablefish and lingcod being debited from IFQ accounts based on the discard mortality rates (DMRs) endorsed by the SSC and utilized elsewhere in management instead of the current approach that debits 100 percent of all catch regardless of survival. The purpose of this action is to provide IFQ participants with discard survival credits for lingcod and sablefish to better meet some of the objectives of the IFQ program, and align discard mortality rates with those used in year-end catch accounting. The need is to increase attainment of co-occurring target species, and increase marketability and value of retained catch by eliminating the need to retain small fish that are not economically marketable, or desirable.

In general, the fishery management system allocates an amount of fish to the sector to cover fishing mortality by that sector. However, the trawl IFQ program manages the trawl allocation with quota based on catch rather than mortality (essentially assuming a 100 percent discard mortality rate). Since catch for some species is discarded and survives, for those species the trawl sector's actual mortality is necessarily less than what it is allocated (so long as catch is not in excess of the QPs issued each year). This measure would provide credit for lingcod and sablefish, increasing the opportunity for the trawl sector to take its full allocation of those two species.

This management measure would reduce the current 100 percent IFQ discard mortality rates (DMRs) used in catch accounting of QPs for lingcod and sablefish to the lesser DMRs that have been endorsed by the SSC (Table C-33) and are utilized elsewhere in management (i.e., WCGOP estimates of total mortality and stock assessment catch streams). Although this new management measure would provide "survival credits" for industry, it would also represent a shift from conservative and buffered DMRs to lesser DMRs that reflect the best available science. For many other species, discard survival rates are not believed to be high enough to warrant consideration of a survival credit.

This management measure would pertain to the coastwide shorebased IFQ fishery, and would primarily affect the sablefish and lingcod stocks from all management areas. However, the resulting "savings" of trawl sablefish could possibly increase landings of co-occurring species such as Dover sole, shortspine thornyheads, and longspine thornyheads (described in detail later).

Adoption of this new management measure is not expected to result in large increases to benefits or changes to fishing behaviors or mortality of groundfish or non-groundfish species. Gross revenue analyses provided below demonstrate that it could be a losing proposition for IFQ participants, both trawl and fixed gear (FG), to increase their discarding of sablefish in general if provided the "credits"; therefore, discarding patterns would be expected to remain similar to the low IFQ-era levels given the lack of incentive for greater discarding. For lingcod, no major changes are expected since fixed gear impacts are negligible and there would be no incentive for bottom trawlers to increase discarding. They would receive a benefit from the lingcod discard survival credit that would allow them to come somewhat closer to the total mortality the sector is allocated (in general, the trawl sector under-attains its lingcod allocation by considerable amounts).

Since minimal changes to discards are expected for sablefish, the main difference is that landings and mortality would be expected to increase by the amount of QP savings/gains the credit would provide, which could be a gain of one-half the trawl discards (9-21 mt per year) and four-fifths the IFQ FG discards (11-20 mt per year) which could be converted into additional landings. The resulting gains in landings and mortality could therefore be an extra 5-11 mt for trawl and 9-16 mt for IFQ FG, which would only be about a 1 percent increase in total coastwide IFQ mortality (discussed in detail below).

Table C-33. Current and proposed IFQ DMRs that would be used to debit quota pounds for sablefish and lingcod. Note the proposed DMRs are endorsed by the SSC and are utilized elsewhere in management (e.g., WCGOP estimates of total mortality and stock assessment removals).

Species	Gear	Proposed DMRs ("survival credit")	Current IFQ DMRs
Lingcod	Bottom Trawl	50%	100%
	Fixed Gear	7% a/	100%
Sablefish	Bottom Trawl	50%	100%
	Fixed Gear	20% b/	100%

a/ Only for hook and line gear.
b/ Applies to both pot and hook and line gear.

2. What was considered in order to optimize the performance of this measure?

Optimization of the performance of this management measure has centered on IFQ program goals, expected benefits, and potential shifts in discarding practices (discussed in detail below).

3. What and when was the Council's decision and how did it arrive at the decision?

The current approach that debits all catch including discards was adopted in Amendment 20 (see section E.2.1.4): "Discarding will be allowed, though all fish discarded will also have to be covered by QP ". The main Council rationale for this decision was to reduce discards and associated mortality, and to also enhance the ability to account for total groundfish mortality in conjunction with a 100 percent monitoring requirement (Objectives 3 and 1 respectively from the Pacific Coast Limited Entry Trawl Fishery FEIS).

The Council elected to analyze this new management measure that would provide survival credits for discards as part of the 2019-2020 biennial harvest specification and management measures process from the November 2017 PFMC meeting.

The Council arrived at this decision based on the following events following adoption of Amendment 20: (1) "IFQ survival credits" of sablefish and lingcod was selected by the Council for further investigation during the June 2017 Omnibus Prioritization Process (Agenda Item G.6, Council Action, June 2017); (2) the GMT verified and the SSC provided an implied endorsement ("no change") that the lesser DMRs used elsewhere in management were appropriate (Agenda Item F.3.a, GMT Report 1, June 2017 and Agenda Item F.3.a, Supplemental SSC Report, June 2017, respectively); and (3) the GMT scoped the purpose and

need, policy trade-offs, expected benefits, and potential shifts in discarding in another June 2017 report (Agenda Item F.3, Attachment 1, June 2017).

4. Is there any other background information that was important to the Council's decision? For example, has this measure been previously discussed by the Council, if so what was the outcome?

The following excerpt from a June 2017 GMT report in regards to policy trade-offs associated with this new management measure to original Amendment 20 catch share program goals is worth noting (Agenda Item F.3, Attachment 1, June 2017):

"There are policy trade-offs for the Council to consider in relation to the Amendment 20 program goals. When the catch shares program was developed, one of the main objectives was to reduce discards and associated mortality (Objective 3, Pacific Coast Limited Entry Trawl Fishery FEIS). Allowing survival credits for these species in the IFQ fishery would likely increase discards, and be counter to that objective (e.g., trawl discards of sablefish were reduced from 5-15 percent before IFQ to one percent or less thereafter; Appendix).

On the other hand, allowing use of discard mortality rates less than 100 percent could help better achieve some of the other IFQ program objectives such as increased attainments of IFQ stocks (e.g., survival credits of sablefish could increase access to Dover sole and thornyheads) as well as increasing the value of IFQ stocks (i.e., due to higher landings and/or highgrading to obtain higher value fish; Objectives 2, 5, 6, Pacific Coast Limited Entry Trawl Fishery FEIS)."

In summary, there are policy trade-offs for either option (i.e., credit or not); neither option accomplishes all the IFQ program goals.

Part B

1. What is the objective of this management measure?
    - Does it have a conservation purpose? (e.g., managing catch within ACLs? mitigating impacts to habitat or protected species?) Does it have a social/economic purpose? (e.g., allowing increased opportunity to catch target species? Does it have a social benefit of making fishing opportunity among different user groups more equitable?)

The primary objectives of this new management measure are economic and are geared toward potentially increasing IFQ landings and/or revenues of lingcod, sablefish, and co-occurring species constrained by sablefish such as Dover sole, shortspine thornyhead, and longspine thornyhead. However, analyses below show that there may not be much added revenue benefits via adoption of this new management measure, which was echoed by the Groundfish Advisory Subpanel (Agenda Item F.3.a, Supplemental GAP Report, June 2017). Therefore, the primary benefits could instead be social in that it could reduce frustration amongst industry that the DMRs used to debit their QP accounts are higher than the DMRs used for final estimates of discard mortality.

Although the main objectives are economic and social, IFQ participants would still be strictly held to their individual and IFQ sector allocations thereby ensuring conservation objectives continue to be met.

2. The following screening is intended to help NMFS understand the broad implications of the management measure and to determine the appropriate NEPA compliance strategy.

   a. How would you describe this new management measure (may select more than one)
      [X] Technical correction or a change to a fishery management action or regulation, which does not result in a noticeable change in any of the following: fishing location, timing, effort, authorized gear types, or harvest levels.
      ❑ Has potential for noticeable change to any of the following: fishing location, timing, effort, authorized gear types, or harvest levels.
      ❑ Designed to mitigate some other environmentally negative effect (e.g., cap, closed area, bag limit).
      [X] Designed to mitigate a negative economic or social effect.
      ❑ Applies to only a small area of the total EEZ.

   b. What resource(s) would the management measure likely affect, either positively or negatively?
      ❑ Physical EFH or Ecosystems
      ❑ Biological Resources (target, non-target species)
      ❑ Protected Resources (mammals, ESA-listed)
      [X] Economic, social, cultural

   c. If the management measure is mitigating or offsetting an effect on a resource, identify that resource.
      ❑ Physical EFH or Ecosystems
      ❑ Biological Resources (target, non-target species)
      ❑ Protected Resources (mammals, ESA-listed)
      ❑ Economic, social, cultural

Part C – Keeping in mind the responses provided in part 2 above, briefly answer the following questions. Please focus on the issues of importance; if there are no potential effects, say 'no anticipated effects'. Remember both positive and negative effects.

1. Groundfish
   a. How does any change in catch relate to harvest specifications and the risk that overfishing will occur? Can the proposed measure reasonably be expected to adversely affect managed fish species?

This new management measure is expected to increase the mortality that relates to harvest specifications by modest amounts because the survival credits would provide QP savings/gains for discards that could be used to increase landings. For example, trawlers would "get back" one-half of their QP (50 percent savings) for each pound of sablefish discarded and IFQ fixed gear (FG) would get back four-fifths of their QP (80 percent savings). Only modest increases are expected because discards are relatively low compared to landings and the survival credit is not expected to increase the incentive for greater discarding (described below).

Although adoption of the survival credits could increase landings and thus mortality, IFQ participants' total fishing mortality would still be strictly held to their individual and sector allocations. As discussed above, adoption of the survival credit would remove a mortality buffer that reduces their ability to achieve the full

IFQ allocations as estimated by WCGOP for official year-end catch accounting purposes (i.e., mortality vs. harvest specifications). As would be the case even if no action is taken, there are always risks that the IFQ fishery could exceed its established allocations due to QP carry-over provisions that result in more QP being available during the year than provided in the annual IFQ sector allocation. Surpluses and deficits of up to 10 percent of the QP in a vessel's account can be carried over from one year to the next. Allowing survival credits that could increase landings and total mortality could exasperate those risks to levels that are comparable to risks for species which are believed to have 100 percent discard mortality.

This new management measure is not expected to increase the risk of overfishing (defined as exceeding an OFL) despite the high attainment of sablefish allocations north of 36° N. lat. Since there is low attainment in the fisheries targeting the southern stock and the OFL is coastwide, there is very little risk of overfishing associated with this management measure. Further, the carryover provisions in the IFQ program allow carryover of 10 percent of unused quota and quota deficits to the next year with deficits covered by quota issued the following year. Since fishing cannot occur with a quota deficit, there is strong incentive to cover quota deficits as quickly as possible. While it would not be expected, it is possible that mortality by the IFQ sector could exceed its allocation, but this would not be expected to adversely affect these stocks beyond what is accounted and planned for in the long term (i.e., ACLs would have to be exceeded every year since stock assessment ten-year forecasts used to set OFLs and ACLs assume full ACL removals each year, which is a rare occurrence). Further, under the IFQ program, if the allocation is exceeded in one year due to carryover, there will be that much less quota available the following year, during which it is the likely that the allocation will be under-attained.

This action increases the importance of the DMR not being underestimated, which would result in actual mortality being underestimated. As previously stated, the SSC did recommend these gear-specific DMRs as best available science and recommended their use in assessments and management. The science-management connection here is that if DMRs are in fact risk-prone (i.e., underestimated), it is likely an assessment would be underestimating natural mortality which would result in underestimating stock productivity and the projected harvest specifications in the assessment. Regardless, if actual DMRs are higher than used in assessments and management, there would only be a higher risk of overfishing if adoption of the credit led to large increases in discarding. While there were considerable declines in discarding following adoption of IFQ in 2011 with the 100 percent DMR, discards are expected to remain at low IFQ-era levels and not return to the higher pre-IFQ levels if provided the credit. That is, costs to discard remain high even with the credit, and are expected to outweigh the potential benefits (described in greater detail below).

This new management measure also has the potential to increase mortality of stocks that co-occur with sablefish. As often suggested by the GAP, sablefish is believed by many to be a constraining stock for the trawl fishery that limits access to Dover sole and thornyheads. If given "survival credits" for sablefish, then the trawl sector could potentially increase the landings of these co-occurring stocks, which would be beneficial for meeting MSY goals, as these stocks are underutilized (e.g., 15 percent and 48 percent or less ACL attainment in 2016, respectively).

b. Will this management measure change catch of groundfish stocks compared to past catches and management reference points? If no, describe in a few sentences why not. If yes, what stocks would be substantially affected?

This management measure has the potential to change catch of groundfish stocks in relation to past performance and management reference points. However, any changes are expected to be minor since the

"survival credits" are not expected to increase the incentive for discarding and thus not affect fishing behaviors in general. Investigation of potential complications arising from increased incentives for discarding was a main recommendation from the SSC report pertaining to survival credits (Agenda Item F.3.a, Supplemental SSC Report, June 2017).

Detailed analysis of potential changes associated with the survival credit are described in the section for: (1) bottom trawl sablefish; (2) bottom trawl co-occurring stocks to sablefish; (3) fixed gear IFQ sablefish; (4) lingcod in general.

Bottom trawl sablefish

Support for this new management measure is predominately stemming from sablefish, since it is the highest value non-whiting species, and is highly attained. Given that there are different size grades of sablefish of which larger fish fetch higher prices per pound, there is high incentive to land the largest sablefish grades to maximize revenues.

If provided survival credits for sablefish, it could increase the incentive to discard for two main reasons. First, it might provide an incentive to high-grade, which is defined as discarding smaller and less valuable grades of sablefish in attempts to catch larger and more valuable grades of sablefish. Second, discarding of sablefish could provide QP savings/gains that could be used to increase landings of co-occurring stocks constrained by sablefish (i.e., Dover sole and thornyheads).

Although survival credits could provide incentives for discarding, there would still be some considerable costs of discarding with the survival credit. These costs include the operational costs related to the labor involved with discarding and the additional fishing effort to replace the discarded fish and losses in gross revenue (exvessel value) that occur when a fish is discarded. If the benefits of discarding with the survival credit do not outweigh the costs, then there would be a disincentive to discard and thus no increases to discarding or fishing patterns in general would be expected. This is the main reason why the SSC report on the survival credit specifically stated that analysis should focus on whether or not the credit creates an incentive for discarding (Agenda Item F.3.a, Supplemental SSC Report, June 2017).

As such, this analysis focused on if the survival credit would create incentive for discarding by the degree to which total gross revenue may be increased by high grading. The ideal approach would have been to gauge expected profit margins, but there is insufficient information regarding total benefits and costs of discarding to do so (e.g., extra tow times). However, before considering the operational costs of high-grading, it is useful to identify the gains in gross revenues that would be available to off-set those costs. If the gains in gross revenue are low, they are unlikely to offset the additional operational costs of highgrading.

Positive "net gross revenues" mean they could receive more revenue than they would lose by discarding, which would contribute to offsetting operational costs of discarding costs and potentially create an incentive to discard. Negative gross revenues mean that there would be no opportunity to offset discarding operational costs, and further, that fishers could lose more revenue than they would gain by discarding, which would maintain a disincentive for discarding.

Again, "net gross revenue" is total ex-vessel revenue minus the revenue lost to discarding, and was standardized to expected revenue per pound of fish discarded for consistency purposes. For example, there would be $0.50 net gross revenue if the lost revenue per pound of discarding is $1.00 and the gained revenue per pound is $1.50. Lost gross revenue is defined as the ex-vessel price per pound of each grade of sablefish discarded, since a fish thrown back is not one they can sell. The gained revenue is the expected amount in

revenue the fishermen could obtain after discarding that fish, which is based on the survival credit savings (i.e., one-half QP gained back per pound discarded) multiplied by the price per pound of what they could land with those one-half QP savings.

It is important to note that high-grading is an attempt by fishermen to land larger and higher price fish, and it would be risky for bottom trawlers to attempt to high-grade if given the survival credit. That is because failed attempts could result in rather substantial revenue loses. For example, a trawler who discards one pound of extra small would lose $1.30 (price per lb.) and would gain back one-half QP that they could use to attempt to high-grade. If they wound up catching another extra small in the process, then their return would only be $0.65 (½ QP x $1.30 per pound), which would represent a net loss of $0.65. Conversely, there is also a chance that high-grading could pay off. For example, they could gain $0.20 if they discarded one pound of extra small (ex-vessel revenue = $1.30) and wound up catching a large grade for a $1.50 net return to gross ex-vessel revenue (½ QP back via the survival credit x $3.0 per lb.).

To determine potential net gross revenues of high-grading, the probability of catching each of the different sablefish grades must be factored in. The expected return of high-grading is based summing the probability of catching each grade multiplied by its respective price per pound, which is akin to a weighted average expected return. Note that previous GMT analyses overestimated the expected returns of high-grading since they assumed that fishermen would be able to perfectly upgrade all their smaller catches to larger and more valuable grades without fail. Selectively catching only larger grades like that does not appear possible, because if it were, trawlers would already be doing it to maximize their revenues, and they are not (89 percent of catch is from extra small to medium grades).

It is unlikely that increases in sablefish revenue resulting from the survival credits will increase sablefish discarding by bottom trawlers since the net gross revenues of high-grading are negative for all grades (Table C-34). In other words, they would be expected to be better off by landing and selling all their sablefish catch. For every pound of extra small they discard, they would be expected to lose -$0.28 in net gross revenue. Worse losses would be expected for the larger grades: -$1.08 for small; -$1.18 for medium; -$1.98 for large; and -$2.38 for extra large.

Table C-34. Expected net gross revenue returns of discarding a pound of sablefish by grade in attempts to high-grade with the survival credit. For example, the expect return of discarding one lb. of extra small sablefish is a loss of $0.28 in revenue since the costs to discard ($1.3) outweigh the expected returns ($1.02).

Grade	% Landings	Sablefish price per lb. (cost to discard)	% landings x price per lb. x 1/2 QP "return" (sum is basis of expected return)	Expected Sablefish return	Net gross revenue sablefish highgrading
Extra Small	24.3%	1.3	0.16	1.02	-0.28
Small	29.9%	2.1	0.31	1.02	-1.08
Medium	34.7%	2.2	0.38	1.02	-1.18
Large	11.1%	3	0.17	1.02	-1.98
Extra Large	0.0%	3.4	0.00	1.02	-2.38
	Expected Sable return = sum of % landings x price per lb. =		**1.02**		

However, if discarding of sablefish also resulted in higher landings of co-occurring stocks (e.g., Dover sole or thornyheads), this could make discarding more profitable and prone to occur. Accordingly, the net gross revenue projections of high-grading alone from Table C-34 were expanded to include the potential benefits of extra catch of co-occurring species that could potentially occur. Projections were based on the same catch ratios used by Dr. Lisa Pfeiffer to evaluate potential increases of Dover sole and thornyheads via additional trawl sablefish quota from the 5-Year Catch Share Program Review Report (Agenda Item F.2.a, Catch Shares Analysts Report, June 2017). Each extra pound of trawl sablefish was modeled to add 4.95 lbs of Dover sole, 0.63 of longspine thornyhead, and 0.5 lbs of shortspine thornyhead. If these full gains were truly to occur, which may be overestimated (described below), then the added non-sablefish ex-vessel value of discarding one pound of sablefish with the survival credit would be an extra $1.45 total for these co-occurring stocks = [½ QP sablefish gained back x (4.95 lbs Dover x $0.45 per lb. + 0.63 lbs shortspine x $0.60 per lb. + 0.5 lbs longspine x $0.60 per lb.).

Although discarding of sablefish to attempt to high-grade to larger sablefish appears to be a losing proposition with the survival credit, the added value of co-occurring species could result in positive net gross revenues if trawlers were to discard their extra small (+$1.17 per lb. discarded), small (+$0.37 per lb. discarded), and medium grades (+$0.27 per lb. discarded). This could create a high incentive to discard if provided the survival credit. For instance, they could be able to nearly double their revenues by discarding extra smalls; keeping one pound of sablefish fetches $1.30, whereas discarding that same pound fetches a $1.02 expected return of sablefish plus a possible $1.45 return in co-occurring stocks for a total possible return of $2.47 and a net gross revenue of $1.17 ($2.47 minus the $1.30 for the discarded pound).

Table C-35. Expected net gross revenue returns of discarding each grade of sablefish based on the high-grading returns (from Table C-34) plus returns in co-occurring species such as Dover sole and thornyheads. For example, the benefits of discarding a pound of extra small sablefish ($1.02 + $1.45) are expected to outweigh the costs ($1.30).

Grade	% Landings	Price per lb. (sablefish cost)	% landings x price per lb.	Expected Sablefish high-grade return	Expected co-occurring return	Net gross revenue
Extra Small	24.3%	1.3	0.16	1.02	1.45	1.17
Small	29.9%	2.1	0.31	1.02	1.45	0.37
Medium	34.7%	2.2	0.38	1.02	1.45	0.27
Large	11.1%	3	0.17	1.02	1.45	-0.53
Extra Large	0.0%	3.4	0.00	1.02	1.45	-0.93

Therefore, potential changes in discarding practices associated with the survival credit hinge on a big and uncertain assumption that trawlers would be able to recoup their sablefish revenue losses with rather large gains from co-occurring species such as Dover sole and thornyheads. This might not be the case if market constrains the landing of other co-occurring stocks, which has been often stated by both trawlers and processors during public testimony. In that case, the expected returns in co-occurring species from this analysis would be overestimated, and no increases to discarding would be expected since the benefits would be outweighed by the costs. In fact, trawlers have specifically stated that the assumed gains in co-occurring species from the catch shares analysis that were used as the basis of this survival credit analysis were overstated: “if the plants are not buying Dover sole and thornyheads as is, why would I expect to catch that much more with additional sablefish?”.

In conclusion, minimal changes are expected for trawl sablefish discard patterns if the survival credit were adopted, since the costs are expected to outweigh the costs of discarding. Although there would be less penalty to discard with the survival credit, the penalty would still remain high (only get back one-half QP) especially compared to the trip limit era (which were effectively zero to the individual, since trip limits were only based on landings).

As such, trawl discards of sablefish would be expected to remain at the same low levels of the post-IFQ era and not return to the higher levels of the trip limit era (Table C-36). Since no changes to discard patterns are expected due to adoption of the credit, the only difference of note could be minor increases of landings (5-11 extra mt per year) associated with them “getting back” half their current discards of sablefish. The overall difference in mortality due to an extra 5-11 mt of landings per year would be negligible (0.3-0.8 percent extra per year). This would provide benefit to industry, as they would be able to convert a portion of their non-marketable discards (current IFQ discards) to landings.

Table C-36. Bottom trawl discards of sablefish in relation to landings by era. If provided the credit, then landings are expected to increase by 5-11 mt per year, which is the amount in QP savings they would get back for discarding (= IFQ era discards x ½).

Year	Program	Landings	Discards	% Discards	Discard mort.	% Discard mort.
2007	LE trawl	2,418	371	13.3%	185	7.1%
2008	LE trawl	2,864	187	6.1%	93	3.2%
2009	LE trawl	2,999	320	9.6%	160	5.1%
2010	LE trawl	2,506	479	16.1%	240	8.7%
2011	IFQ	1,677	9	0.6%	5	0.3%
2012	IFQ	1,440	8	0.5%	4	0.3%
2013	IFQ	1,401	8	0.5%	4	0.3%
2014	IFQ	1,279	21	1.6%	11	0.8%

IFQ fixed gear sablefish

The same cost-benefit analysis that was used for trawl was used to evaluate if an FG survival credit of 80 percent (i.e., current DMR is 100 percent and proposed is 20 percent) could create the incentive for increased discarding.

Similar to trawl, attempting to high-grade with the survival credit would likely be a losing proposition in general for IFQ FG. That is because their expected gross revenue from attempting to high-grade (+$2.42 per pound discarded) is outweighed by the gross revenue lost from high-grading except for with the extra smalls (+$0.49 per pound discarded). As with trawl, the expected return is based on the chances that they could catch any of the grades while attempting to high-grade, which includes risks of failed attempts where they catch the same or smaller grades.

It is doubtful that the extra $0.49 per pound that could be gained by discarding extra smalls would be worth the time or effort. That is because IFQ FG appears to nearly exclusively target sablefish (96 percent of total landings) despite there being rather high potential net gross revenues for other stocks, especially compared to the $0.49 sablefish potential for high-grading extra smalls. For example, the potential net gross revenue for targeting shortspine thornyhead, which is the second-most commonly landed IFQ FG stock (48 mt of 3,473 mt), is over $2.00 per pound based on a lease cost of only $0.02 per pound (January 2018 auction price via Jefferson State Trading Company) compared to an average landed price per pound of $2.16 (for IFQ FG).

While perhaps not a perfect example, since it might be more time consuming or costly to try to catch shortspine thornyheads, it does provide supporting rationale as to why greater IFQ fixed gear discarding of sablefish would not be expected with the survival credit for any grade. Assuming the ratios and prices used in this analysis are correct and consistent across the fleet, time, and fishing areas, the question is whether

fishers would incur the costs of fishing under the IFQ program (including the costs of at-sea monitoring) in order to catch a $0.49/lb. fish. If the answer is no, then discard survival credit would be less likely to result in high-grading. If there are particular fishermen, times, or fishing areas where a better return can be gained, then this analysis might understate the potential incentive for discarding.

Since minimal additional increases in discarding for IFQ FG would be expected, the main difference with a survival credit could be an increase in landings by roughly 80 percent of the discards (Table C-37). That is because 80 percent of their discards could be converted to QP savings/gains that would go back into their accounts and could be spent on more landed catch. The projected increases in landings are projected to be minor (9-17 mt per year), as that would represent about a 1-2 percent increase in total mortality.

In conclusion, the survival credit is not expected to increase discarding for bottom trawl or IFQ FG, since the costs of discarding would be expected to outweigh the benefits. Therefore, the main difference with adoption of the credit would be an increase of landings equal to the IFQ era discards multiplied by the credit, as this would represent the amount of QP savings they would get back that could be spent on landings. In both cases, the expected increases to landings would be minor since discards have been low for both during the IFQ era. Although higher landings would increase IFQ attainments, they would still be strictly held to their individual and sector allocations, which maintains a low risk to the ACL. Risks to IFQ allocations are mainly attributed to carry-over, and any extra risks associated with survival credits would be best addressed in future carry-over decision-making processes, since the two are linked.

Table C-37. Expected net gross revenue returns of discarding a pound of IFQ FG sablefish by grade in attempt to high-grade with the survival credit.

Grade	**% Landings**	**Sablefish price per lb. (cost to discard)**	**% landings x price per lb. x 4/5 QP savings (sum is basis for expected return)**	**Expected Sablefish return**	**Net gross revenue**
Extra Small	18.5%	1.9	0.29	2.42	0.52
Small	27.0%	2.9	0.62	2.42	-0.48
Medium	35.4%	3.1	0.89	2.42	-0.68
Large	18.8%	4.1	0.62	2.42	-1.68
Extra Large	0.3%	4.0	0.01	2.42	-1.58
		Sum is expected sable return =	**2.42**		

Table C-38. Projected change in historical IFQ fixed gear discards and landings, had the survival credit been available in the past. Expected gains in landings (9-17 mt) would only increase mortality by 1-2 percent by year.

Year	Original			Expected with 80% survival credit		
	Landings	Discards	Discard mort	Landings	Discards	Discard mort
2011	1,116	20	4	1,131	20	4
2012	934	21	4	950	21	4
2013	523	11	2	532	11	2
2014	761	13	3	771	13	3

Bottom trawl and IFQ FG lingcod

Although the survival credit would apply to both trawl lingcod and trawl sablefish, the analysis of this new management is primarily focused on impacts stemming from the sablefish survival credit. That is because the two main potential benefits of discarding sablefish are not thought to be nearly as prevalent for lingcod (i.e., no price benefit of high-grading to larger lingcod nor are lingcod thought to be a constraint to other stocks).

Additionally, since lingcod are a low attainment IFQ stock[4] and fetch high prices, the main focus with or without the survival credit would be to land as much of their catch as possible and to try to catch even more. There is little if any benefit of discarding marketable and legal-size lingcod (22" minimum north of 42° N. lat.; 24" minimum south of 42° N. lat.) just to replace it with other marketable legal-size lingcod. As evidence, note that the lingcod discard rate has been low during the IFQ era (Table C-38**)** of which the main reason for the discards as reported to the observer program (see section 3-9 of the observer manual) has been lack of markets or sub-legal fish (Table C-39). For example, 88 percent of northern discards and 99 percent of southern discards have been for these reasons.

No changes to fishing patterns are therefore expected to result if bottom trawlers are provided survival credits for lingcod. Again, they would be expected to retain everything that is legal and marketable regardless if given a survival credit for discarding or not. One of the main benefits would be that individual vessels would be able to increase their revenue for a given amount of quota. For example, if 9.2 percent of the fish are discarded (as in 2014) and 68.1 percent of the discards are because they are sublegals, then the maximum take under status quo a vessel is using is about 6.3 percent of its lingcod QP to cover discards (9.2% x 68.1%). It might also be significant for the occasional vessel which approaches the annual vessel QP limit for lingcod. Such a vessel could land more fish than it could without the discard credits.

[4] The projected 2019 IFQ lingcod attainments are 42 percent for north of 40°10' N. lat. (854 mt of 2,047 mt) and 8 percent for south of 40°10' N. lat. (36 mt of 443 mt) compared to 98 percent for north of 36° sablefish (2,529 mt of 2,581 mt).

For IFQ FG, no changes are expected since there are only minor amounts of lingcod landings (< 3 mt) and discards (< 0.5 mt) per year. The IFQ fixed gear appears to be selectively targeting only sablefish (>95 percent of their total catch).

Table C-39. Bottom trawl landings and discards of lingcod +-4 years of implementation of IFQ in 2011.

Year	Era	Landings	Discards	% Discards	Discard mort.	% Discard mort.
2007	LE trawl	117	144	55.1%	72	38.1%
2008	LE trawl	107	79	42.6%	40	27.0%
2009	LE trawl	108	115	51.4%	57	34.6%
2010	LE trawl	72	18	20.2%	9	11.3%
2011	IFQ	241	41	14.4%	20	7.7%
2012	IFQ	342	30	8.1%	15	4.2%
2013	IFQ	321	24	6.9%	12	3.6%
2014	IFQ	221	22	9.2%	11	4.8%

Table C-40. Rationale for bottom trawl discards of lingcod.

Discard reason	North of 42° (OR + WA)		South of 42° (CA)	
	Pre-IFQ	IFQ	Pre-IFQ	IFQ
Lack of market	44.6%	19.9%	28.0%	4.3%
Regulatory - other a/	27.7% a/	12.0%	14.7% a/	0.7%
Regulatory - sublegal a/	27.7%	68.1%	57.3%	95.0%

a/ They only report to a single regulatory category that could be for any reason. Regulatory category fish below the size limit had to have been sublegals.

Other Fish

c. Will this management measure affect catch of non-groundfish species? If no, describe in a few sentences why not. If yes, is the magnitude of the change substantial and to what stocks? How is this catch monitored? Are the affected stocks managed under another

federal FMP or by a state? Do other management plans include harvest specifications? Is it possible to assess the contribution of the measure, if any, to overfishing risk of a non-groundfish stock?

This management measure is not expected to result in considerable changes to fishing or discard practices, thus no notable negative impacts are expected to non-groundfish. Note that non-groundfish estimates are produced on a one-year lag which would delay evaluation timeframes.

2. EFH and Ecosystems
    a. Will this management measure change fishing activity so as to adversely affect essential fish habitat compared to no-action effects? If no, describe in a few sentences why not. If yes, is the magnitude of the change substantial and why? Describe the mechanism linking the management measure to adverse impacts. For example, changes in fishing gear or methods; changes in the temporal and/or geographic distribution fishing effort.

This management measure is not expected to result in considerable changes to fishing practices, thus no notable negative impacts to EFH or ecosystems are expected.

    b. Can the proposed measure reasonably be expected to adversely affect vulnerable marine or coastal ecosystems, including but not limited to, deep coral ecosystems?

This management measure is not expected to result in considerable changes to fishing or discard practices, thus no notable negative impacts are expected.

    c. Can the proposed measure reasonably be expected to adversely affect biodiversity or ecosystem functioning (e.g., benthic productivity, predator-prey relationships, etc.)?

This management measure is not expected to result in considerable changes to fishing or discard practices, thus no notable negative impacts are expected.

3. Marine Mammals and ESA Species
    a. Will this management measure result in adverse effects to ESA-listed species and/or non-listed marine mammals and seabirds? If no, describe in a few sentences why not. If yes, is the magnitude of change substantial and why? Describe the mechanism linking the management measure to adverse impacts. For example, changes in fishing gear or methods; changes in the temporal and/or geographic distribution fishing effort.

There are interactions between the Pacific coast groundfish fishery (including the shorebased IFQ fishery) and ESA salmon, ESA non-salmon, and marine mammals.

In regards to ESA non-salmon, the 2012 Biological Opinion concluded that the continued action of the Pacific coast groundfish fishery is “not likely to jeopardize the continued existence and is not likely to destroy or adversely modify designated critical habitat of green sturgeon, eulachon, and leatherback sea turtles, and is not likely to jeopardize humpback whales. (Note that the eastern distinct population segment [DPS] of Steller sea lions was subsequently de-listed.)

(Agenda Item F.5, Situation Summary, April 2017).

The same conclusion was determined for ESA salmon in the 2017 Biological Opinion (NMFS Consultation Number: F/WCR-2017-7552).

There are also interactions with non-ESA marine mammals as documented in a Northwest Fisheries Science Center report.

This management measure is not expected to result in considerable changes to fishing practices, thus no notable negative impacts are expected to ESA species or marine mammals.

4. Social and Economic
    a. Will this management measure change the distribution of catch opportunity among user groups, fishing communities, states, or regions? If no, describe in a few sentences why not. If yes, is the magnitude of the change substantial? Why is it substantial? For example, which user groups are likely to see increased catch opportunity? Which may lose catch opportunity?

The benefits in additional landings of sablefish associated with the credit are similar but slightly greater for IFQ FG (9-17 mt in extra landings; Table C-37) than for trawl (5-11 mt in extra landings; Table C-36).

    b. Can the proposed action reasonably be expected to significantly affect public health or safety?

This management measure is not expected to result in considerable changes to fishing or discard practices, thus no notable negative impacts are expected to safety or public health.

5. Cumulative effects

Past fishery and non-fishery actions have created the baseline conditions. For fishery management actions, consider current (put into place recently but the effects may not be visible) or "reasonably foreseeable future items (actions that the Council is moving forward with). For Specs, consider the 19/20 preferred alternative and the routine management measures.

Since this management measure is not expected to result in considerable changes to fishing or discard practices, the cumulative effects associated with other changes for the current and foreseeable future are expected to be minor.

These include: (1) proposed new management that would liberalize the shoreward non-trawl RCA from 100 fm to 75 fm in the area off Northern California (40°10' N. lat. - 42° N. lat.) that would pertain to IFQ FG; (2) the new salmon mitigation measures/reserve rules being analyzed as a new management measure that stem from the ITS of the 2017 Biological Opinion, which would pertain to all IFQ gears; (3) the trawl EFPs (Electronic Monitoring and the Year-Round Coastwide Midwater Trawl & Gear Modification EFP; (4) the ongoing development of Amendment 26 that would remove blackgill rockfish from the southern slope complex to be managed with stock-specific harvest specifications and revised trawl and non-trawl allocations; (5) the ongoing development of Amendment 28 that could modify EFH and trawl RCAs; (6) mitigation measures stemming from the ITS for Short-tailed Albatross such as modifications to streamer line requirements and fixed gear logbook; and possibly others.

Repeat each set of questions for affected resources (Groundfish, other fish, EFH, ecosystems, ESA species, marine mammals, social, and economic).

a. Does the proposed management measure have non-negligible adverse effects to the resource? *If none then stop and proceed to the next resource.*

None.

6. Other
    a. Are the proposed action's effects on the quality of the human environment likely to be highly controversial? (science of the effects, not the perception)

No.

b. Are the proposed action's effects on the human environment likely to be highly uncertain or involve unique or unknown risks?

Any analyses that attempt to project behavioral responses to conditions that have not yet occurred are inherently uncertain. The risks are low, as individual accountability measures would apply regardless if provided credit or not.

7. MSA National Standards
    a. Describe how the management measure is consistent with the 10 MSA National Standards.
        i. (1) Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.

As described in detail above, the new management measure is not expected to increase the risk of overfishing and could increase the ability to obtain optimum yields.

i. (2) Conservation and management measures shall be based upon the best scientific information available.

This new management measure would reflect a shift toward using the best scientific information available.

i. (3) To the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination.

NA

i. (4) Conservation and management measures shall not discriminate between residents of different States. If it becomes necessary to allocate or assign fishing

privileges among various United States fishermen, such allocation shall be (A) fair and equitable to all such fishermen; (B) reasonably calculated to promote conservation; and (C) carried out in such manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.

There is no inequality or discrimination associated with the new management measure.

i. (5) Conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose.

As described above, conservation and fishery utilization are both considered.

i. (6) Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches.

Risks of variation are mitigated by the IFQ fisheries being held to the highest of standards.

i. (7) Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.

NA

i. (8) Conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities by utilizing economic and social data that meet the requirements of paragraph (2), in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities.

As detailed above, this new management measure could increase the landings and overall value of fishery resources.

i. (9) Conservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.

This new management measure is not expected to increase discarding nor discard mortality of sablefish or lingcod, and is not expected to alter fishing behaviors and thus not change bycatch of other species.

i. (10) Conservation and management measures shall, to the extent practicable, promote the safety of human life at sea.

NA

C.6.4 Adjustments to the Non-Trawl Rockfish Conservation Area in California

This new management measure was not adopted as part of the Council's preferred alternative in April 2018. However, the following analysis was available for the Council's consideration and is preserved in this Appendix since the Council may want to build upon this analysis for future consideration.

Part A

5. Describe the new management measure.
    - What stocks will it affect? What fisheries will it affect? What is the geographic scope?

This management measure would modify the seaward boundary of the non-trawl Rockfish Conservation Area (RCA) from the California/Oregon border (42° N. latitude) to Cape Mendocino (40°10' N. latitude). The non-trawl RCAs are currently 30 fm to 100 fm; this action would modify the seaward boundary from 100 fm to 75 fm and would only apply to non-trawl commercial fisheries.

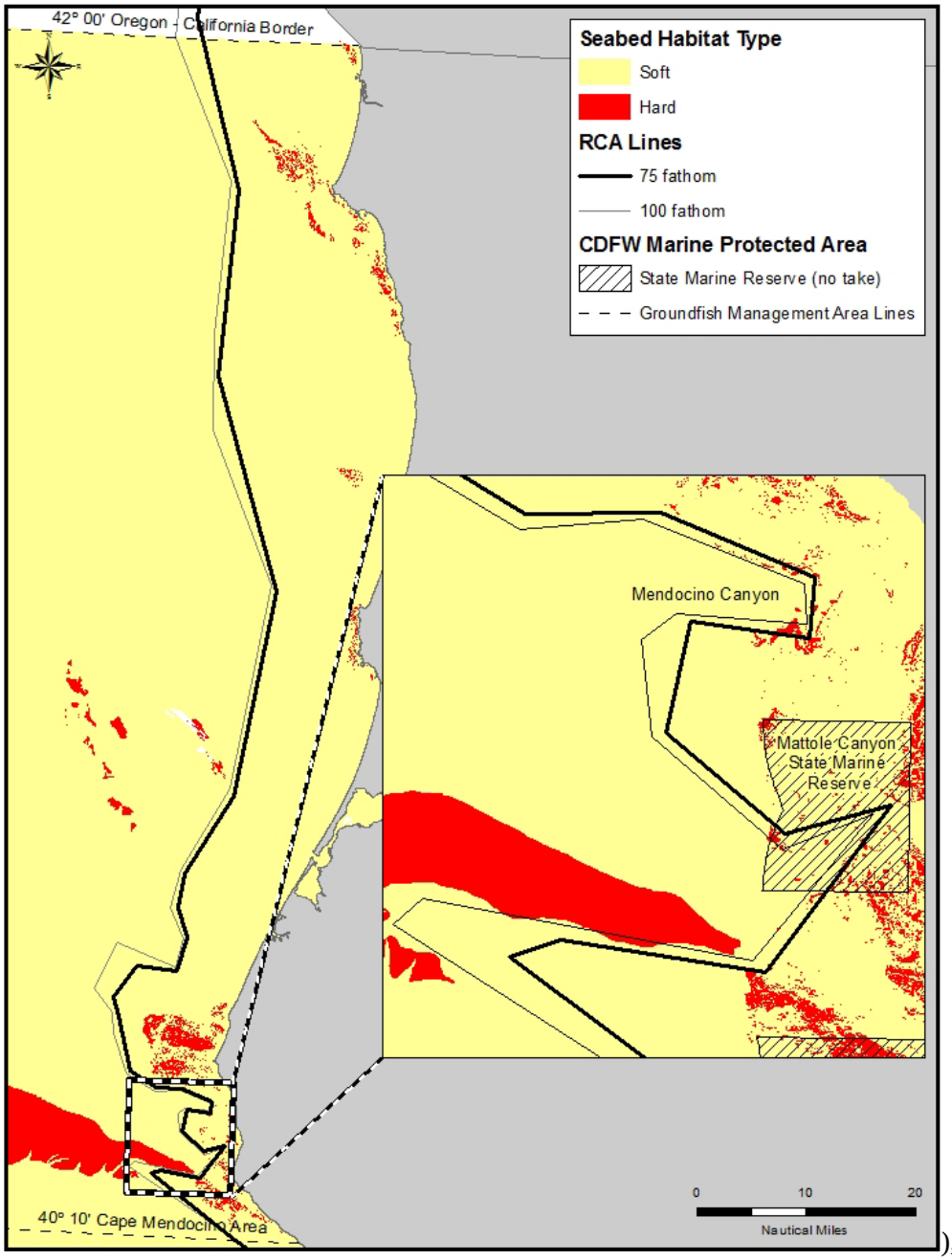
Modifications to RCAs are designated as a routine management measure in the groundfish FMP. The National Marine Fisheries Service (NMFS) has routinely made modifications to RCAs via inseason action for commercial trawl, commercial fixed gear, and recreational fisheries. Because the seaward boundary of the non-trawl RCA in the proposed area has been in place for over a decade, additional analysis is provided here to help inform potential impacts of this action.

RCAs were originally established in the early 2000s to protect rockfish species, which had recently been declared overfished. The primary goal of the non-trawl RCA between 42° N. latitude and 40°10' N. latitude was to protect widow, canary, and yelloweye rockfish. These closures were intended to close areas (or to restrict access) in the main portion of the species' depth range to reduce encounters and mortality, thereby allowing the stock to rebuild more quickly. In conjunction with RCAs, trip limit reductions (including no retention) were implemented to reduce catches (and overall mortality) and help stocks rebuild more quickly. While RCAs have been successful in reducing encounters with overfished species, they have also reduced access to many co-occurring healthy target stocks which are found in similar depths.

The groundfish fleet in California is comprised of many small vessels, which were impacted when RCAs were implemented. An important shelf rockfish fishery for widow and yellowtail, which used to occur between the California/Oregon border and Cape Mendocino was severely impacted when the non-trawl RCA was implemented because it restricted access to prominent fishing grounds. Non-trawl landings of shelf rockfish into ports in the Crescent City and Eureka areas resulted in a yearly average of 162 mt between 1990 and 2000 with a high of 452 mt in 1990. Although individuals still tried to target shelf rockfish species, they were unsuccessful because they could no longer find them in economically viable quantities in the areas that were open to fishing. Non-trawl landings of shelf rockfish into Crescent City and Eureka resulted in a yearly average of only 3.4 mt between 2001 and 2010 with a high of 8.8 mt in 2001.

Widow rockfish was declared rebuilt in 2011, followed by canary rockfish in 2015. Given that these stocks are rebuilt, it is appropriate to consider modifications to the non-trawl RCA. Modifications to RCAs have been implemented by NMFS to allow access to healthy stocks as long as interactions with other overfished species remain within allowable limits. This action will still maintain the 86 percent of the non-trawl RCA and continue to provide protections to species, but will allow access to healthy target stocks which are currently inaccessible due to the configuration of the current non-trawl RCAs.

This management measure will increase access to shelf rockfish species (i.e., yellowtail and widow rockfish) in California between 42° N. latitude and 40°10' N. latitude. Although canary rockfish may be encountered and can be retained as of 2017, any increased impacts are expected to remain below allocation limits because mortality will be limited through cumulative trip limits.

This management measure is not expected to increase encounters with yelloweye rockfish. The preferred habitat for yelloweye rockfish is rocky outcrops and pinnacles. Although yelloweye rockfish have been found over soft muddy bottom near rocky outcrops, movement away from rocky outcrops tends to be minimal. A majority (99.7 percent) of the predicted seabed habitat in the area to be opened is soft muddy bottom (

), whereas the substrate tends to be more of a mix of rocky outcrops and soft bottom north of 42° N. latitude farther north,

where the biomass is estimated to be larger (Table C-41, Figure C-11, Figure C-12) (Gertseva and Cope, J.M. 2017; Love, 2002).

The depth range for yelloweye rockfish is from 8 fm to 300 fm. Adults are found primarily between 50 fm and 100 fm, and tend to occur in shallow water in the northern parts of their geographic range (Love, 2002). The AFSC Triennial Survey and Northwest Fisheries Science Center (NWFSC) West Coast Groundfish Bottom Trawl Survey[5], combined, recorded 0.14 mt of yelloweye rockfish between 42° N. latitude and 40°10' N. latitude from 1977-2015; 0.06 mt from the NWFSC West Coast Groundfish Bottom Trawl Survey (2003-2015) between 50fm – 100fm. As noted in the 2017 yelloweye rockfish stock assessment (Gertseva and Cope 2017), the bottom trawl survey is limited, however, it indicates known areas of abundance correspond with major rocky outcrops.

Given the original intent of the non-trawl RCA was to offer protection to overfished rockfish, the areas in which the non-trawl RCAs cover hard substrate are likely the most beneficial to species such as yelloweye rockfish. With over 99 percent of soft seabed habitat within the area of interest, as well as only 0.14 mt recorded over a period of 38 years of a trawl survey, the impacts to yelloweye rockfish in the proposed area are likely to be minimal.

Table C-41. Percent of seabed habitat between 75-100 fm off the coast of Washington, Oregon, and Northern California.

Area	Habitat	Area (mi^2)	%
WA	Soft	1412.153	89.7%
	Mixed	140.3846	8.9%
	Hard	21.55685	1.4%
OR	Soft	2335.702	86.8%
	Mixed	83.61147	3.1%
	Hard	270.9084	10.1%
CA	Soft	140.3277	99.7%
	Hard	0.380395	0.3%

This management measure will also increase fishable area available to the directed Pacific halibut fishery, yet it is not likely to result in increased yelloweye rockfish encounters because the fishing activity occurs over soft bottom habitat in specific areas due to the patchy distribution of Pacific halibut off northern California. Although there are reports of yelloweye rockfish bycatch from the Pacific halibut fishery, the bycatch usually occurs north of 42° N. latitude, likely due to the proximity of the preferred habitat of both species.

Moreover, the non-trawl allocation for yelloweye rockfish increases from 13.4 mt in 2017 to 21.3 mt in 2019 and 22.2 mt in 2020 under No Action. Under Alternative 1, the allocation would be 30.5 mt in 2019 and 31.4 mt in 2020. The substantial increase in the allocation, under either alternative, significantly reduces yelloweye rockfish constraints on the non-nearshore fixed gear fishery. Lastly, it is likely that

[5] Data source: West Coast Groundfish Bottom Trawl Survey. NOAA Fisheries, NWFSC/FRAM, 2725 Montlake Blvd. East, Seattle, WA 98112

fishermen will actively avoid and/or minimize interactions with this stock because yelloweye rockfish is overfished and retention is prohibited in commercial fixed gear fisheries.

Participants in the Trawl Individual Fishing Quota program who utilize gear switching would also be affected by this management measure, but because individuals in this program are fully accountable for both retained and discarded catch, impacts are not expected to increase (or cannot be quantified) for these species from this management measure for similar reasons stated above: minimal retention of canary rockfish; a majority of the substrate between 75fm -100 fm is not preferable for yelloweye rockfish leading to small amounts of yelloweye rockfish to be reported; and increases in the yelloweye rockfish Shorebased IFQ allocation from 1.1 mt to 1.9 mt (No Action) or 2.7 mt (Alternative 1) would reduce constraints on the fishery.

6. What was considered in order to optimize the performance of this measure?

The original intent of the RCAs and the ongoing need to restrict access to these areas in light of optimistic outlooks on overfished stocks was considered to optimize performance of this measure. Because many stocks have been declared rebuilt (i.e., widow and canary)) it is appropriate to modify the non-trawl RCA to allow access to healthy target stocks while still maintaining a large portion of the RCA which will provide protections as other stocks continue to rebuild.

Widow rockfish was declared rebuilt in 2011 and canary rockfish in 2015. Yelloweye rockfish is forecast to be rebuilt by 2025 according to the 2017 rebuilding analysis[6] which is 12 years ahead of schedule. In addition, the 2017 yelloweye stock assessment[7] indicates that 2017 spawning output (323 million eggs) and Age 8+ biomass (3,711 mt) are the highest these values has been since 2007. No change to yelloweye rebuilding progress is expected as a result of this action.

7. What and when was the Council's decision and how did it arrive at the decision?

At the September 2017 meeting, the Council adopted consideration for new management measures for the directed commercial Pacific halibut fishery in California and Oregon, and commercial fixed gear groundfish fisheries with alternatives that included movement of the non-trawl RCA boundary from 100 fm to 75 fm for vessels participating in the directed commercial Pacific halibut fishery. At the November 2017 meeting, the Council decided not to forward measures that only affected the directed commercial Pacific halibut fishery, noting various complexities (enforcement, etc.) because this is a derby fishery.

8. Is there any other background information that was important to the Council's decision? For example, has this measure been previously discussed by the Council, if so what was the outcome?

The Council routinely modifies RCAs for both the trawl and non-trawl fisheries during inseason actions and biennial specifications. In 2014, NMFS recommended liberalizations to the trawl RCA north of 40°10' N. latitude[8] to allow increased access to target species, mainly petrale sole. In 2013 and 2015, NMFS implemented changes to the non-trawl RCA between 43° N. latitude and 40°10' N. latitude to restore access to target stocks, mainly nearshore species and lingcod after the shoreward boundary had been changed from the 30 fathom line to the 20 fathom depth contour in 2009. In 2013, the shoreward boundary of the non-trawl RCA between 43° N. latitude and 42° N. latitude changed from the 20 fathom depth contour to 30

[6] https://www.pcouncil.org/wp-content/uploads/2018/01/2017_yelloweye_rebuilding_Final.pdf
[7] https://www.pcouncil.org/wp-content/uploads/2017/12/Yelloweye_rockfish_2017_Final.pdf
[2] http://www.westcoast.fisheries.noaa.gov/publications/nepa/groundfish/misc_ea/rca_ea_3_4_14.pdf

fathom line. In 2015, the shoreward boundary of the non-trawl RCA between 42° N. latitude and 40°10' N. latitude also changed from the 20 fathom depth contour to 30 fathom line. In 2017, NMFS implemented changes to the seaward non-trawl RCA for the area between 40°10' N. latitude and 34°27' N. latitude and the shoreward non-trawl RCA for the area south of 34°27' N. latitude.

Part B

5. What is the objective of this management measure?
    - Does it have a conservation purpose? (e.g., managing catch within ACLs? mitigating impacts to habitat or protected species?) Does it have a social/economic purpose? (e.g., allowing increased opportunity to catch target species? Does it have a social benefit of making fishing opportunity among different user groups more equitable?)

The objective of this management measure is to allow increased opportunity to catch target species, which are inaccessible due to the current RCAs. This management measure will also restore access to historical fishing grounds to fleets in California that were severely restricted due to implementation of the RCAs in the early 2000s. Non-trawl landings of shelf rockfish into ports in the Crescent City and Eureka areas resulted in a yearly average of 162 mt between 1990 and 2000 with a high of 452 mt in 1990. Non-trawl landings of shelf rockfish into Crescent City and Eureka resulted in a yearly average of only 3.4 mt between 2001 and 2010.

Modifications to RCAs in the trawl fishery have been implemented routinely to allow access to target species (e.g., petrale sole), and this management measure would afford the commercial fixed gear fisheries in California the same opportunity.

6. The following screening is intended to help NMFS understand the broad implications of the management measure and to determine the appropriate NEPA compliance strategy.

    g. How would you describe this new management measure (may select more than one)
        - ❑ Technical correction or a change to a fishery management action or regulation, which does not result in a noticeable change in any of the following: fishing location, timing, effort, authorized gear types, or harvest levels.
        - ■ Has potential for noticeable change to any of the following: fishing location, timing, effort, authorized gear types, or harvest levels.
        - ❑ Designed to mitigate some other environmentally negative effect (e.g., cap, closed area, bag limit).
        - ❑ Designed to mitigate a negative economic or social effect.
        - ❑ Applies to only a small area of the total EEZ.

    h. What resource(s) would the management measure likely effect, either positively or negatively?
        - ❑ Physical EFH or Ecosystems
        - ■ Biological Resources (target, non-target species)
        - ❑ Protected Resources (mammals, ESA-listed)
        - ■ Economic, social, cultural

    i. If the management measure is mitigating or offsetting an effect on a resource, identify that resource.
        - ❑ Physical EFH or Ecosystems
        - ❑ Biological Resources (target, non-target species)
        - ❑ Protected Resources (mammals, ESA-listed)
        - ❑ Economic, social, cultural

Part C – Keeping in mind the responses provided in part 2 above, briefly answer the following questions. Please focus on the issues of importance; if there are no potential effects, say 'no anticipated effects'. Remember both positive and negative effects.

10. Groundfish
    a. How does any change in catch relate to harvest specifications and the risk that overfishing will occur? Can the proposed measure reasonably be expected to adversely affect managed fish species?

Target stocks

This management measure is expected to increase catch of widow, yellowtail, and other healthy shelf rockfish species by allowing access to depths in which they are most prevalent. No adverse impacts are anticipated for target stocks. The non-trawl fisheries are currently managed with cumulative trip limits, and any increases in catch are expected to remain within allowable harvest limits.

Widow and yellowtail rockfishes cannot be accessed to their fullest extent due to the current RCA depth restrictions that were originally implemented to protect overfished species (e.g., canary rockfish). Since canary rockfish has been declared rebuilt, allowing some access back inside the RCA is appropriate to access abundant healthy stocks like widow and yellowtail rockfish, and at the same time not jeopardize the stock status of other overfished species such as yelloweye rockfish.

Table C-42 summarizes the Baseline projected impacts for groundfish stocks compared to non-trawl allocations. All are far below their respective allocations. In 2016, retention of canary rockfish was prohibited; therefore reported values account for bycatch only.

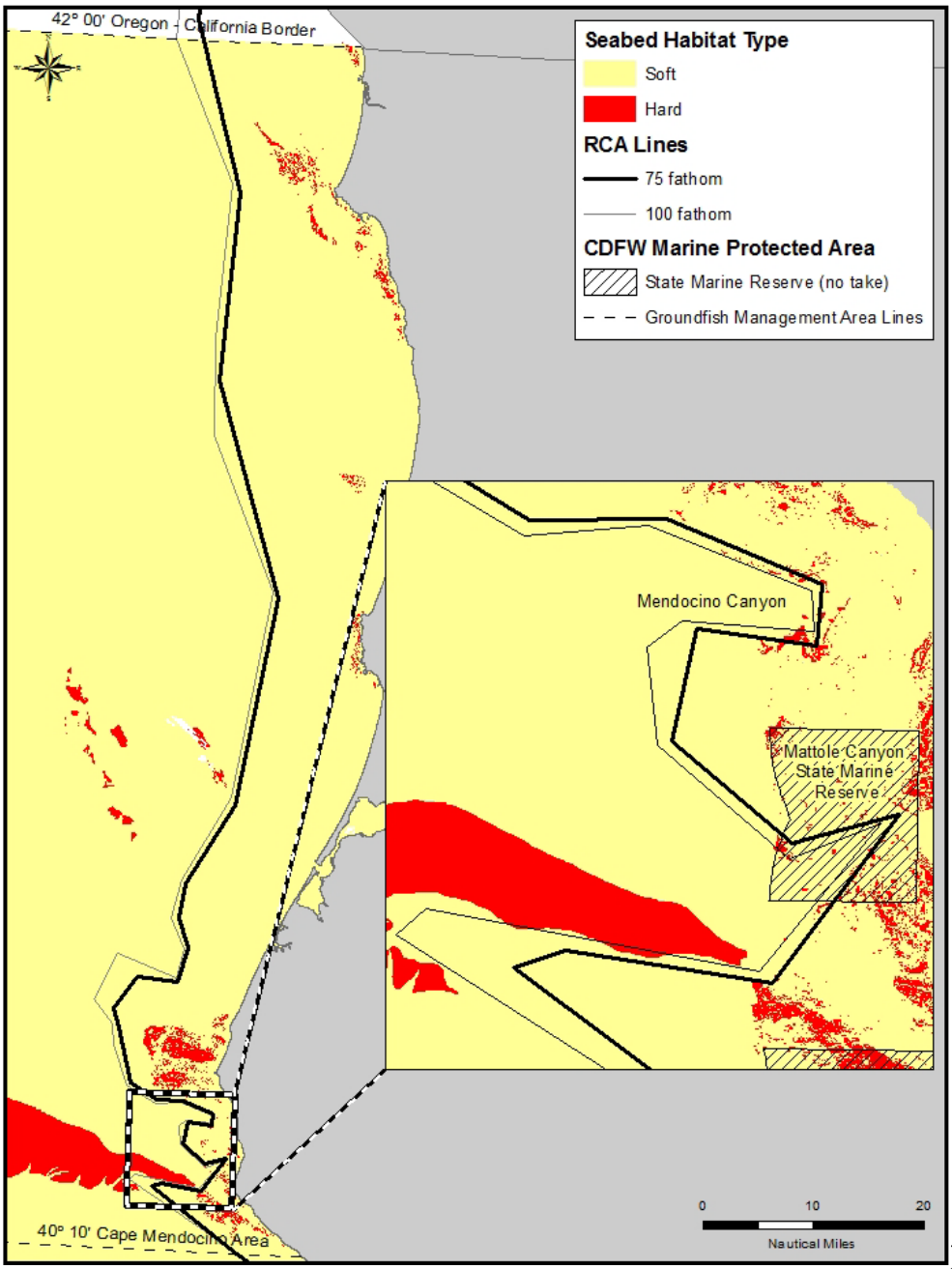
Table C-42. Summary of projected impacts under Baseline compared to non-trawl allocations.

Stock	Management Area	2016 Total Mortality Fixed Gear (mt)	2016 Non-Trawl Allocation (mt)
Yellowtail rockfish	North of 40°10' N. lat.	1.81	638
Widow rockfish	Coastwide	1.28	169
Shelf rockfish	North of 40°10' N. lat.	3.00	748
Canary rockfish	Coastwide	2.08	51.3
Yelloweye rockfish	Coastwide	0.8	12.1

Starting in 2017, limited retention of canary rockfish was permitted for fixed gear fisheries. Although modifying the RCAs may increase encounters of canary rockfish, trip limits will limit the amount of canary rockfish that can be legally landed. As a result, once a trip limit is reached, fishermen will likely avoid encountering canary rockfish, as it becomes financially burdensome spending extra time sorting and discarding any additional canary rockfish.

Overfished species (yelloweye rockfish)

Yelloweye rockfish is encountered north of 40°10' N. latitude, with encounters increasing with latitude, typically over high relief pinnacles. The likelihood of this management measure increasing encounters of yelloweye rockfish is small because only 0.3 percent (0.38 mi² out of 140.51 mi²) of the predicted seabed habitat type in the area to be opened is classified as "hard" (



) presumably leading to the small amount of bycatch (9.25 lbs) that has been reported between 75 fm -100 fm in various surveys. In addition, 0.12 mi² of the 0.38 mi² of "hard" habitat to be opened as a result of the RCA change will actually remain closed to the commercial fishery because it overlaps with the Mattole Canyon State Marine Reserve. Finally, it is likely that fishermen will actively try to avoid and/or minimize interactions with this stock because yelloweye rockfish cannot be retained in the non-trawl fixed gear fishery.

b. Will this management measure change catch of groundfish stocks compared to past catches and management reference points? If no, describe in a few sentences why not. If yes, what stocks would be substantially affected?

As noted previously, this management measure is expected to increase catch of widow, yellowtail, and other healthy shelf rockfish species by allowing access to depths in which they are most prevalent. Table C-42 summarizes projected impacts for groundfish stocks expected to be affected by this measure compared to their respective non-trawl allocations. All are far below their respective allocations.

11. Other Fish
    a. Will this management measure affect catch of non-groundfish species? If no, describe in a few sentences why not. If yes, is the magnitude of the change substantial and to what stocks? How is this catch monitored? Are the affected stocks managed under another federal FMP or by a state? Do other management plans include harvest specifications? Is it possible to assess the contribution of the measure, if any, to overfishing risk of a non-groundfish stock?

Commercial non-trawl fixed gear fisheries are subject to Federal observer coverage by WGCOP. WGCOP documents and calculates both landings and discards annually[9]. According to the 2016 WGCOP total mortality report, few non-groundfish species are encountered in the fixed gear fisheries coastwide. California halibut, Dungeness crab, California sheephead, and deepsea sole are non-groundfish species that have been observed in this fishery at very low levels. Catch of these non-groundfish species is not expected to change as a result of this management measure. Deepsea sole are found in very deep depths already accessible, and modifying the depth restrictions will have no effect. Both California halibut and California sheephead have a more southerly distribution and are not found in this area, nor in these depths.

12. EFH and Ecosystems
    a. Will this management measure change fishing activity so as to adversely affect essential fish habitat compared to no-action effects? If no, describe in a few sentences why not. If yes, is the magnitude of the change substantial and why? Describe the mechanism linking the management measure to adverse impacts. For example, changes in fishing gear or methods; changes in the temporal and/or geographic distribution fishing effort.

This measure is not expected to change fishing activity as to adversely affect EFH compared to the current or baseline as analyzed in the 2015-2016 FEIS. EFH which prohibits fishing with bottom trawl gear other than demersal seine is currently designated in some areas that are already open to fishing under No Action. There are no EFH closures applicable to fixed gear in the proposed action area. Any EFH closures currently in effect will remain in place and will not be affected by this action. In a separate decision, the Council is contemplating modifying EFH and/or adding additional EFH areas, however, these closures will only be applicable to bottom contact with trawl gear, not fixed gear, and would therefore have no effect or bearing on this action.

    b. Can the proposed measure reasonably be expected to adversely affect vulnerable marine or coastal ecosystems, including but not limited to, deep coral ecosystems?

Anticipated effects will be minimal because of the small number of documented observations of deep sea corals in this area where seabed habitat is classified as “soft.” An evaluation of the NOAA Deep Sea Coral

[9]Data are summarized coastwide and are not stratified north and south of 40°10' N. lat.

database reveals that there have been 8 observations of sea pens, 3 observations of sponges, and 1 observation of black coral in the area between the 100 and 75 fathom RCA line that would be opened (Figure C-13). In addition, fixed fishing gear has minimal effect on sensitive habitat unlike other gears such as trawl gear.

c. Can the proposed measure reasonably be expected to adversely affect biodiversity or ecosystem functioning (e.g., benthic productivity, predator-prey relationships, etc.)?

No anticipated effects. Fishing activity currently occurs seaward of the 100 fathom RCA line and increasing the fishable area by allowing fishing seaward of the 75 fathom line is not expected to have adverse effects on biodiversity or ecosystem functioning.

13. Marine Mammals and ESA Species
    a. Will this management measure result in adverse effects to ESA-listed species and/or non-listed marine mammals and seabirds? If no, describe in a few sentences why not. If yes, is the magnitude of change substantial and why? Describe the mechanism linking the management measure to adverse impacts. For example, changes in fishing gear or methods; changes in the temporal and/or geographic distribution fishing effort.

This management measure is not expected to affect ESA-listed species and/or non-listed marine mammals and seabirds. No leatherback sea turtles were observed as bycatch in the most recent five-year period (2011-2015). Encounters of eulachon and green sturgeon have been associated with trawl gear, not fixed gear. Also in the time period of 2011-2015, one humpback whale was observed taken in 2014, but at depths much greater than the depths associated with this proposed management measure. Between 2010 and 2015, one short-tailed albatross was also taken in 2011. As described in Table 2-45 of the 2017 Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion, salmon are predominantly encountered with trawl gear, not fixed gear. WCGOP data from 2002-2015 indicate that the average coastwide bycatch of salmon in the non-IFQ fixed gear fleet is 54 Chinook, with a high of 124 individuals. While there have been some bycatch in the non-trawl groundfish fishery between 42° N. latitude and 40°10' N. latitude, the amount has been comparatively insignificant and this management measure is not expected to change this.

14. Social and Economic
    a. Will this management measure change the distribution of catch opportunity among user groups, fishing communities, states, or regions? If no, describe in a few sentences why not. If yes, is the magnitude of the change substantial? Why is it substantial? For example, which user groups are likely to see increased catch opportunity? Which may lose catch opportunity?

This measure is expected to increase catch opportunities in California ports between 42° N. latitude and 40°10' N. latitude, particularly in ports like Crescent City and Eureka which used to have a strong non-trawl shelf rockfish fishery that resulted in yearly average landings of 162 mt between 1990 and 2000 with a high of 452 mt in 1990. California's groundfish fleet is unique and comprised of many more non-trawl fixed gear fishermen compared to other states, and many of these fishermen relied on shelf rockfish species such as yellowtail and widow as a staple in their fishery portfolios. Restoring access to areas where yellowtail and widow rockfish are accessible to non-trawl fishermen will have positive social and economic effects on these ports. The scale of these positive impacts cannot yet be quantified due to recent significant increases in yellowtail limits and the unresolved question of whether or not this increase in combination with the proposed RCA modification will provide enough economic incentive for nearshore fishermen to fish in these depths. This measure is not expected to negatively impact any user groups. This measure

would not have any effect on allocations, so it would not affect any other sector's allowable harvest levels or ability to harvest those fish.

IFQ

From 2011 to 2016, WCGOP observed set data by IFQ vessels exercising the gear switching option revealed that no IFQ fixed gear activity occurred shoreward of the 250 fathom RCA line between 42° N. latitude and 40°10' N. latitude. Therefore, if a shift of the non-trawl RCA seaward boundary into 75 fm were to be implemented, there would probably be very few or no expected changes to the IFQ fixed gear vessel fishing pattern and landings because the fleet is not currently fishing in this area.

Non-IFQ

Examination of WCGOP observed sets by the non-IFQ fixed gear fleet reveals that 36 percent of those sets took place in waters shallower than the shoreward RCA boundary of 30 fm and 64 percent in waters deeper than 100 fm. Of those sets made in waters deeper than 100 fm, the majority of them (79 percent) were made in waters from 150 fm and deeper because of targeting sablefish.

No adverse impacts are anticipated for target stocks. Recent effort in the areas close to the depths to be opened (described below) infers that changes in effort will be small and fixed gear fisheries are currently managed with cumulative trip limits. Any increases in catch are expected to remain within allowable harvest limits.

Figure C-14 depicts areas where WCGOP observed non-IFQ hook-and-line fishing effort occurred and Figure C-15 depicts areas where WCGOP observed non-IFQ pot fishing effort occurred in relation to the non-trawl RCAs from 2011 to 2015 between 42° N. latitude and 40°10' N. latitude[10]. Due to confidentiality issues, these illustrations use relative line density to mask actual fishing locations. As such, in some areas it may appear that fishing took place within the RCAs or much closer to the boundaries than it actually did. Locations of fixed gear sets were approximated by creating straight line features from the start and end points of sets. Straight line features represent an approximation of actual fishing patterns because actual sets are not likely straight and may also skirt the boundaries of closed areas like RCAs without actually entering them. Relative intensity of fishing effort for each gear type was then calculated as the total length of all lines intersecting a standardized area. In addition, areas that included less than three unique vessels due to either patchy effort or low observer coverage rates were excluded from the map to preserve confidentiality.

b. Can the proposed action reasonably be expected to significantly affect public health or safety?

No anticipated effects.

15. Cumulative effects

Past fishery and non-fishery actions have created the baseline conditions. For fishery management actions, consider current (put into place recently but the effects may not be visible) or "reasonably

[10]http://www.pcouncil.org/wp-content/uploads/2017/03/F5a_NMFS_Rpt1_ElectricOnly_FishingEffort_rpt_2017_Apr2017BB.pdf

foreseeable future items (actions that the Council is moving forward with). For Specs, consider the 19/20 preferred alternative and the routine management measures.

Repeat each set of questions for affected resources (Groundfish, other fish, EFH, ecosystems, ESA species, marine mammals, social, and economic).

a. Does the proposed management measure have non-negligible adverse effects to the resource? *If none then stop and proceed to the next resource.*
b. Is it likely that any current or future fishery management actions may have overlapping effects with this management measure on the resource?
c. Is it likely that any current or future non-fishery management actions may have overlapping effects with this management measure on the resource?
d. Qualitatively or quantitatively, add the effects in (a), (b), and (c) projected to the end of 2020. Can the sum of the effects be considered 'significant'? Consider both positive and negative effects.
e. Whether significant or not, what is the proposed new management measure's contribution to the total effect? E.g., the incremental impact from this management measure to the cumulative effects on groundfish is negligible/high/medium.

Groundfish – Trip limit adjustments proposed for sablefish, slope rockfish, darkblotched rockfish, longspine thornyhead, and shortspine thornyhead will not result in cumulative effects to groundfish because these species occur in much greater depths than the 75 to 100 fathom depth range of this proposed change. Lingcod trip limit adjustments may result in a cumulative impact with this management measure since lingcod occur in the area but it is expected to be negligible and will not put lingcod at risk of overfishing because trip limits will be in place to ensure that catch does not exceed ACLs.

Other Fish - There are no cumulative effects to other fish because there are no other commercial fixed gear actions being contemplated that would affect other fish in this area. Several state-managed species, which could be encountered in commercial fixed gear fisheries, are not found within the geographic scope of the proposed action. The incremental impact from this management measure to the total cumulative effects on other fish species is negligible.

EFH - There are no cumulative effects to EFH because no changes are proposed to existing EFH for commercial fixed gear fisheries between 42° N. latitude and 40°10' N. latitude. Under a separate process, the Council is considering modifying EFH along the west coast and removing the trawl RCA. Given that both these actions are limited to trawl gear, and not fixed gear, the incremental impact from this management measure to the total cumulative effects on EFH is negligible.

Ecosystem - There are no cumulative effects to ecosystems because the proposed management measure is not expected to adversely affect vulnerable marine or coastal ecosystems or adversely affect biodiversity. The incremental impact from this management measure to the total cumulative effects on the ecosystem is negligible.

ESA Species - There are no cumulative effects to ESA species as a result of this action. Although salmon, eulachon, leatherback sea turtles, green sturgeon, humpback whales, and short-tailed albatross do occur in this geographic area, they are either rarely or not commonly encountered with fixed gear. The incremental impact from this management measure to the total cumulative effects on the ecosystem ESA-listed species is negligible.

Marine Mammals - There are no cumulative effects to marine mammals because in the time period of 2011-2015, no marine mammals were taken in this area at the depths associated with this action. The incremental impact from this management measure to total cumulative effects on marine mammals is negligible.

Social - This management measure will have minor positive social impacts by restoring a portion of historical fishing grounds in California whose fisheries were curtailed due to the implementation of the RCAs in the early 2000s.

Economic - This management measure will have positive economic impacts by restoring a portion of historical fishing grounds in California that were eliminated due to the implementation of the RCAs in the early 2000s. The scale of these positive impacts cannot yet be quantified due to recent significant increases in yellowtail rockfish limits and the unresolved question of whether or not this increase in combination with the proposed RCA modification will provide enough economic incentive for nearshore fishermen to fish in these depths. Some increase in landings and revenue could be expected by allowing access to depths in which species are most prevalent.

16. Other
    a. Are the proposed action's effects on the quality of the human environment likely to be highly controversial? (science of the effects, not the perception)

The proposed action on the quality of the human environment is not highly controversial because this action will still maintain a large portion of the non-trawl RCA and provide protection to species. In addition, widow rockfish was rebuilt in 2011 followed by canary rockfish in 2015. Given that these stocks are rebuilt, it is appropriate to consider modifications to the non-trawl RCA. Yelloweye rockfish is forecast to be rebuilt by 2025 according to the 2017 rebuilding analysis[11] which is 12 years ahead of schedule. Although yelloweye rockfish have been found over soft muddy bottom near rocky outcrops, movement away from rocky outcrops tends to be minimal. As noted in the 2017 yelloweye rockfish stock assessment, the bottom trawl survey indicates known areas of yelloweye abundance correspond with major rocky outcrops. The likelihood of this management measure increasing encounters of yelloweye rockfish is small since 99.7 percent of the predicted seabed habitat in the area to be opened is soft and not preferred yelloweye rockfish habitat.

    b. Are the proposed action's effects on the human environment likely to be highly uncertain or involve unique or unknown risks?

No, the proposed action's effects on the human environment are not likely to be highly uncertain or involve unknown or unique risks.

17. MSA National Standards
    a. Describe how the management measure is consistent with the 10 MSA National Standards.

Modifying the non-trawl RCAs is consistent with the following National Standards: (1) result in more optimal yield without overfishing; (2) based on the best scientific information; and (8) take into account/benefit fishing communities. This action is consistent with National Standard 1 by providing the greatest overall benefit to the nation by allowing harvest of healthy stocks which are currently being underutilized (e.g., widow and yellowtail rockfish). Prior to canary rockfish being declared overfished, the

[11] https://www.pcouncil.org/wp-content/uploads/2018/01/2017_yelloweye_rebuilding_Final.pdf

non-trawl fixed gear fisheries used to support a vibrant shelf rockfish fishery, which was eliminated when the RCAs were implemented. This action is also consistent with National Standard 2 by utilizing the best available scientific information, which indicates that canary rockfish is no longer overfished and has rebuilt to healthy levels. Further, this management measure leaves in place a large portion of the non-trawl, which would continue to provide protection to, yelloweye and other rockfish. This action is also consistent with conservation requirements and takes into account the importance of fishery resources to fishing communities. Many coastal communities in central and northern California are comprised with non-trawl fishermen who depend on income from fixed gear fisheries. This measure will re-establish access to many important shelf rockfish stocks, which will benefit local economies.

Attachment 4

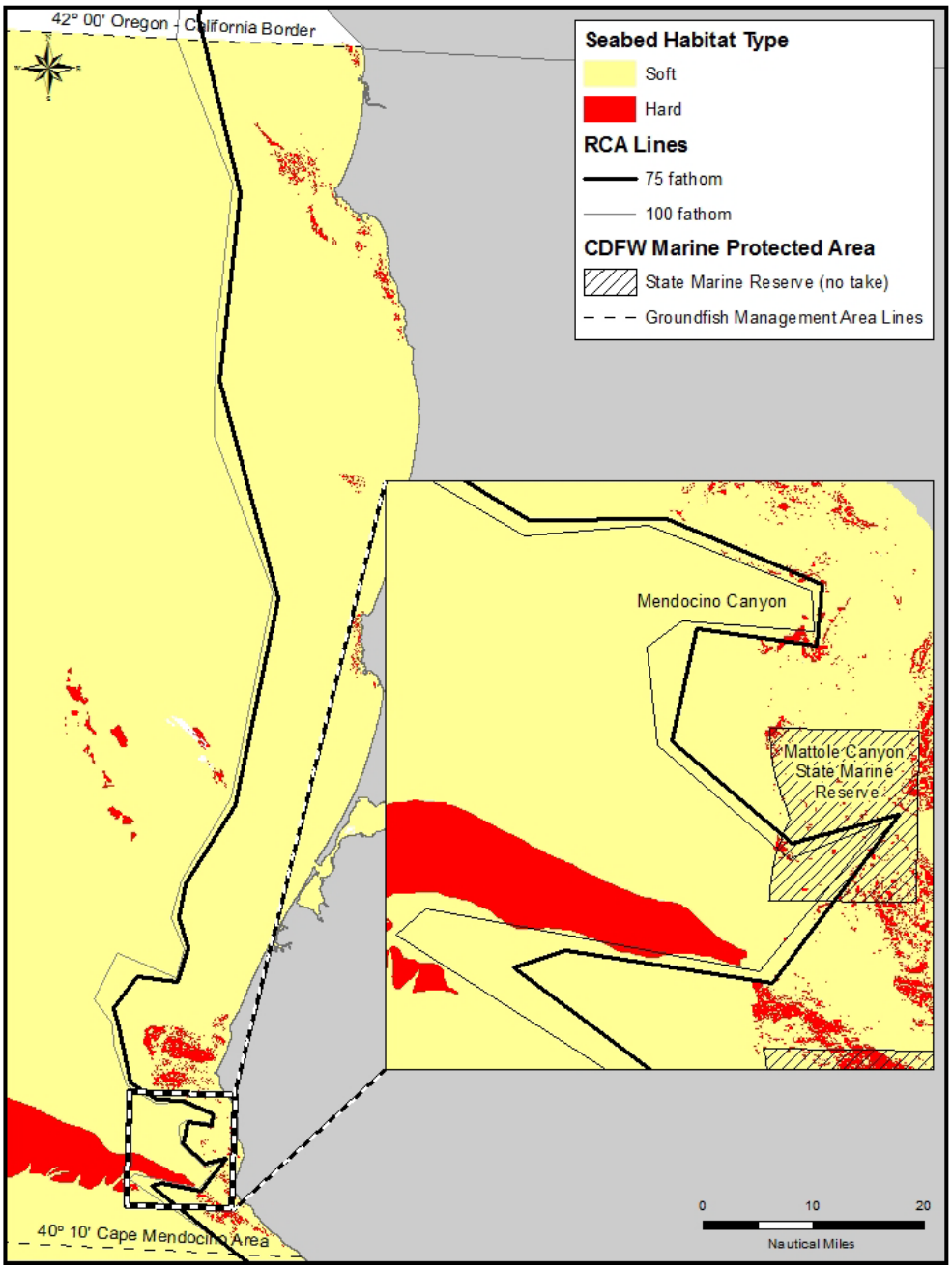


Figure C-10. Seabed habitat type between 42° N. latitude and 40°10' N. latitude from the Pacific Groundfish EFH 5-Year Review that illustrates that the majority of seabed habitat between the 75 and 100 fathom RCA lines was classified as "Soft". Mendocino Canyon and Mattole Canyon (see inset map) are the only areas where seabed classified as "Hard" is present. (Note: Mattole Canyon will remain closed to all commercial fishing as a result of the Mattole Canyon State Marine Reserve).

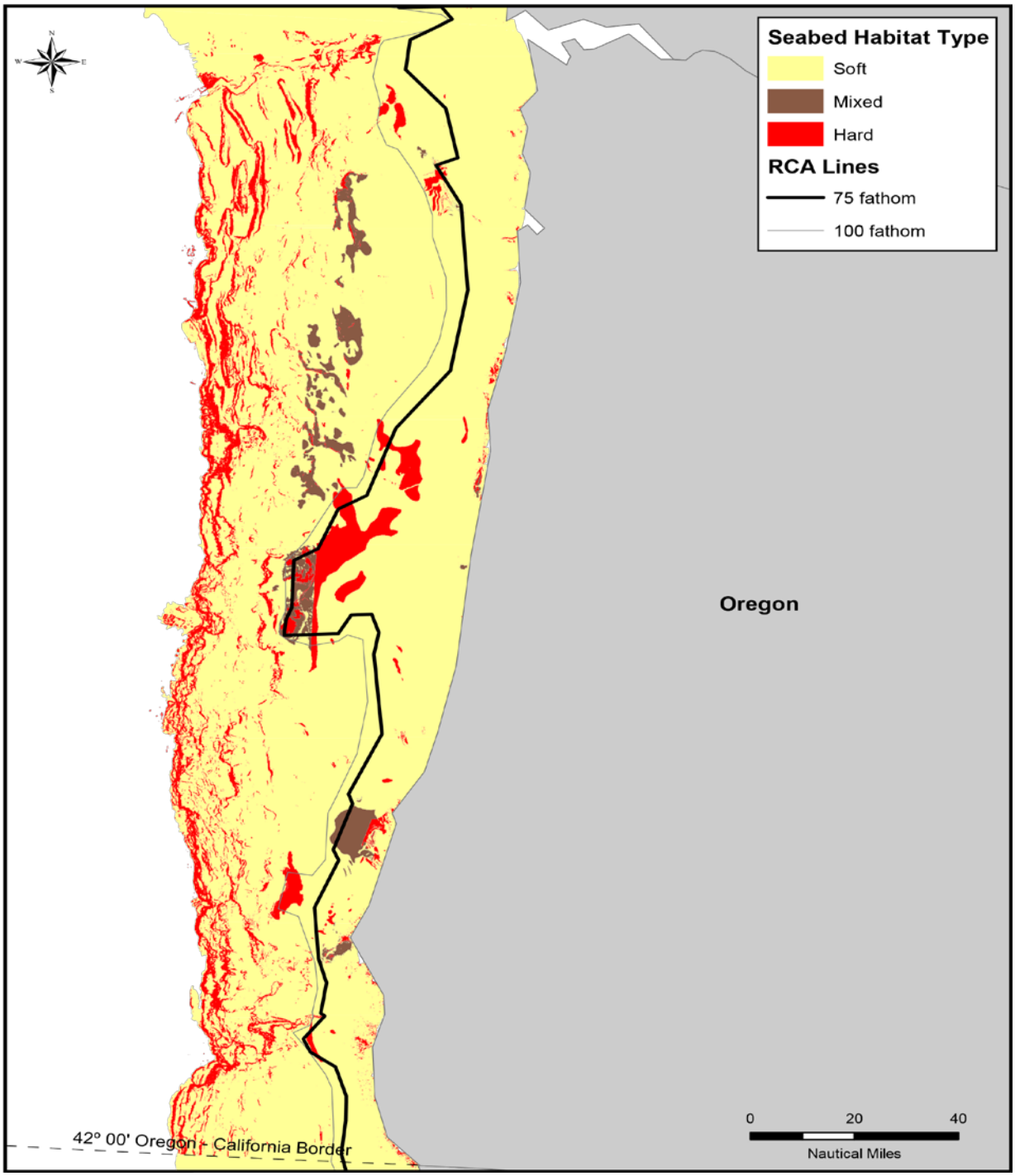


Figure C-11. Seabed habitat type off Oregon from the Pacific Groundfish EFH 5-Year Review that illustrates the seabed habitat between the 75 and 100 fathom RCA lines.

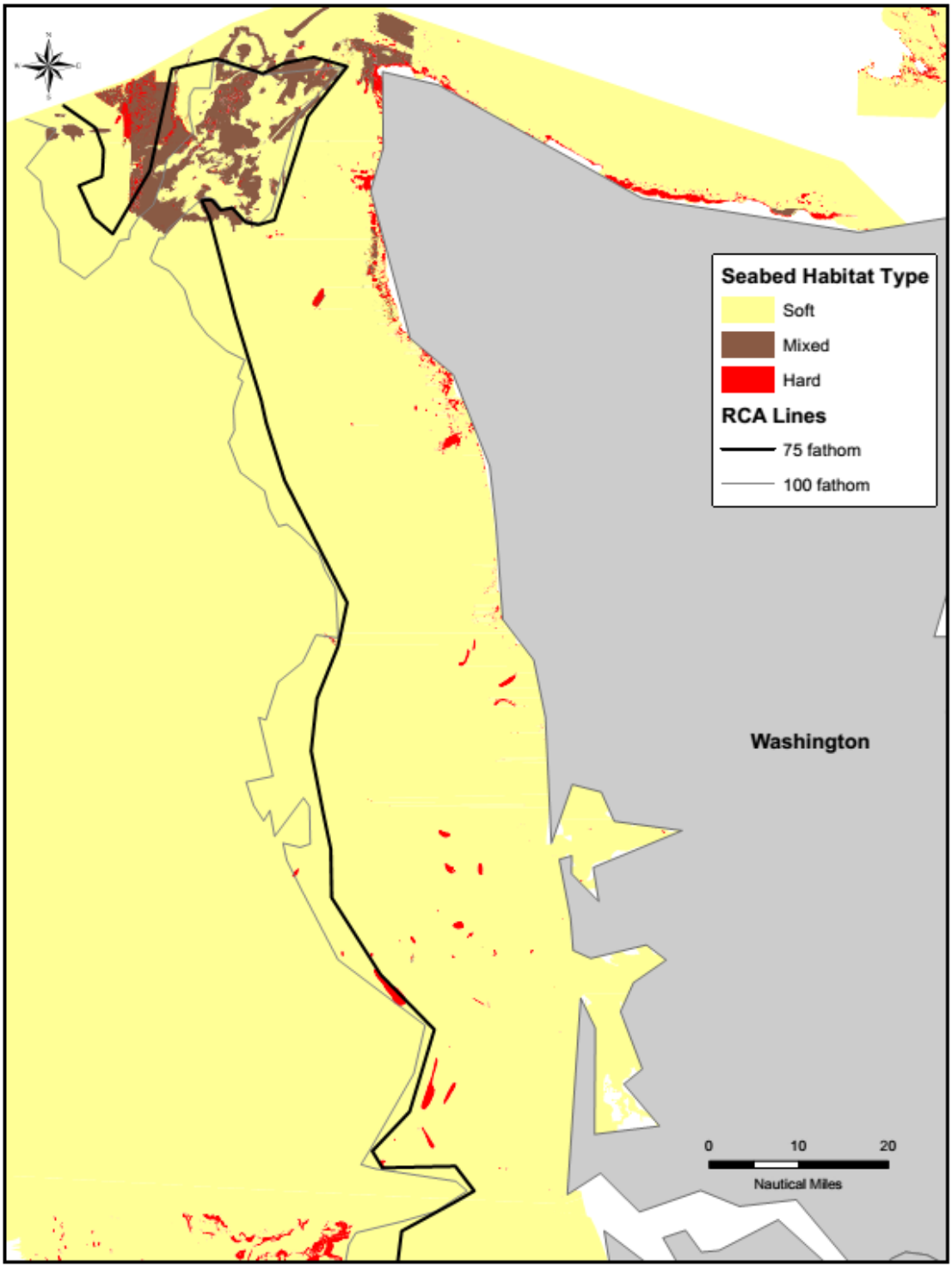


Figure C-12. Seabed habitat type off Washington from the Pacific Groundfish EFH 5-Year Review that illustrates the seabed habitat between the 75 and 100 fathom RCA lines.

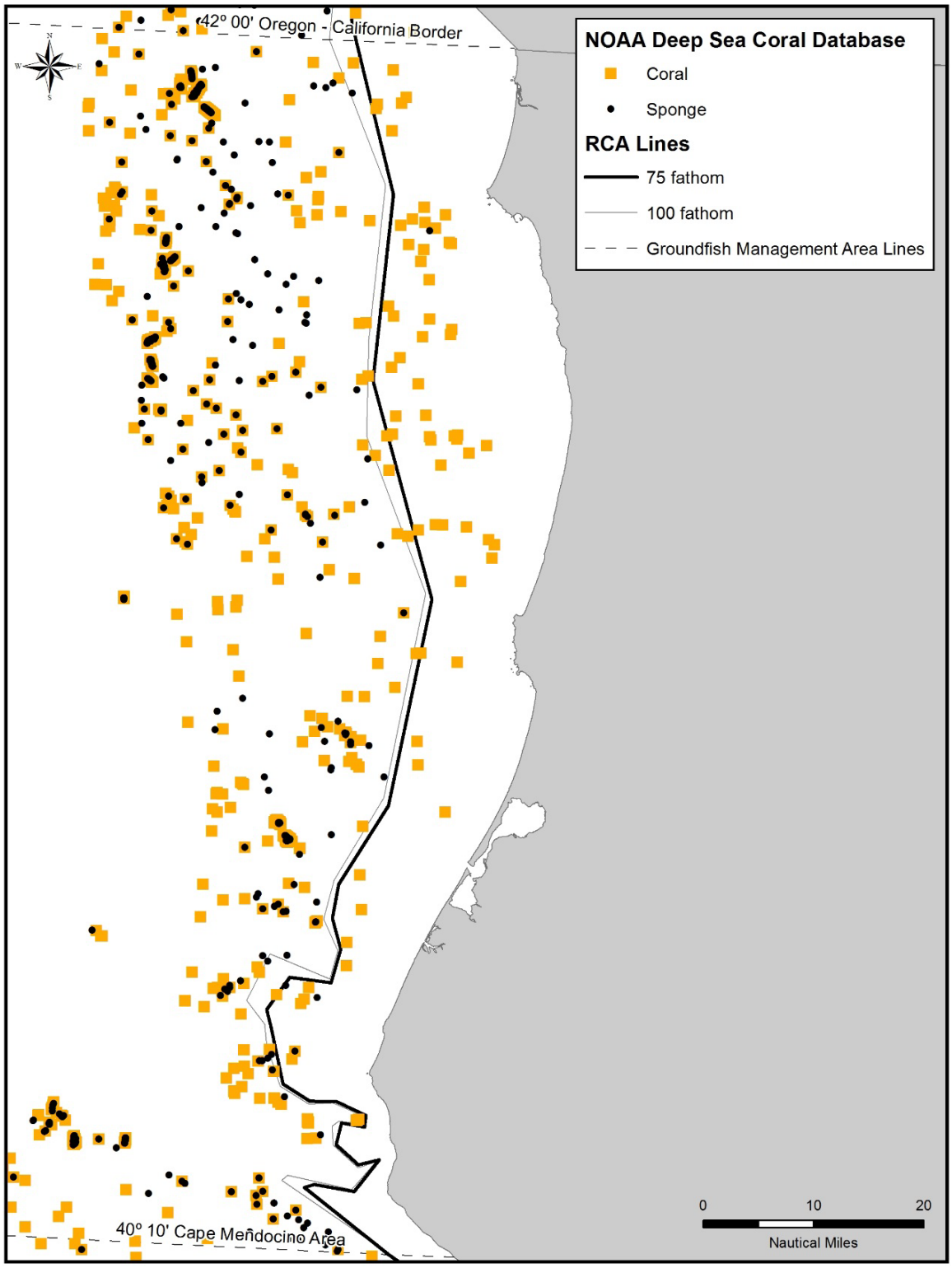


Figure C-13. Sponge/coral observations between 42° N. latitude and 40°10' N. latitude from the NOAA Deep Sea Coral Database.

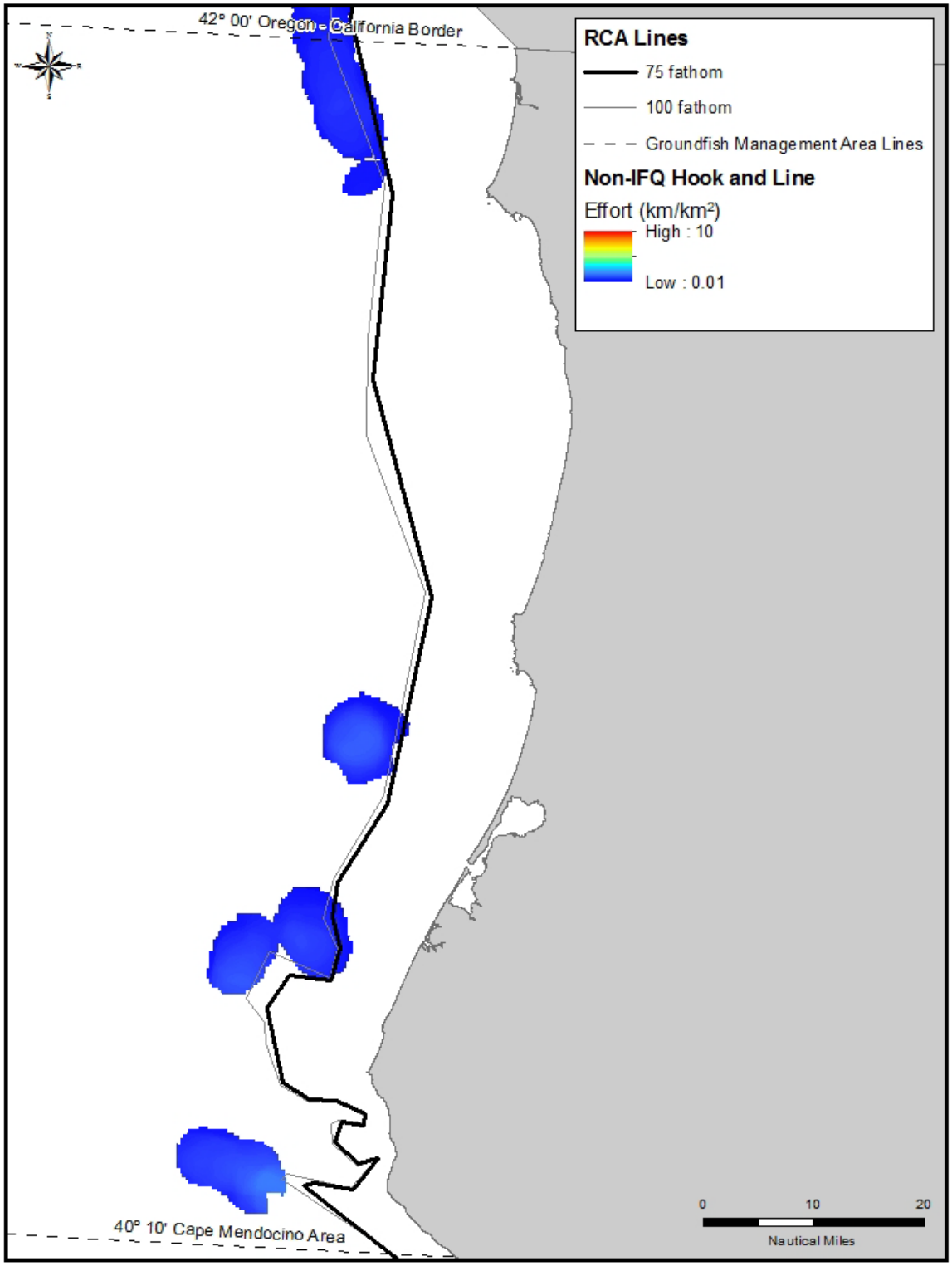


Figure C-14. 2011 to 2015 non-IFQ hook and line fishing effort observed by the West Coast Groundfish Observer Program between 42° N. latitude and 40°10' N. latitude.

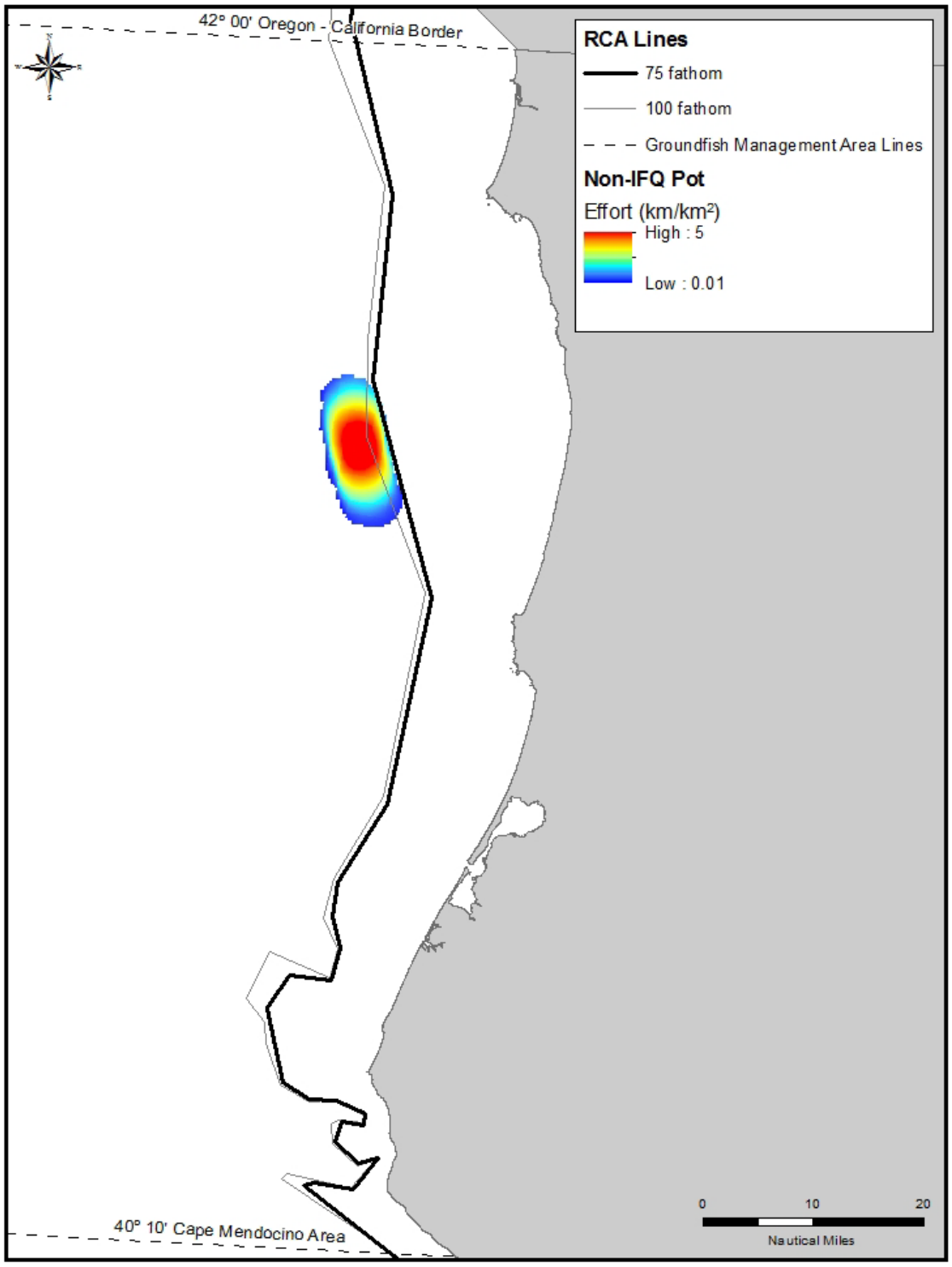


Figure C-15. 2011 to 2015 non-IFQ pot fishing effort observed by the West Coast Groundfish Observer Program between 42° N. latitude and 40°10' N. latitude.

C.6.5 Modify Commercial Fixed Gear Depths inside the Western Cowcod Conservation Area

Part A

9. Describe the new management measure.
    - What stocks will it affect? What fisheries will it affect? What is the geographic scope?

This management measure would modify the allowable fishing depths for the commercial fixed gear fishery inside the western Cowcod Conservation Area (CCA) from 20 fm to 30 fm or 40 fm and add new waypoints approximating 30 and 40 fm depth contours around Santa Barbara Island, San Nicolas Island, Tanner Bank, and Cortes Bank (Figure C-16).

Nearshore rockfish, shelf rockfish, cabezon, kelp greenling, California scorpionfish, and lingcod can be retained shoreward of the 20 fm depth contour within the CCA when trip limits authorize such fishing. Other Flatfish may also be taken year-round at any depths when using no more than 12 #2 or smaller hooks.

While there are current 30 and 40 fm depth contours specified in regulation at 50 CRF 660.71-660.73, none have been specified inside the CCA, which are proposed to be used by recreational and commercial fisheries. This management measure proposes to add new waypoints to approximate the 30 fm and 40 fm depth contours inside the CCA. Charts delineating the areas are provided in Attachment 5, and proposed waypoint coordinate tables are provided in Attachment 6.

This management measure is expected to increase catch of shelf rockfish, bocaccio, nearshore rockfish, cabezon, greenling, and California scorpion fish, – but mortality is expected to be well within the non-trawl allocations and harvest specifications. Although this measure could increase catch of lingcod, a trip limit reduction proposed for 2019-2020 is expected to keep catches within the non-trawl allocation and harvest specifications. This measure is not expected to result in increased interactions with cowcod. This management measure will not likely affect canary and yelloweye rockfish because they are not commonly found in this area.

10. What was considered in order to optimize the performance of this measure?

Cowcod was last assessed in 2013, and at that time it was rebuilding much quicker than anticipated under its rebuilding plan. Cowcod is expected to be rebuilt by 2020, assuming full removal of the ACL, which is 48 years ahead of schedule. Given that removals have consistently been far below the ACL, it is possible that the stock has already reached its rebuilding target.

The latest stock assessments for canary rockfish and bocaccio indicate that these stocks are no longer overfished and have rebuilt. Yelloweye rockfish continues to make satisfactory rebuilding progress and is currently estimated at 28.4 percent of B_0.

The more optimistic outlook on the status of cowcod from the most recent assessment along with more optimistic outlooks for other stocks were considered to optimize performance of this measure. Because many stocks are rebuilding much quicker than anticipated (cowcod) or have been declared rebuilt (bocaccio rockfish), modifications to the allowable depth restrictions are considered. Modifications would allow

access to healthy target stocks while still closing the depths where the overall density of cowcod is the greatest (100 to 130 fm; SAFE 2016[12]) to provide protections to cowcod as the stock continues to rebuild.

11. What and when was the Council's decision and how did it arrive at the decision?

Three proposals were submitted for consideration in the 2019-2020 specifications to modify the CCA at the September 2017 PFMC meeting. The first proposal was to modify the CCA boundaries, which would have affected all groundfish fisheries. The second and third proposals increased the allowable fishing depth inside the CCA for recreational and fixed gear commercial fisheries. At its November 2017 meeting, the PFMC decided to remove the first proposal from the 2019-2020 specification process and consider it in a stand-alone analysis, given interactions and complications with ongoing EFH/RCA modifications in that area.

12. Is there any other background information that was important to the Council's decision? For example, has this measure been previously discussed by the Council, if so what was the outcome?

Two CCAs (Western and Eastern) were originally established in 2001 as an overfished species rebuilding measure. These area closures were intended to close off areas to fishing in the main portion of cowcod's depth range (overall distribution 22 to 270 fm, with the highest density 100-130 fm; SAFE, 2016) to reduce encounters and mortality, allowing the stock to rebuild more quickly. The western CCA encompasses 5,126 mi^2 and is located in the Southern California Bight south of Point Conception.

The CCA is also expected to provide protections for bronzespotted rockfish, a stock with similar life history characteristics, habitat associations, and vulnerability to fishing as cowcod (2009-2020 SPEX[13]). Commercial landings of bronzespotted dropped in the late 1980s and have remained at low levels from 1990 to present. While the hook-and-line fishery traditionally accounted for most of the landings, the Southern California gillnet fishery in the early 1980s accounted for most of the mortality during the period of decline, consistent with the movement of effort to deeper and rockier habitats in that fishery.

The Council routinely modifies RCAs for trawl and non-trawl fisheries during inseason actions and biennial specifications. In 2014, NMFS recommended liberalizations to the trawl RCA north of 40°10' N. latitude[14] to allow increased access to target species, mainly petrale sole. In 2013 and again in 2015, NMFS implemented changes to the shoreward boundary of the non-trawl RCA north of 42° N. latitude and between 42° N. latitude and 40°10' N. latitude respectively to allow access to target stocks, mainly nearshore species and lingcod. In 2017, NMFS implemented changes to the seaward non-trawl RCA for the area between 40°10' N. latitude and 34°27' N. latitude and the shoreward non-trawl RCA for the area south of 34°27' N. latitude.

In the 2009-2010 biennial specifications and management measure process, CDFW staff conducted an analysis similar to this proposal that evaluated increasing depth restrictions inside the CCA to 30 fm and 40 fm for the recreational fishery (PFMC 2008). As part of its Final Preferred Alternative, the Council recommended modifying the recreational depth restrictions inside the CCA to 30 fm. This decision was disapproved by NMFS in its Final Rule (76 FR 27508) due to concerns of proposed impacts to cowcod, especially juveniles, which could delay rebuilding. NMFS also indicated that because the ACL for cowcod

[1212] http://www.pcouncil.org/wp-content/uploads/2017/02/SAFE_Dec2016_02_28_2017.pdf

[13]https://www.pcouncil.org/groundfish/current-season-management/past-management-cycles/2009-2010-final-environmental-impact-statement/

[14] http://www.westcoast.fisheries.noaa.gov/publications/nepa/groundfish/misc_ea/rca_ea_3_4_14.pdf

was low (4 mt at that time), any measures that potentially increased cowcod mortality required better information on potential biological and economic effects to support such a change. At the time of NMFS' disapproval, cowcod was at 4.5 percent of unfished biomass with a projected time to rebuild of 2071. The OFL and ACL established for 2011-2012 were 13 mt and 4 mt respectively. For 2019-2020, a similar proposal is being considered to modify depths inside the Western CCA for the recreational groundfish fishery (See Section C.6.6),

Part B

7. What is the objective of this management measure?
    - Does it have a conservation purpose? (e.g., managing catch within ACLs? mitigating impacts to habitat or protected species?) Does it have a social/economic purpose? (e.g., allowing increased opportunity to catch target species? Does it have a social benefit of making fishing opportunity among different user groups more equitable?)

The objective of this management measure is to allow increased opportunity to catch target stocks which are inaccessible due to the current depth restrictions.

8. The following screening is intended to help NMFS understand the broad implications of the management measure and to determine the appropriate NEPA compliance strategy.

    j. How would you describe this new management measure (may select more than one)
        - ❑ Technical correction or a change to a fishery management action or regulation, which does not result in a noticeable change in any of the following: fishing location, timing, effort, authorized gear types, or harvest levels.
        - ■ Has potential for noticeable change to any of the following: fishing location, timing, effort, authorized gear types, or harvest levels.
        - ❑ Designed to mitigate some other environmentally negative effect (e.g., cap, closed area, bag limit).
        - ❑ Designed to mitigate a negative economic or social effect.
        - ■ Applies to only a small area of the total EEZ.

    k. What resource(s) would the management measure likely affect, either positively or negatively?
        - ❑ Physical EFH or Ecosystems
        - ■ Biological Resources (target, non-target species)
        - ❑ Protected Resources (mammals, ESA-listed)
        - ❑ Economic, social, cultural

    l. If the management measure is mitigating or offsetting an effect on a resource, identify that resource.
        - ❑ Physical EFH or Ecosystems
        - ❑ Biological Resources (target, non-target species)
        - ❑ Protected Resources (mammals, ESA-listed)
        - ❑ Economic, social, cultural

Part C – Keeping in mind the responses provided in part 2 above, briefly answer the following questions. Please focus on the issues of importance; if there are no potential effects, say 'no anticipated effects'. Remember both positive and negative effects.

18. Groundfish
    a. How does any change in catch relate to harvest specifications and the risk that overfishing will occur? Can the proposed measure reasonably be expected to adversely affect managed

fish species?

Non-overfished stocks

No adverse impacts are anticipated for non-overfished stocks south of 40°10' N. latitude - shelf rockfish, bocaccio, nearshore rockfish, and lingcod. Recent commercial fixed gear fishing effort has been very low. According to WCGOP data, twelve hauls from five vessels have been observed in the western CCA in the 0 to 20 fm depth range between 2002 and 2016. Recent (2011 to 2015) commercial fixed gear fishing effort outside of the CCA has also been very low (See Attachment 5, Figure C-17 to Figure C-20). Anecdotal reports from commercial groundfish fishery participants indicate that there is currently not enough economic incentive under the 20 fm depth restriction to justify trips to the remote western CCA. Proposed depth changes within the CCA would allow greater access to valuable deeper species and would create the economic incentive that would justify trips. As a result, a small increase in the number of fixed gear vessels fishing in this area may occur, but the size increase cannot be quantified. A redistribution of depth of catch is also expected as a result of the increased depths. No additional increase in mortality is expected for bronzespotted rockfish because they are found between 41 fm and 205 fm – outside the depth range of the proposed action.

Commercial vessels targeting highly migratory species (yellowtail, tuna, and white seabass) which are found in deeper depths where rockfish retention is prohibited also operate in the CCA. Allowing rockfish retention in deeper depths is expected to provide some more opportunities for targeting migratory species and increase revenues.

As noted earlier, new opportunities in deeper depths will increase economic incentive and may increase the number of fixed gear vessels fishing in the CCA, but the increase would likely still be limited by the remote location of the western CCA. Any increases in target groundfish catch will likely be low and be limited by the 2-month catch limits. As a result, impacts are expected to remain well within ACLs and/or non-trawl allocations and pose a low risk to overfishing (Table C-43 through Table C-48).

Table C-43. Total mortality (mt) of Minor Nearshore Rockfish south of 40°10' N. latitude compared to annual catch limit (data source: WCGOP Total Mortality Reports).

Year	Recreational	Commercial	Total	ACL	% of ACL
2011	336.54	99.86	436.10	1,001	43.5%
2012	357.28	84.97	442.25	990	44.7%
2013	400.69	93.43	494.12	990	49.9%
2014	499.79	95.41	595.20	990	60.1%
2015	564.85	109.53	674.38	1,114	60.5%
2016	551.00	89.25	640.25	1,006	63.6%

Table C-44. Total mortality (mt) of bocaccio south of 40°10' N. latitude compared to non-trawl allocation (data source: WCGOP Total Mortality Reports.)

Year	Recreational	Commercial	Total	Non-trawl allocation	% of non-trawl allocation
2011	103.20	2.30	105.50	189.6	55.6%
2012	124.73	3.35	128.08	189.6	67.5%
2013	130.84	3.87	134.71	236.7	56.9%
2014	99.53	5.87	105.40	249.6	42.2%
2015	90.46	7.63	98.09	258.8	37.9%
2016	68.60	2.44	71.04	368.7	19.3%

Table C-45. Total mortality (mt) of shelf rockfish south of 40°10' N. latitude compared to non-trawl allocation (data sources: WCGOP Total Mortality Reports).

Year	Recreational	Commercial	Total	Non-trawl allocation	% of non-trawl allocation
2011	306.19	19.90	326.09	615	53.0%
2012	354.31	23.23	377.54	615	61.4%
2013	364.24	30.27	394.51	587	67.2%
2014	348.34	34.30	382.64	587	65.2%
2015	485.43	46.74	532.17	1,383	38.5%
2016	390.30	34.19	424.49	1,384	30.7%

Table C-46. Total mortality (mt) of lingcod south of 40°10' N. latitude compared to non-trawl allocation (data sources: WCGOP Total Mortality Reports).

Year	Recreational	Commercial	Total	Non-trawl allocation	% of non-trawl allocation
2013	381.27	36.25	417.52	606	68.9%
2014	492.43	57.88	550.31	580	94.9%
2015	602.87	82.11	684.98	547	125.2%
2016	582.90	59.39	642.29	515	124.7%

Table C-47. Total mortality (mt) of California scorpionfish south of 34°27' N. latitude compared to annual catch limit (data sources: WCGOP Total Mortality Reports).

Year	Recreational	Commercial	Total	ACL	% of non-trawl allocation
2011	99.56	3.25	102.81	135	76.2%
2012	116.26	3.19	119.45	126	94.8%
2013	112.00	1.72	113.72	120	94.8%
2014	122.62	2.37	124.99	117	106.8%
2015	81.42	2.26	83.68	114	73.4%
2016	73.00	6.57	79.57	111	71.7%

Table C-48. Estimated total mortality (mt) of kelp greenling (California) compared to ABC contribution of the Other Fish complex. The Other Fish complex ACL is provided for context (data sources: WCGOP Total Mortality Reports and Nearshore Model).

Year	Recreational	Commercial a/	Total	ABC b/	% of ABC	Other Fish complex ACL
2011	22.63	2.04	24.67	111	22.2%	5,575
2012	12.88	5.12	18.0	111	16.2%	5,575
2013	13.66	5.53	19.19	82.5	23.3%	4,717
2014	12.56	5.03	17.59	82.5	21.3%	4,697
2015	17.57	6.42	23.99	99.2	24.2%	242 c/
2016	10.7	4.91	15.61	99.2	15.7%	243 c/

a/ Commercial mortality estimates are the annual landings plus an estimated discard produced by the Nearshore Model. Note the Nearshore Model discard is calculated similarly to the WCGOP estimation method except the model uses all years of WCGOP data (2002-2016) to generate estimates. Additionally, the Nearshore Model has an extra stratification (North of 42º N. lat., 42º – 40º 10’ N. lat. and South of 40º 10’ N. lat.) that can allow for area-specific discard and mortality estimates.

b/ The ABCs listed are the kelp greenling (CA) contributions to the Other Fish complex ACL.

c/ The significant reduction in the Other Fish complex ACL is due to the removal of the ecosystem component (EC) species from the complex.

Overfished species (Cowcod)

No adverse impacts are anticipated for cowcod south of 40°10' N. latitude beyond those already accounted for in the integrated alternatives. Although overall cowcod distribution is 22 fm to 270 fm, the highest densities are found in depths of 100 fm to 130 fm (SAFE, 2016). No cowcod catch was documented in WCGOP observed fixed gear sets made in the western CCA between 2002 and 2016. In 2014, the NFWSC hook-and-line survey for shelf rockfish was allowed to operate inside the CCA. In the two years that the survey has been allowed to operate inside the CCA, zero cowcod have been encountered inside 40 fm. Throughout the entirety of the 12 year survey, zero cowcod have been encountered outside the CCA in those same depths. All of the cowcod encountered inside the CCA were in depths of 40 fm or greater (Table C-49). Therefore, increases in encounters are not expected.

Table C-49. NWFSC Hook and Line Survey catch and catch rate of cowcod by depth stratum inside and outside of the CCAs, 2004 – 2016 (data: courtesy John Harms, NWFSC).

Depth stratum[a/] (fm)	Valid hooks deployed[b/]		Cowcod catch (n)		Cowcod catch rate (n per valid hook)	
	Outside CCA	Inside CCA	Outside CCA	Inside CCA	Outside CCA	Inside CCA
20 - 40	10,282	1,933	0	0	0.00000	0.00000
40 - 50	30,261	2,038	1	4	0.00003	0.00196
50 - 60	19,689	2,932	7	3	0.00036	0.00102
60 - 70	13,610	1,363	47	11	0.00345	0.00807
70 - 80	12,257	1,484	88	19	0.00718	0.01280
80 - 90	9,518	1,301	55	12	0.00578	0.00922
90 - 100	5,174	780	41	19	0.00792	0.02436
> 100	2,863	1,352	79	21	0.02759	0.01553
Total catch			318	89		

a/ The H&L survey's depth range is 20 - 125 fm
b/ Sampling outside the CCAs began in 2004; sampling inside the CCAs began in 2014

As noted in the recreational analysis (see Section C.3.6), prior to implementation of the CCA (1999-2000) 5.9 percent of recreational cowcod encounters occurred in depths of 40 fm or less, whereas after implementation (2004-2009) 6.8 percent of the encounters occurred in those same depths. There are some similarities (i.e., depths fished, gear type) between the recreational fishery and portions of the commercial fixed gear fishery. Therefore, it expected that this trend would likely apply to portions of the commercial fishery as well.

This management measure poses a low risk of overfishing, given that mortality has consistently remained well below the ACL (previously OY) since 2003. Any increase in impacts are expected to remain well within ACLs and/or non-trawl allocations (Table C-50).

Table C-50. Total mortality of cowcod south of 40°10' N. latitude by year (source: Dick et al 2013 & WCGOP Total Mortality reports).

Year	Recreational	Commercial	Total	OY/ACL	% OY/ACL
2003	0.48	0.22	0.70	4.8	14.6%
2004	0.45	0.95	1.40	4.8	29.2%
2005	0.15	1.15	1.30	4.2	30.9%
2006	0.07	2.20	2.27	4.2	54.0%
2007	0.30	2.03	2.33	4	58.2%
2008	0.25	0.48	0.73	4	18.2%
2009	0.21	1.45	1.66	4	41.5%
2010	0.19	1.00	1.20	4	30.0%
2011	0.83	0.02	0.85	4	21.2%
2012	0.84	0.00	0.84	3	21.0%
2013	1.52	0.19	1.71	3	57.0%
2014	0.75	0.19	0.94	10	9.4%
2015	0.47	0.39	0.86	10	8.6%
2016	0.70	0.28	0.98	10	9.8%

The 2014 cowcod rebuilding analysis evaluated the tradeoffs of time to rebuild under higher harvest levels (Table C-51). This rebuilding analysis showed that large changes in mortality and exploitation rates did not have an appreciable effect on rebuilding times. For example, increasing the baseline ACT by over 500 percent (23.0 mt) is only expected to add three years to rebuilding. Therefore, even if mortality was higher than projected there would be a negligible effect on time to rebuild or rebuilding progress.

Table C-51. Rebuilding reference points for select model runs from 2014 cowcod rebuilding analysis (Dick and MacCall 2014).

Model Run	Baseline ACL in 2015	ACL 4mt*	ACL 5 mt	ACL 6 mt	ACL 7mt	50% prob. by 2022
Exploitation rate in 2015	0.007	0.0036	0.0045	0.0054	0.0063	0.0203
50% prob. recovery by	2020	2019	2019	2019	2019	2022
2015 ACL (mt)	7.8	4.0	5.0	6.0	7.0	22.7
2016 ACL (mt)	8.0	4.1	5.1	6.2	7.2	23.0

*Equivalent to the Council's baseline ACT of 4 mt.

b. Will this management measure change catch of groundfish stocks compared to past catches and management reference points? If no, describe in a few sentences why not. If yes, what stocks would be substantially affected?

As noted previously, this management measure is not expected to make substantial changes to catch of target or overfished stocks compared to past catches and management reference points. Under the current regulations, 40.4 mi^2 (or less than 1 percent of the entire CCA) is open to fishing in 20 fm or less. Increasing the depth to 30 fm depth restriction would increase the fishable area within the CCA to 101.5 mi^2 (2.0

percent of the CCA). Under a 40 fm depth restriction, the area would increase to 150.4 mi^2 (Table C-52 and Table C-53). These areas represent very small increases compared to the coastal nearshore and shelf areas south of 40°10' N. latitude that are already open to commercial fixed gear fishing.

Some increase in retention of nearshore rockfish, shelf rockfish, cabezon, kelp greenling, and California scorpionfish may occur, but is expected to remain well within ACLs and/or non-trawl allocations. Non-trawl allocations for shelf rockfish south of 40°10' N. latitude have increased from 587 mt in 2014 to 1,383 mt in 2016 and 1,576 mt in 2017, while commercial trip limits for shelf rockfish species have remained stable with only moderate adjustments. In 2016, only 30.7 percent of the non-trawl allocation was attained; no further trip limit adjustments are being proposed for 2019-2020. Total mortality of nearshore and bocaccio rockfish south of 40°10' N. latitude is also well below the non-trawl allocation limits, with the commercial sector making up a small portion of the existing total mortality compared to the recreational sector. In addition, recent commercial fixed gear fishing effort within the CCA has been very low. Anecdotal reports from commercial groundfish fishery participants indicate that this proposed change will likely increase, but not substantially, the number of vessels travelling to this remote location. Opening a comparatively small area should not pose a conservation risk for nearshore, shelf, or bocaccio rockfish.

Table C-52. Summary of open fishing areas (mi2) inside the western Cowcod Conservation Area under a 20 fm (baseline), 30 fm, and 40 fm depth restriction.

Area	Area (mi^2)		
	20 fm	**30 fm**	**40 fm**
Santa Barbara Island	3.6	5.8	8.4
San Nicolas Island	32.8	72.9	107.9
Tanner Bank	0.3	4.5	8.5
Cortes Bank	3.7	18.3	25.6
Total Open Area	40.4	101.5	150.4

Table C-53. Percent increase in open fishing areas under a 30 fm or 40 fm depth restriction inside the western CCA compared to baseline (20 fm).

Depth Statistic	20 fm	30 fm	40 fm
Total Open Area (mi^2)	40.4	101.5	150.4
Area increase (mi^2)	-	61.1	110
% Increase	-	151%	272%
% total CCA[a/]	0.8%	2.0%	2.9%

a/ Total area inside the CCA is 5,126 mi^2.

19. Other Fish
    a. Will this management measure affect catch of non-groundfish species? If no, describe in a few sentences why not. If yes, is the magnitude of the change substantial and to what stocks? How is this catch monitored? Are the affected stocks managed under another federal FMP or by a state? Do other management plans include harvest specifications? Is it possible to assess the contribution of the measure, if any, to overfishing risk of a non-groundfish stock?

According to the 2016 WCGOP Total Mortality Report, few non-groundfish species (e.g., California halibut and California sheephead) are encountered as bycatch in the nearshore fixed gear fishery south of 40°10' N. latitude. Catch of these non-groundfish species is not expected to change as a result of this management measure. California halibut and California sheephead are both shallow dwelling species that are already accessible under the baseline depth restrictions. Therefore, simply modifying allowable depths is not expected to increase catches of these species, since they tend to be found in shallower depths in which fishing is already permitted.

Several commercial state-managed fisheries operate in this area and depth – market squid, urchin, California spiny lobster, yellowtail, and white seabass. This measure is not expected to have any effect on market squid, urchin, and California spiny lobster because the incidental take of rockfish does not provide an added economic incentive to fish within the 20 to 40 fm depth range in the CCA. These fisheries also operate in depths deeper than those proposed by this management measure. Fishing effort for yellowtail and white seabass inside the CCA may increase as a result of economic incentives tied to being able to retain rockfish catch between 20 and 40 fm within the CCA, but the magnitude of this increased effort and the impacts it may have is expected to be small. In addition, white seabass is managed under a state Fishery Management Plan with low levels of fishery exploitation, and the risk of overfishing from this management measure is expected to be low.

20. EFH and Ecosystems

    a. Will this management measure change fishing activity so as to adversely affect essential fish habitat compared to no-action effects? If no, describe in a few sentences why not. If yes, is the magnitude of the change substantial and why? Describe the mechanism linking the management measure to adverse impacts. For example, changes in fishing gear or methods; changes in the temporal and/or geographic distribution fishing effort.

This measure is not expected to change fishing activity as to adversely affect EFH compared to the current or baseline as analyzed in the 2016-2017 FEIS. EFH which prohibits fishing with bottom contact gear is currently designated in an area off Santa Barbara Island that is already open to fishing inside the CCA under No Action. A state Marine Protected Area, which prohibits fishing, was also designated in this same area (See Attachment 5, Figure C-21).

Any EFH that is currently in effect will remain in effect and not be affected by this action. The Council is contemplating modifying EFH and/or adding additional EFH areas under a separate action, but those potential modifications are only applicable to trawl gear and would therefore have no effect or bearing on this action.

    b. Can the proposed measure reasonably be expected to adversely affect vulnerable marine or coastal ecosystems, including but not limited to, deep coral ecosystems?

No anticipated effects. Fishing activity occurs in shallow depths where deep sea coral ecosystems are not found. An evaluation of NOAA Deep Sea Coral database reveals that no deep sea corals have been observed around Santa Barbara Island, San Nicolas Island, or Cortes Bank under baseline depths (Figure C-22, Figure C-24, and Figure C-28); some observations have been documented at Tanner Banks (Figure C-25). Increasing the depths to 30 fm or 40 fm is not expected to adversely affect coral ecosystems because fixed fishing gear has minimal effect on sensitive habitats, unlike other gears such as trawl gear. As previously mentioned, fishing already occurs in these depths and areas for state-managed fisheries, so no additional negative effects are expected simply as a result of this change.

c. Can the proposed measure reasonably be expected to adversely affect biodiversity or ecosystem functioning (e.g., benthic productivity, predator-prey relationships, etc.)?

No anticipated effects. Fishing activity occurs in these areas, and increasing allowable fishing depths is not expected to have any effect on biodiversity of ecosystem functioning.

21. Marine Mammals and ESA Species

a. Will this management measure result in adverse effects to ESA-listed species and/or non-listed marine mammals and seabirds? If no, describe in a few sentences why not. If yes, is the magnitude of change substantial and why? Describe the mechanism linking the management measure to adverse impacts. For example, changes in fishing gear or methods; changes in the temporal and/or geographic distribution fishing effort.

No anticipated effects. This management measure is not expected to affect ESA-listed species and/or non-listed marine mammals and seabirds because they are not vulnerable to the fishing gear or are not found in the depths and area under the scope of action. While leatherback sea turtles are known to occur in this area, none have been taken as bycatch in any U.S. west coast commercial groundfish fishery sectors since 2011. Since 2006, there has only been one observed leatherback sea turtle encountered in any U.S. west coast groundfish fishery, which occurred in 2008 in an area and depth outside the geographic scope of this management measure. Also in the time period of 2011-2015, one humpback whale was observed taken in 2014 but in an area and depth outside the geographic scope of this management measure. Between 2010 and 2015, one short-tailed albatross was also taken in 2011 in an area and depth outside the geographic scope of this management measure.

22. Social and Economic

a. Will this management measure change the distribution of catch opportunity among user groups, fishing communities, states, or regions? If no, describe in a few sentences why not. If yes, is the magnitude of the change substantial? Why is it substantial? For example, which user groups are likely to see increased catch opportunity? Which may lose catch opportunity?

Although changes are proposed under separate actions for the recreational and fixed gear commercial fisheries, no change in distribution of catch is expected between user groups. Management measures for both fisheries are designed to ensure they remain within their respective allocations. This management measure is expected to provide a positive economic impact for vessels fishing inside the CCA, though the exact scale of this impact cannot be estimated at this time.

b. Can the proposed action reasonably be expected to significantly affect public health or safety?

No anticipated effects.

23. Cumulative effects

Past fishery and non-fishery actions have created the baseline conditions. For fishery management actions, consider current (put into place recently but the effects may not be visible) or "reasonably foreseeable future items (actions that the Council is moving forward with). For Specs, consider the 19/20 preferred alternative and the routine management measures.

Repeat each set of questions for affected resources (Groundfish, other fish, EFH, ecosystems, ESA species, marine mammals, social, and economic).

a. Does the proposed management measure have non-negligible adverse effects to the resource? *If none then stop and proceed to the next resource.*
b. Is it likely that any current or future fishery management actions may have overlapping effects with this management measure on the resource?
c. Is it likely that any current or future non-fishery management actions may have overlapping effects with this management measure on the resource?
d. Qualitatively or quantitatively, add the effects in (a), (b), and (c) projected to the end of 2020. Can the sum of the effects be considered 'significant'? Consider both positive and negative effects.
e. Whether significant or not, what is the proposed new management measure's contribution to the total effect? E.g., the incremental impact from this management measure to the cumulative effects on groundfish is negligible/high/medium.

Groundfish – Lingcod trip limit adjustments may result in a cumulative impact with this management measure since lingcod occur in the area, but will not put lingcod at risk of overfishing because trip limits will be in place to ensure that catch does not exceed ACLs. Trip limit adjustments proposed for sablefish, slope rockfish, darkblotched rockfish, longspine thornyhead, and shortspine thornyhead are outside of the geographic area (i.e., north of 40°10' N. latitude) of this proposed change and will therefore not result in a cumulative effect. The proposed canary rockfish closure in Period 2 will not result in a cumulative effect to groundfish because this species is not commonly found in this area. Although a similar action is being proposed for the recreational fishery in this same area, the incremental impact from this management measure to the total cumulative effects on groundfish is negligible.

Other Fish – There are no cumulative effects to state-managed species because there are no other commercial actions being contemplated that would affect other fish in this area. The incremental impact from this management measure to the total cumulative effects on other fish species is negligible.

EFH – There are no cumulative effects to EFH because no changes are proposed to existing EFH inside the CCA as part of this management measure. Under a separate process, the Council is considering modifying EFH along the west coast and removing the trawl RCA. Given that both these actions are limited to trawl gear, and not fixed gear, the incremental impact from this management measure to the total cumulative effects on EFH is negligible.

Ecosystem – There are no cumulative effects to ecosystems because the proposed management measure is not expected to adversely affect vulnerable marine or coastal ecosystems or adversely affect biodiversity. The incremental impact from this management measure to the total cumulative effects on the ecosystem is negligible.

ESA species – There are no cumulative effects to ESA as a result of this action. Although leatherback sea turtles, humpback whales, and short-tailed albatross do occur in southern California, they are either rarely or not commonly encountered with fixed gear inside the 20 to 40 fathom depth range. The incremental impact from this management measure to the total cumulative effects on ESA species is negligible.

Marine mammals – There are no cumulative effects to marine mammals because in the time period of 2011-2015, no marine mammals were taken in this area at the depths associated with this action. The incremental impact from this management measure to the total cumulative effects on marine mammals is negligible.

Social – There are no cumulative social effects because this management measure is not expected to change distribution of fishing effort among user groups. The incremental impact from this management measure to the total cumulative effects on social impacts is negligible.

Economic – Lingcod trip limit reductions are proposed along with the increases in fishable area inside the CCA proposed with this management measure. It is unclear what the cumulative economic effect of these two opposing changes will be. Trip limit adjustments proposed for sablefish, slope rockfish, darkblotched rockfish, longspine thornyhead, and shortspine thornyhead are outside of the geographic area (i.e., north of 40°10' N. latitude) of this proposed change and will therefore not result in a cumulative economic effect. The proposed canary rockfish closure in Period 2 will not result in a cumulative effect because this species is not commonly found in this area. The incremental impact from this management measure to the total cumulative effects on economic impacts is likely negligible.

24. Other

    a. Are the proposed action's effects on the quality of the human environment likely to be highly controversial? (science of the effects, not the perception)

The proposed action on the quality of the human environment will not likely be highly controversial because cowcod is rebuilding much quicker than expected, and this proposed management measure will still keep over 97 percent of the entire CCA closed to fishing.

    b. Are the proposed action's effects on the human environment likely to be highly uncertain or involve unique or unknown risks?

No, the proposed action's effects on the human environment are not likely to be highly uncertain or involve unknown or unique risks.

25. MSA National Standards

    a. Describe how the management measure is consistent with the 10 MSA National Standards.

This management measure proposes to replace the depth-based inner boundary of the western CCA with a waypoint-based 30 or 40 fathom RCA line. The intent of the RCA concept is to prevent overfishing, while at the same time protecting overfished species by preventing fishing in areas where these species of concern are more likely to be found. This management measure would not jeopardize this concept, and at the same time would allow the fishing communities to better access target stocks to help them achieve their harvest limits. Additionally, this management measure has very little chance of causing any of the impacted species to become overfished, or for overfishing to occur. This would address National Standard 1.

This management measure is also consistent with National Standard 2 because it is based on the best scientific information available, which suggests that cowcod is nearly rebuilt and higher levels of mortality are not expected to jeopardize its rebuilding progress.

Inherent in the RCA system, the goal of minimizing bycatch of species of concern and non-target species has been addressed. This management measure improves the RCA method by providing slight modifications that improve monitoring of fishing activity, thus meeting National Standard 9.

Attachment 5

Charts of overview of western Cowcod Conservation Area, WCGOP fishing effort, and 30 fm and 40 fm RCA lines around Santa Barbara Island, San Nicolas Island, Tanner Bank, and Cortes Bank.

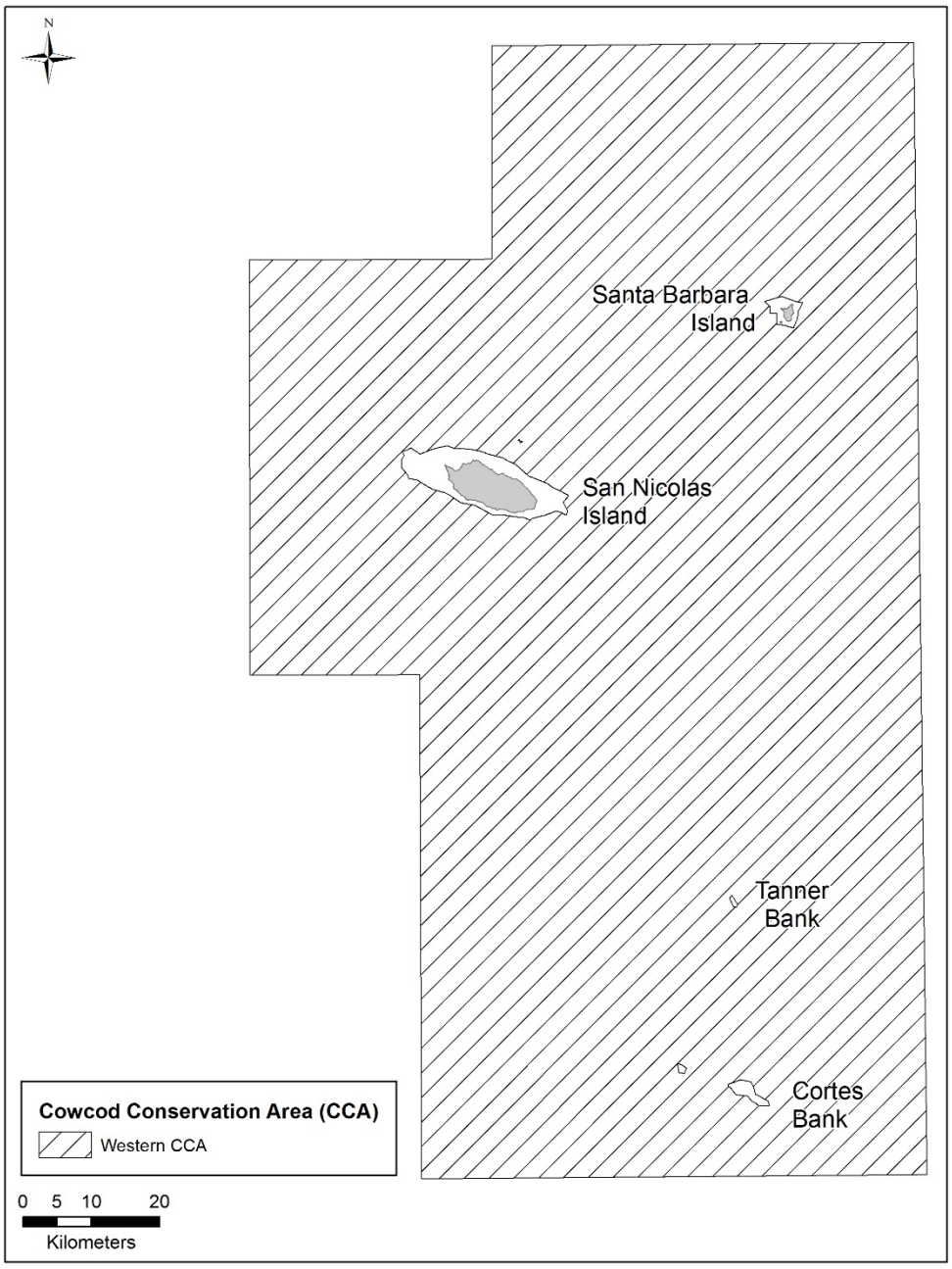


Figure C-16. Overview of western Cowcod Conservation Area.

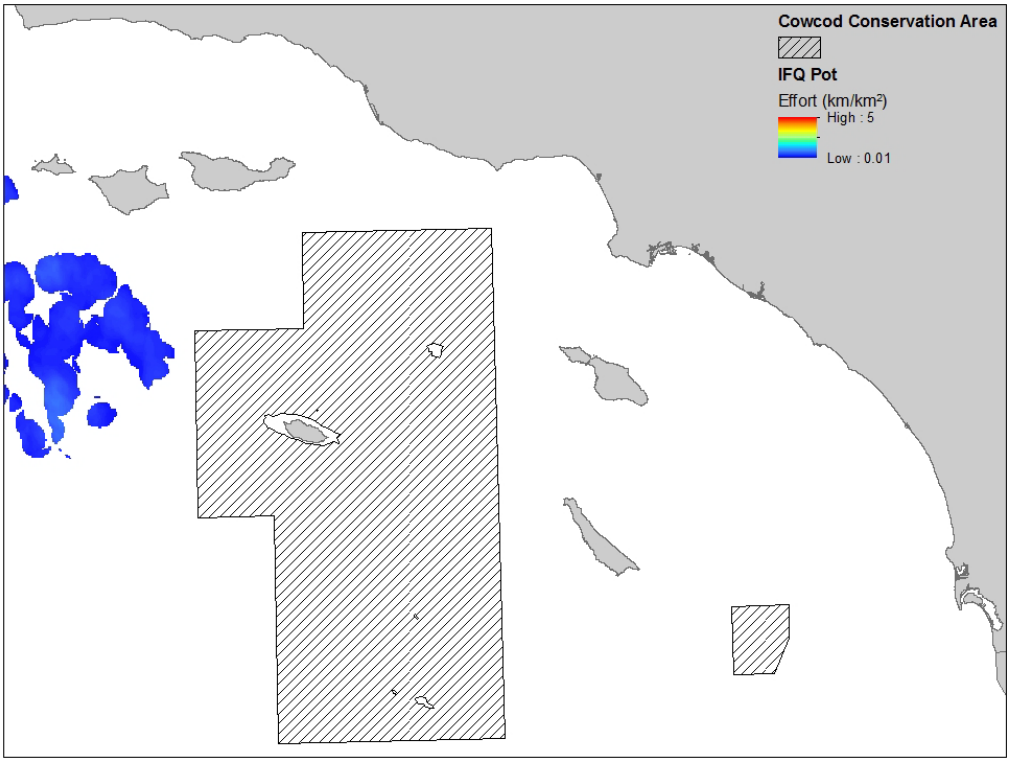


Figure C-17. IFQ pot fishing effort observed by the West Coast Groundfish Observer Program (2011 to 2015).

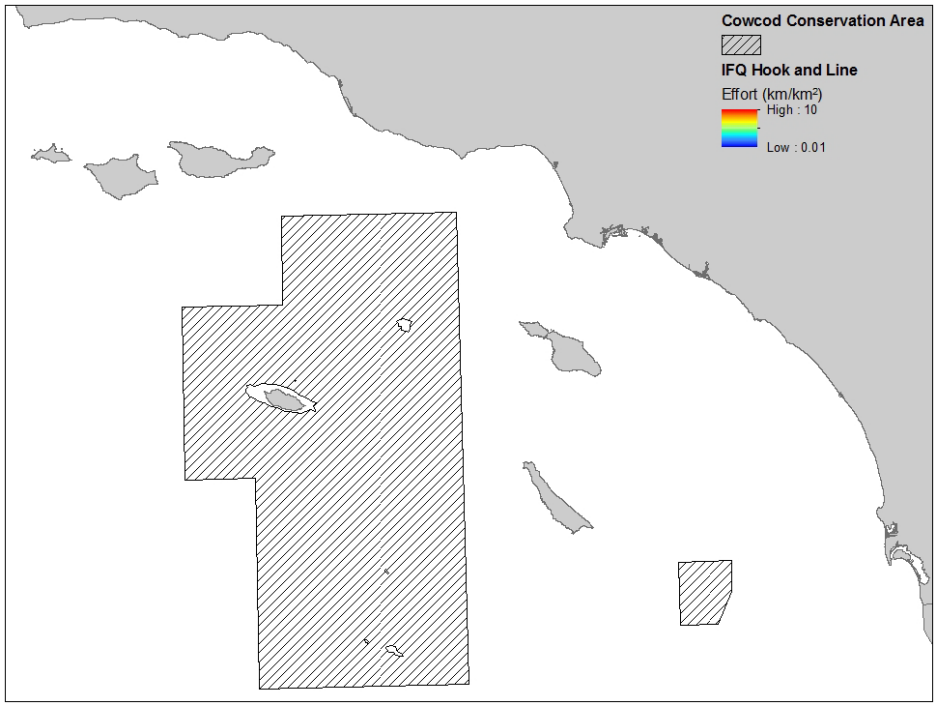


Figure C-18. IFQ hook-and-line fishing effort observed by the West Coast Groundfish Observer Program (2011 to 2015).

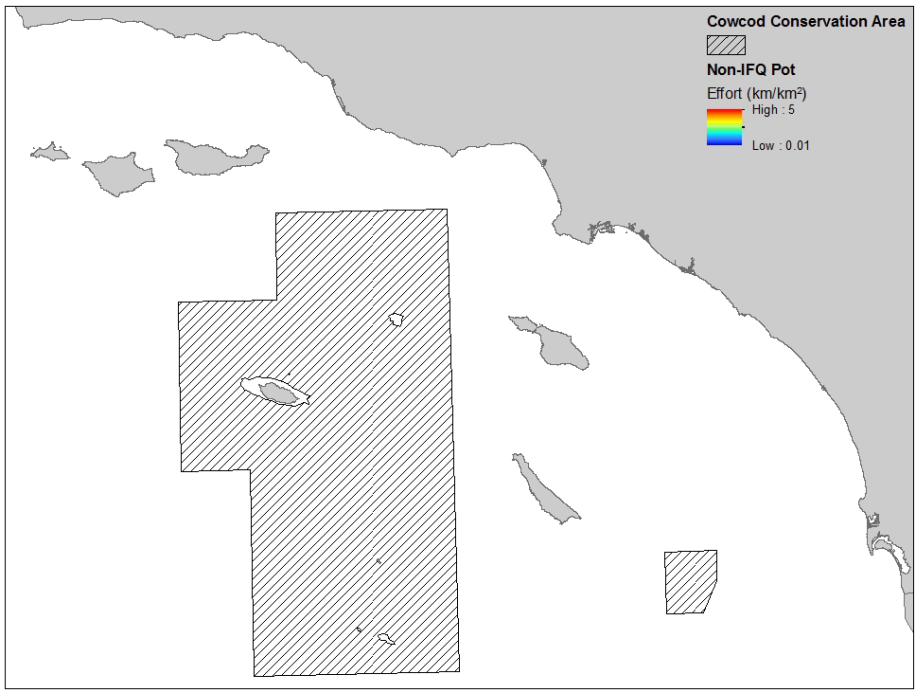


Figure C-19. Non-IFQ pot fishing effort observed by the West Coast Groundfish Observer Program (2011 to 2015).

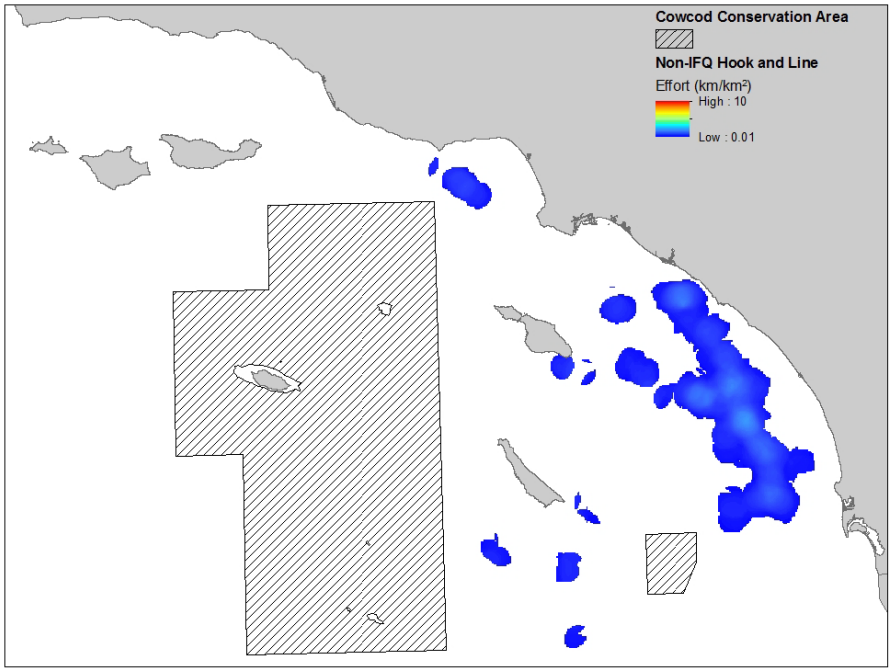


Figure C-20. Non-IFQ share hook-and-line fishing effort observed by the West Coast Groundfish Observer Program (2011 to 2015).

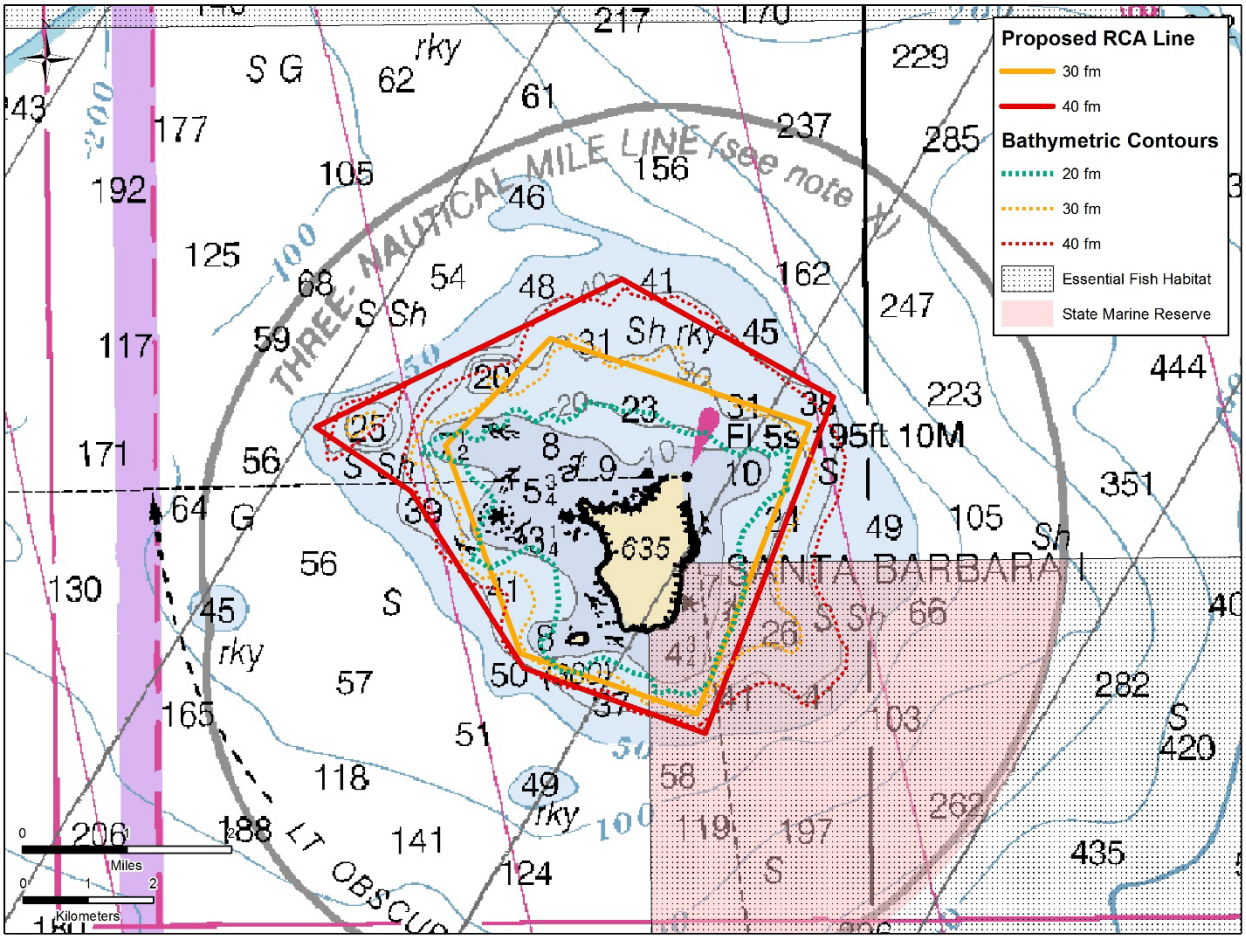


Figure C-21. Proposed 30 fm and 40 fm RCA lines around Santa Barbara Island.

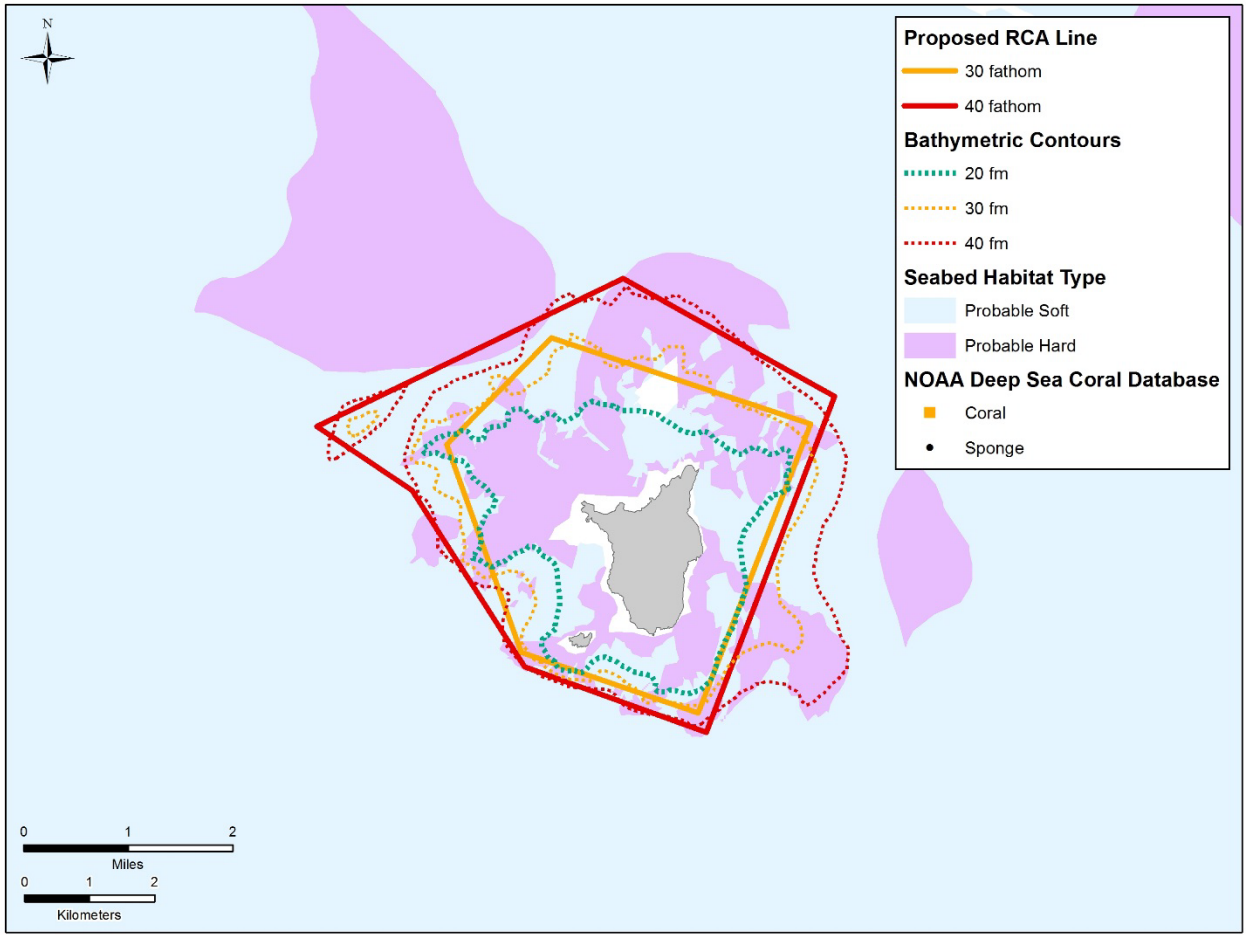


Figure C-22. Proposed RCA changes around Santa Barbara Island including habitat type and sponge/coral observations (source: Pacific Groundfish EFH 5-Year Review and NOAA Deep Sea Coral Database).

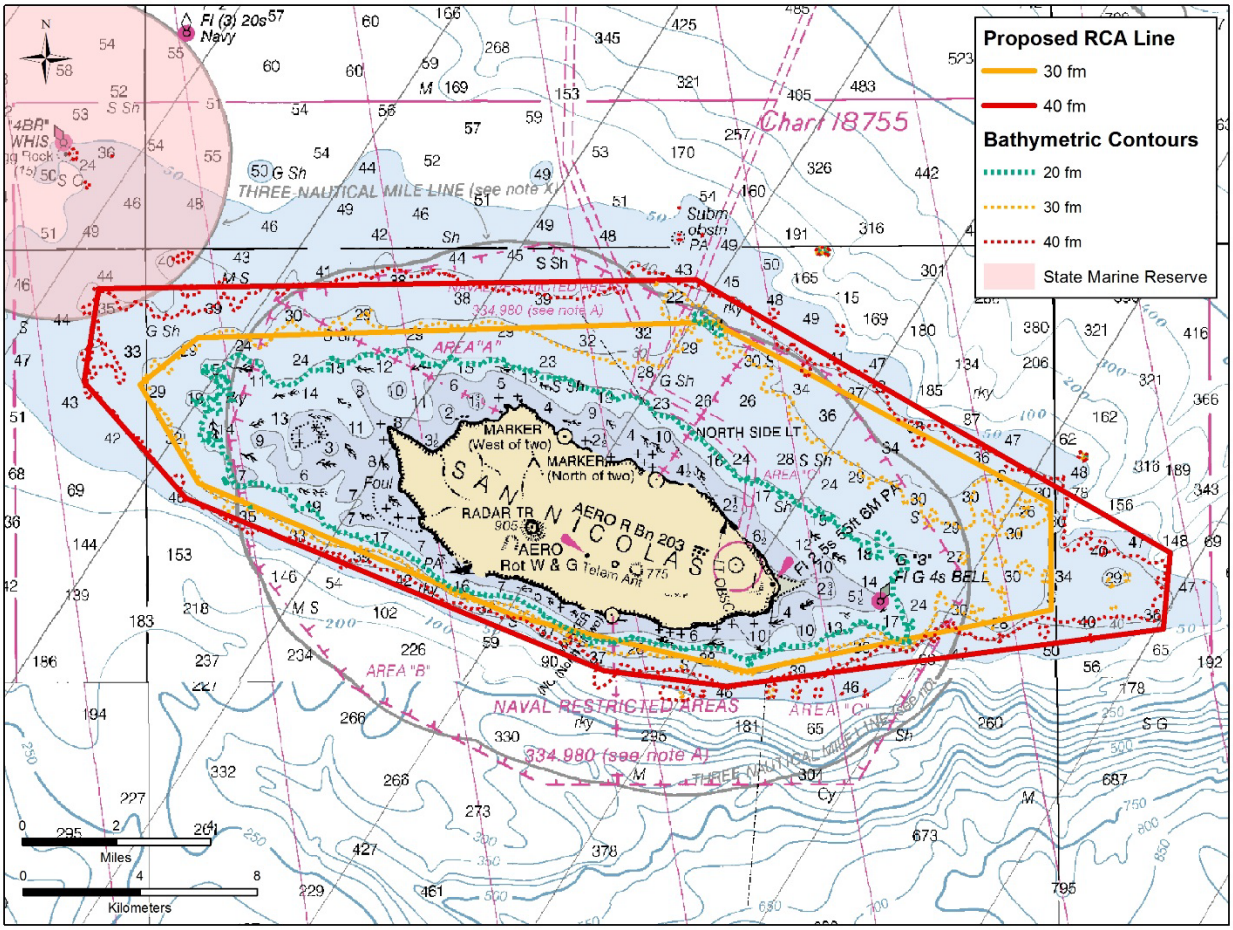


Figure C-23. Proposed 30 fm and 40 fm RCA lines around San Nicolas Island.

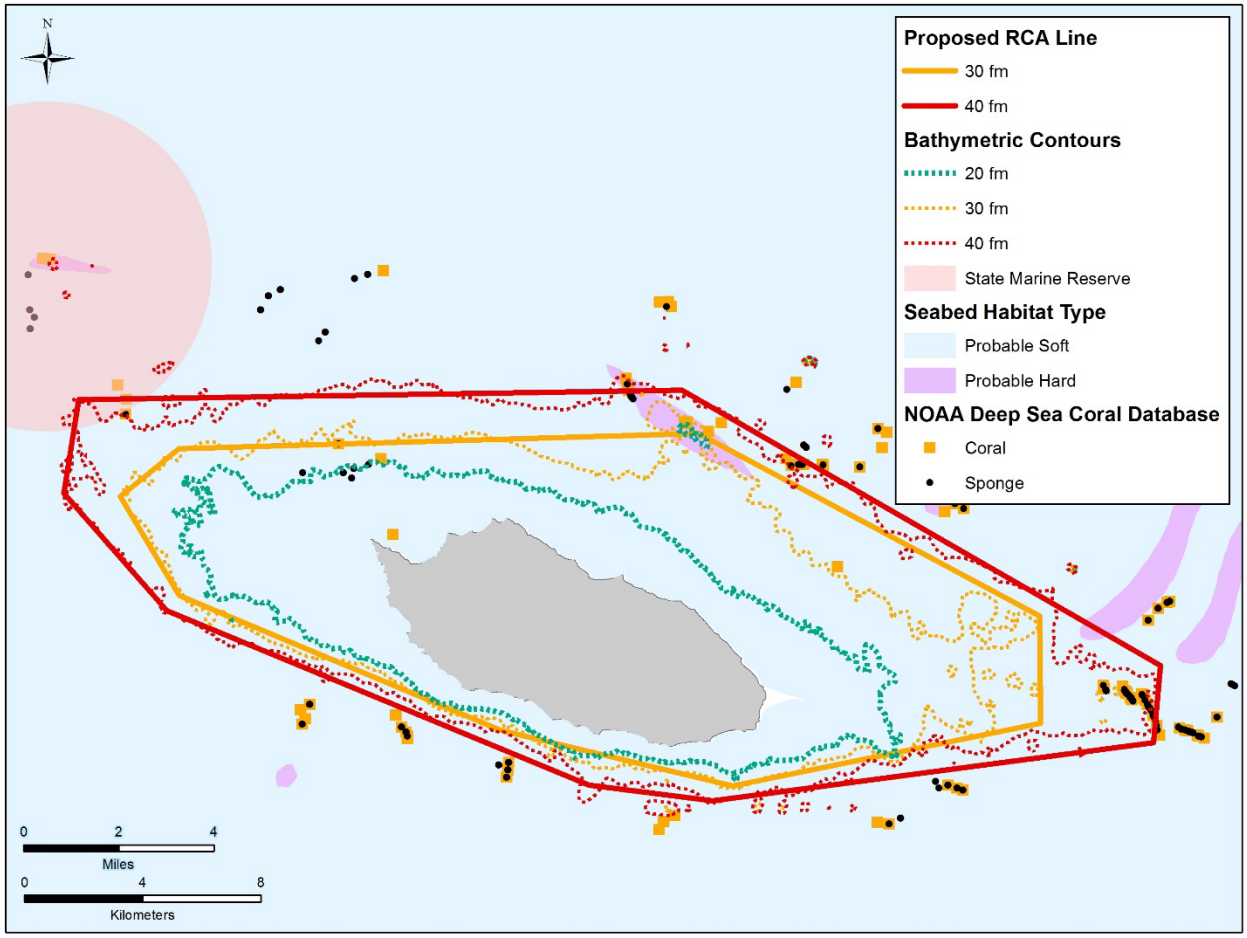


Figure C-24. Proposed RCA changes around San Nicolas island including habitat type and sponge/coral observations (source: Pacific Groundfish EFH 5-Year Review and NOAA Deep Sea Coral Database).

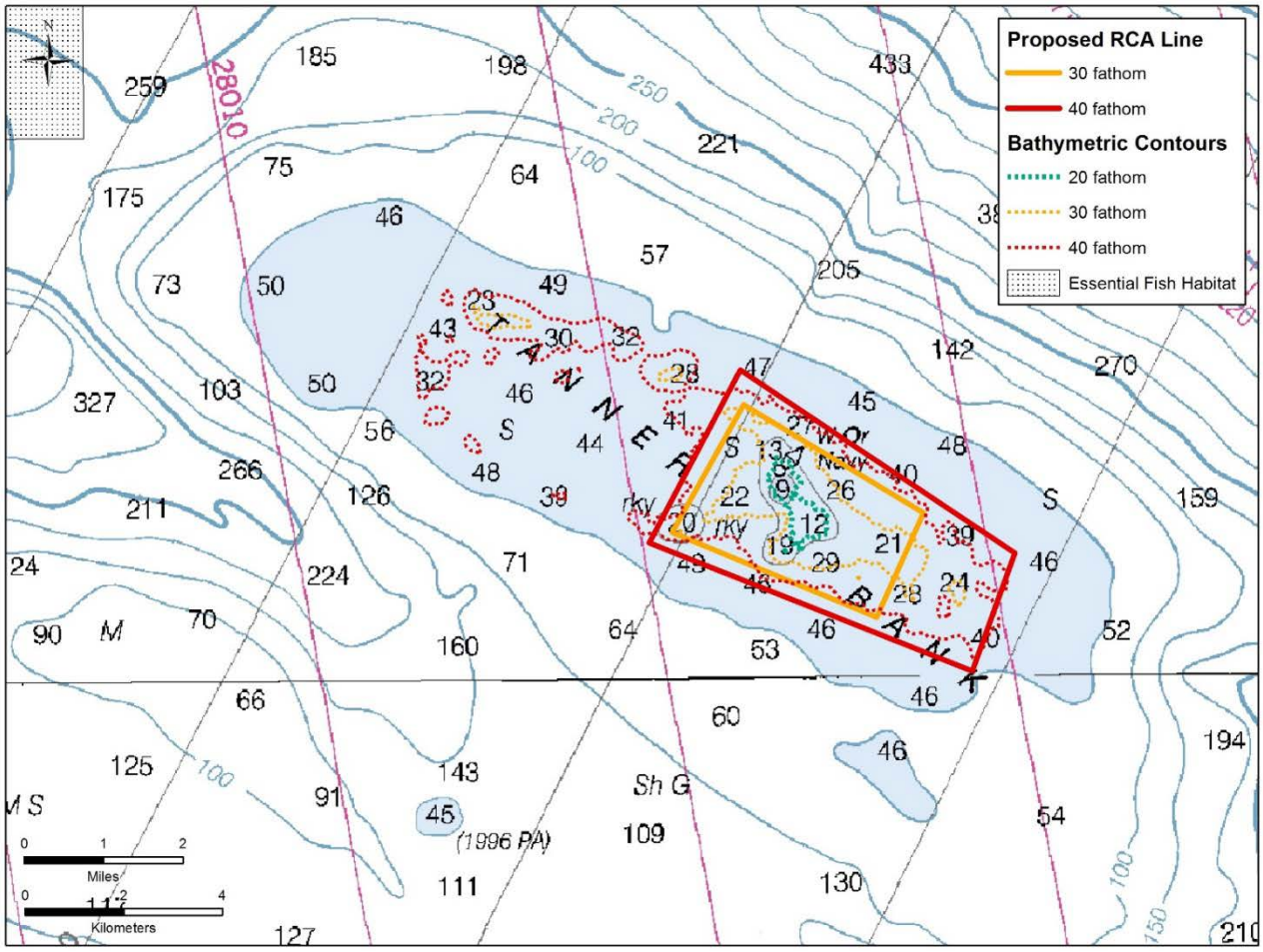


Figure C-25. Proposed 30 fm and 40 fm RCA lines around Tanner Bank.

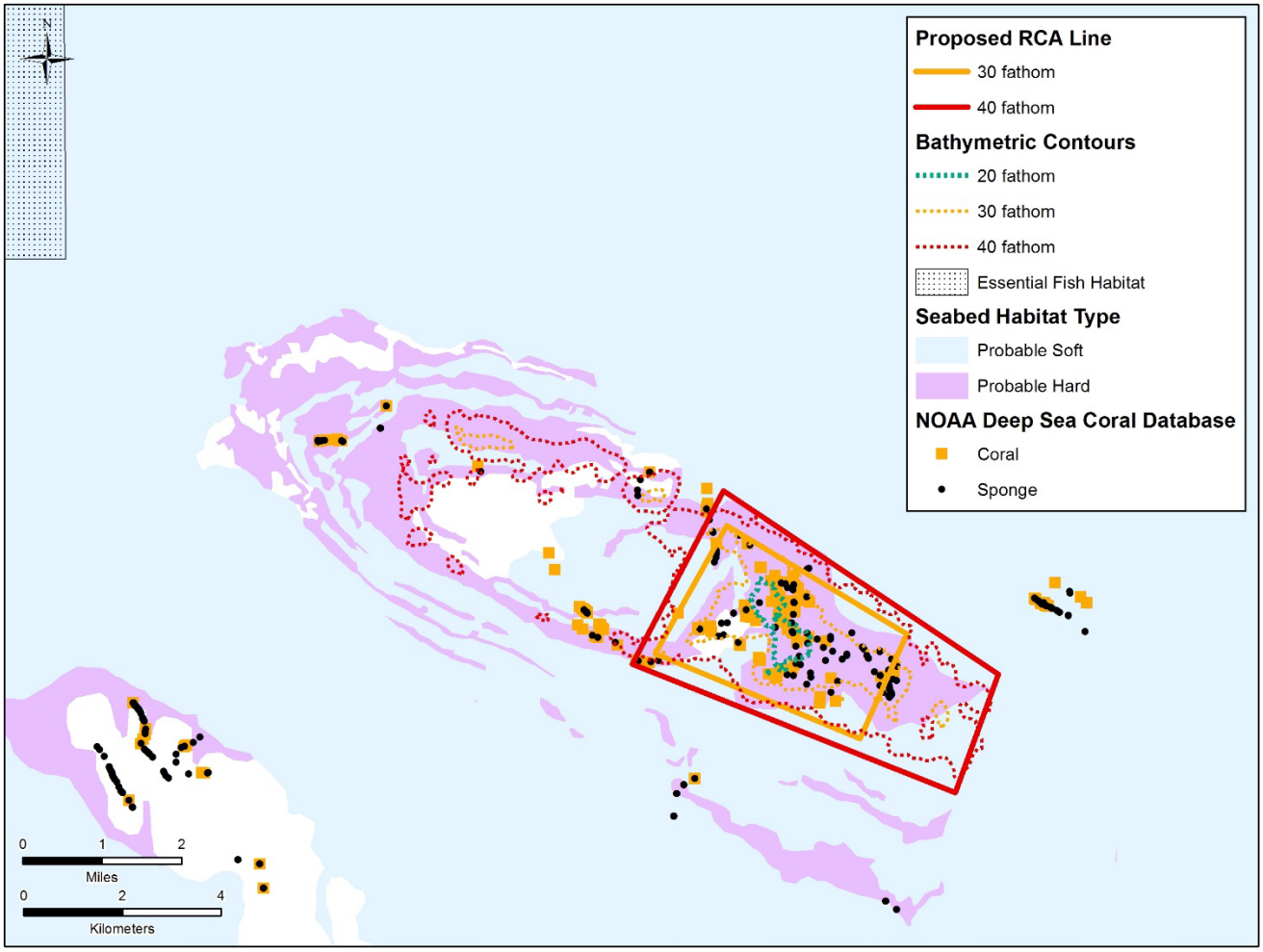


Figure C-26. Proposed RCA changes around Tanner Bank island including habitat type and sponge/coral observations (source: Pacific Groundfish EFH 5-Year Review and NOAA Deep Sea Coral Database).

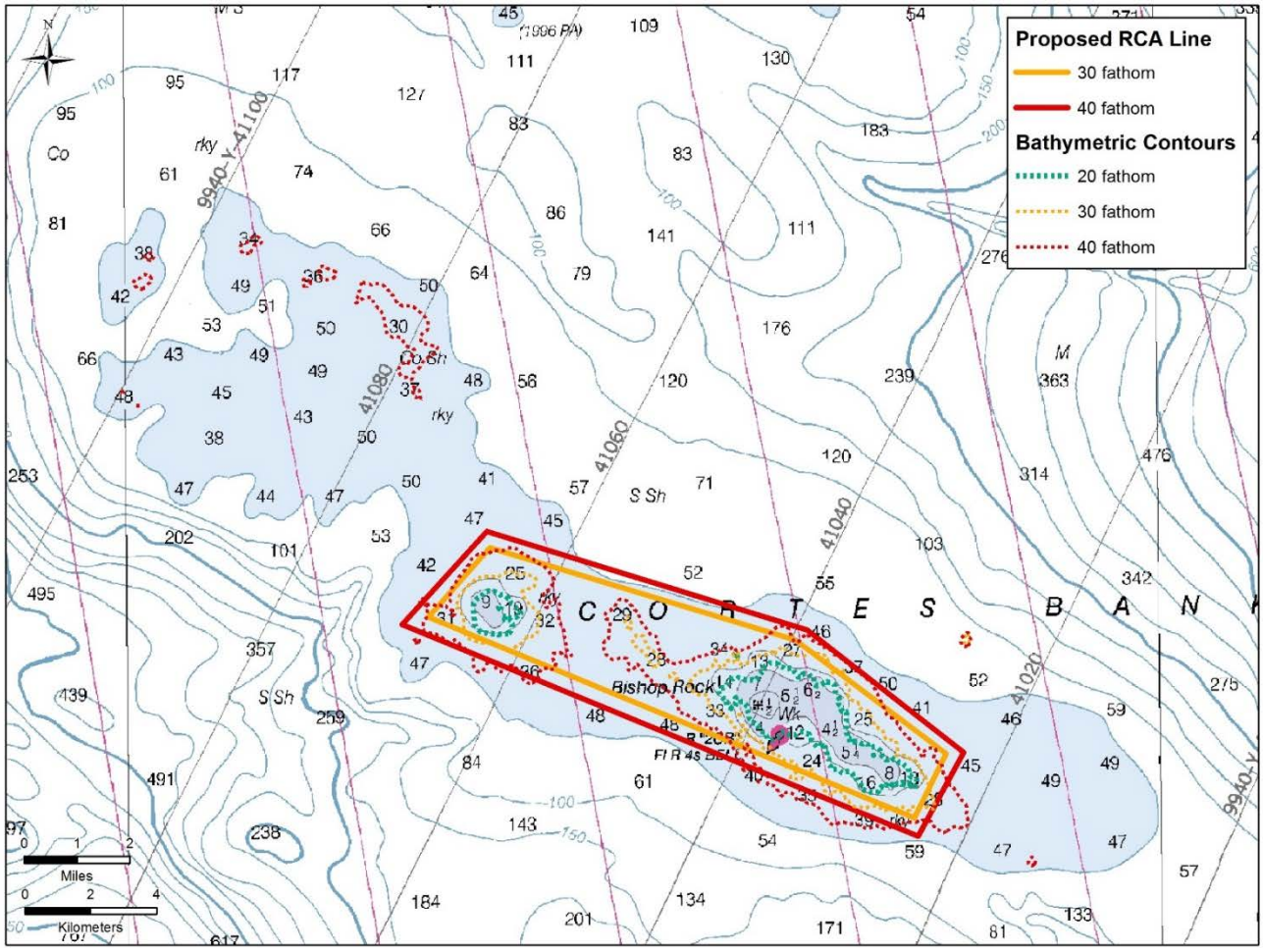


Figure C-27. Proposed 30 fm and 40 fm RCA lines around Cortes Bank.

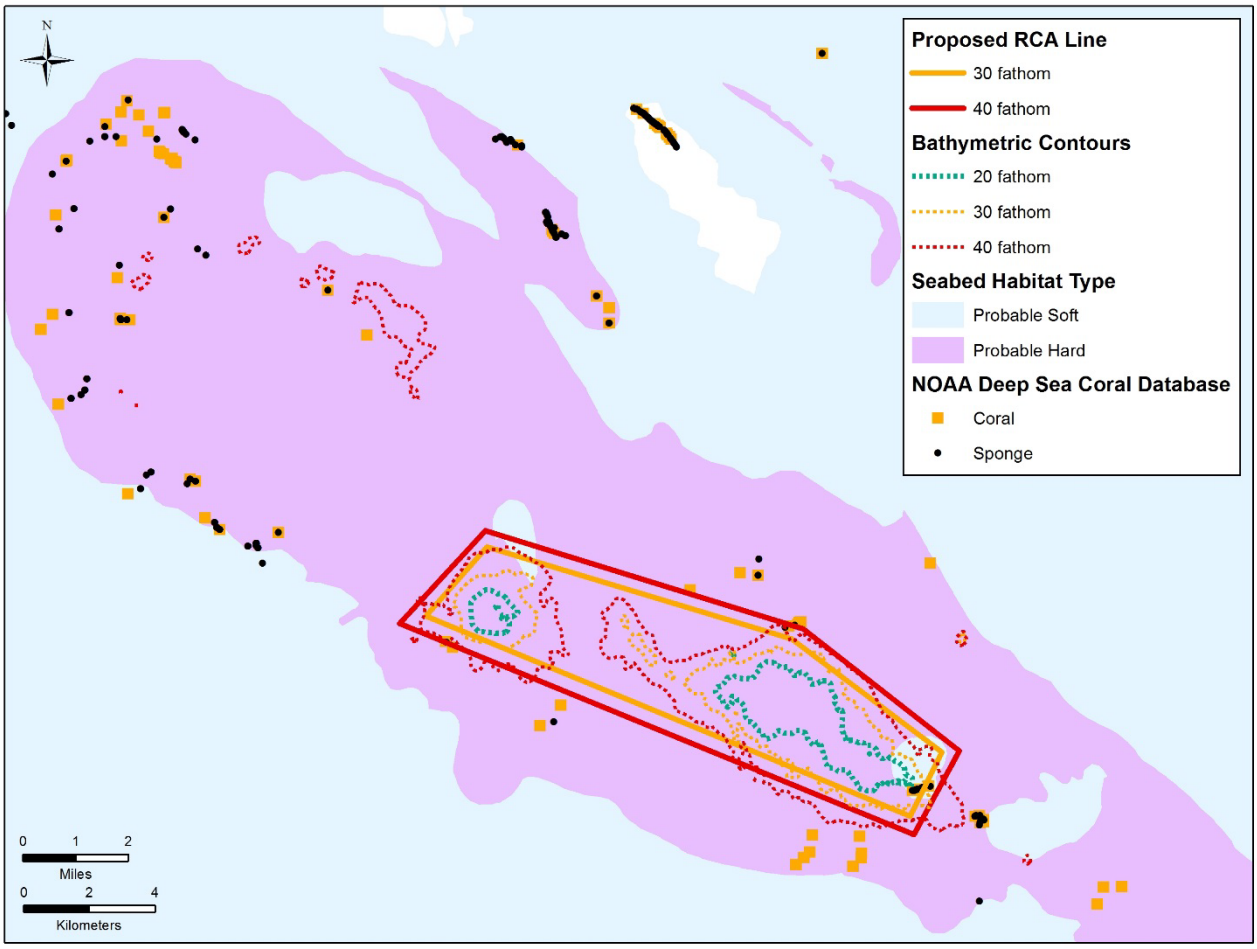


Figure C-28. Proposed RCA changes around Cortes Bank including habitat type and sponge/coral observations (source: Pacific Groundfish EFH 5-Year Review and NOAA Deep Sea Coral Database).

Attachment 6

Coordinate tables for 30 fm and 40 fm RCA lines around Santa Barbara Island, San Nicolas Island, Tanner Bank, and Cortes Bank.

30 Fathom Coordinates

Table C-54. Proposed 30 fathom coordinates for Santa Barbara Island.

Order	Action	LatDeg_New	LatMin_New	LongDeg_New	LongMin_New
1	Add	33	30.38	119	3.15
2	Add	33	29.64	119	0.58
3	Add	33	27.24	119	1.73
4	Add	33	27.76	119	3.48
5	Add	33	29.50	119	4.20
6	Add	33	30.38	119	3.15

Table C-55. Proposed 30 fathom coordinates for San Nicolas Island.

Order	Action	LatDeg_New	LatMin_New	LongDeg_New	LongMin_New
1	Add	33	18.39	119	38.87
2	Add	33	18.63	119	27.52
3	Add	33	15.24	119	20.10
4	Add	33	13.27	119	20.10
5	Add	33	12.16	119	26.82
6	Add	33	13.20	119	31.87
7	Add	33	15.70	119	38.87
8	Add	33	17.52	119	40.15
9	Add	33	18.39	119	38.87

Table C-56. Proposed 30 fathom coordinates for Tanner Bank.

Order	Action	LatDeg_New	LatMin_New	LongDeg_New	LongMin_New
1	Add	32	43.02	119	8.52
2	Add	32	41.81	119	6.20
3	Add	32	40.67	119	6.82
4	Add	32	41.62	119	9.46
5	Add	32	43.02	119	8.52

Table C-57. Proposed 30 fathom coordinates for Cortes Bank.

Order	Action	LatDeg_New	LatMin_New	LongDeg_New	LongMin_New
1	Add	32	29.73	119	12.95
2	Add	32	28.17	119	7.04
3	Add	32	26.27	119	4.14
4	Add	32	25.22	119	4.77
5	Add	32	28.6	119	14.15
6	Add	32	29.73	119	12.95

40 Fathom Coordinates

Table C-58. Proposed 40 fathom coordinates for Santa Barbara Island.

Order	Action	LatDeg_New	LatMin_New	LongDeg_New	LongMin_New
1	Add	33	30.87	119	2.43
2	Add	33	29.87	119	0.34
3	Add	33	27.08	119	1.65
4	Add	33	27.64	119	3.45
5	Add	33	29.12	119	4.55
6	Add	33	29.66	119	5.49
7	Add	33	30.87	119	2.43

Table C-59. Proposed 40 fathom coordinates for San Nicolas Island.

Order	Action	LatDeg_New	LatMin_New	LongDeg_New	LongMin_New
1	Add	33	19.30	119	41.05
2	Add	33	19.42	119	27.88
3	Add	33	14.31	119	17.48
4	Add	33	12.90	119	17.64
5	Add	33	11.89	119	27.26
6	Add	33	12.19	119	29.96
7	Add	33	15.42	119	39.14
8	Add	33	17.58	119	41.38
9	Add	33	19.30	119	41.05

Table C-60. Proposed 40 fathom coordinates for Tanner Bank.

Order	Action	LatDeg_New	LatMin_New	LongDeg_New	LongMin_New
1	Add	32	43.40	119	8.56
2	Add	32	41.36	119	5.02
3	Add	32	40.07	119	5.59
4	Add	32	41.51	119	9.76
5	Add	32	43.40	119	8.56

Table C-61. Proposed 40 fathom coordinates for Cortes Bank.

Order	Action	LatDeg_New	LatMin_New	LongDeg_New	LongMin_New
1	Add	32	30	119	12.98
2	Add	32	28.33	119	6.81
3	Add	32	25.69	119	3.21
4	Add	32	24.66	119	3.83
5	Add	32	28.48	119	14.66
6	Add	32	30	119	12.98

C.6.6 Modify Recreational Depths inside the Western Cowcod Conservation Area

Part A

13. Describe the new management measure.
    - What stocks will it affect? What fisheries will it affect? What is the geographic scope?

This management measure would modify the allowable fishing depths for the recreational fishery inside the western Cowcod Conservation Area (CCA) from 20 fathoms to 30 fathoms or 40 fathoms and add new waypoints approximating the 30 and 40 fathoms depth contours around Santa Barbara Island, San Nicolas Island, Tanner Bank, and Cortes Bank (Figure C-16).

Under the baseline Federal regulations, Minor Nearshore Rockfish, cabezon, kelp greenling, lingcod, and shelf rockfish can be retained shoreward of 20 fathoms from March through December 31. California scorpionfish can be retained January 1-August 31. Petrale sole and starry flounder may be taken year round at any depths within the CCA. Other Flatfish may also be taken round at any depths when using no more than 12 #2 or smaller hooks.

While there are current 30 and 40 fathoms depth contours specified in regulation at 50 CRF 660.71-660.73, none have been specified inside the CCA, which are proposed to be used by recreational and commercial fisheries. This management measure proposes to add new waypoints to approximate the 30 fathoms and 40 fathoms depth contours inside the CCA.

This management measure is expected to increase catch of shelf rockfish, bocaccio, and deeper nearshore rockfish - but mortality is expected to be well within the non-trawl allocations and harvest specifications. Although this measure could increase catch of lingcod, a bag limit reduction proposed for 2019-2020 is expected to keep catches within the non-trawl allocation and harvest specifications. No changes are expected for cabezon and greenling because they are already accessible under the current depth restrictions. This measure is not expected to result in increased interactions with cowcod. This management measure will not likely affect canary and yelloweye rockfish because they are not commonly found in this area.

14. What was considered in order to optimize the performance of this measure?

Cowcod was last assessed in 2013 and at that time it was rebuilding much quicker than anticipated under its rebuilding plan. Cowcod is expected to be rebuilt by 2019, assuming full removal of the ACL, which is 48 years ahead of schedule. Given that removals have consistently been far below the ACL, it is possible that the stock has already reached its rebuilding target.

The latest stock assessments for canary rockfish and bocaccio indicate that these stocks are no longer overfished and have rebuilt. Yelloweye rockfish continues to make adequate rebuilding progress and is currently estimated at 28.4 percent of B_0.

The more optimistic outlook on the status of cowcod from the most recent assessment along with more optimistic outlooks for other stocks were considered to optimize performance of this measure. Because many stocks are rebuilding much quicker than anticipated (e.g., cowcod) or have been declared rebuilt (e.g., bocaccio), modifications to the allowable depth restrictions are considered to allow access to healthy target stocks while still closing the depths where the overall density of cowcod is the greatest (100 to 130 fm; PFMC 2016) to provide protections to cowcod as the stock continues to rebuild.

15. What and when was the Council's decision and how did it arrive at the decision?

At the September 2017 PFMC meeting, three proposals were submitted for consideration in the 2019-2020 specifications process to modify the CCA. The first proposal was to modify the outer boundary of the western CCA, which would have affected all groundfish fisheries. The second and third proposals increased the allowable fishing depth inside the CCA for recreational and fixed gear commercial fisheries. At its November 2017 meeting, the PFMC decided to remove the first proposal from the 2019-2020 specification process and consider it in a stand-alone analysis given interactions and complications with ongoing EFH/RCA modifications in that area.

16. Is there any other background information that was important to the Council's decision? For example, has this measure been previously discussed by the Council, if so what was the outcome?

Two CCAs (Western and Eastern) were originally established in 2001 as an overfished species rebuilding measure for cowcod, which had been recently declared overfished. These area closures were intended to close off areas to fishing in the main portion of the species' depth range (overall distribution 22 fm to 270 fm, with the highest density (100 to 130 fm; PFMC 2016) to reduce encounters and mortality, allowing the stock to rebuild more quickly. The western CCA encompasses 5,126 mi² and is located in the Southern California Bight south of Point Conception.

The CCA is also expected to provide protections for bronzespotted rockfish, a stock with a similar life history characteristics, habitat associations, and vulnerability to fishing as cowcod (PFMC 2008). Commercial landings of bronzespotted dropped in the late 1980s and have remained at low levels from 1990 to present. While the hook and line fishery traditionally accounted for most of the landings, the Southern California gillnet fishery in the early 1980s accounted for most of the mortality during the period of decline, consistent with the movement of effort to deeper and rockier habitats in that fishery.

In the 2009-2010 biennial specifications and management measure process, CDFW staff conducted an analysis that evaluated increasing depth restrictions inside the CCA to 30 fathoms or 40 fathoms for the recreational fishery (PFMC 2008). That analysis included a summary of historical fishing data to explore cowcod encounters prior to implementation of the CCA, a summary of cowcod encounters from the then-current fishery data, effects on co-occurring target species, and proposed coordinates for new 30 fathoms and 40 fathoms depth contour lines.

As part of its Final Preferred Alternative, the Council recommended modifying the recreational depth restrictions inside the CCA to 30 fathoms. This decision was disapproved by NMFS in its Final Rule (76 FR 27508) due to concerns of proposed impacts to cowcod, especially juveniles, which could delay rebuilding. NMFS also indicated that because the ACL for cowcod was low (4 mt at that time), any measures that potentially increased cowcod mortality required better information on potential biological and economic effects to support such a change. At the time of NMFS' disapproval, cowcod was at 4.5 percent of unfished biomass with a projected time to rebuild of 2071. The OFL and ACL established for 2011-2012 were 13 mt and 4 mt respectively.

In 2013, a new stock assessment was conducted which suggested a significant improvement in the status of cowcod. Cowcod was estimated to be at 34 percent B_0 and projected to rebuild 48 years ahead of schedule (2020 versus 2068). This new stock assessment explored ecosystem effects and updated habitat preferences of juvenile cowcod based on new research published since the previous full assessment in 2007. The stock assessment identified young of year fish being distributed between (52-277 m; 28–151 fm) with juveniles slightly deeper. With such a wide range of depths, it is unknown whether juveniles are concentrated in the

shallower end or the deeper end of that depth range. This proposal would be implementing a depth range that is deeper than where YOY are expected (i.e., deeper than 28 fm) in addition to considering that the NMFS survey data from inside the CCA showed no cowcod (juvenile or adult) have been encountered within the proposed depths. The assessment also noted that the 2013 annual rockfish recruitment and ecosystem assessment survey conducted by NOAA Fisheries Santa Cruz Laboratory encountered the highest numbers of cowcod in the 30-year history of the survey and suggested the potential for a strong 2013 year class.

In response to the significantly improved status of cowcod, NMFS implemented an OFL, ACL, and annual catch target (ACT) of 66.6 mt, 10 mt, and 4 mt respectively for 2016 – significantly higher than in prior years. Although the best available science suggested an ACL more than double that in prior years would not jeopardize the stock or rebuilding progress, the Council chose to implement a lower ACT (4 mt) due in part to the change in perception of stock status and the desire to take precautionary steps in recommending higher ACL amounts.

In 2011 the Council also adopted discard mortality rates reflecting the use of descending devices for cowcod, canary, and yelloweye rockfish and CRFS samplers have been collecting data (onboard and dockside) on descending device use for inclusion in management. The reduction in mortality due to descending device use is reflected in catch estimates and the reduction in discard mortality facilitates rebuilding of overfished stocks.

In 2014 the NFWSC hook and line survey for nearshore and shelf rockfish was allowed to operate inside the CCA. In the two years that the survey has been allowed to operate inside the CCA, zero cowcod have been encountered inside 40 fathoms. Throughout the entirety of the 12 year survey, zero cowcod have been encountered outside the CCA in those same depths. All of the cowcod encountered inside the CCA were in depths of 40 fathoms or greater (Table C-49).

Part B

9. What is the objective of this management measure?
    - Does it have a conservation purpose? (e.g., managing catch within ACLs? mitigating impacts to habitat or protected species?) Does it have a social/economic purpose? (e.g., allowing increased opportunity to catch target species? Does it have a social making fishing opportunity among different user groups more equitable?)

The objective of this management measure is allow increased opportunity to catch target stocks (i.e., shelf rockfish, bocaccio, and deeper nearshore rockfish) which are inaccessible due to the current depth restrictions.

10. The following screening is intended to help NMFS understand the broad implications of the management measure and to determine the appropriate NEPA compliance strategy.

    m. How would you describe this new management measure (may select more than one)

    ❑ Technical correction or a change to a fishery management action or regulation, which does not result in a noticeable change in any of the following: fishing location, timing, effort, authorized gear types, or harvest levels.

    ■ Has potential for noticeable change to any of the following: fishing location, timing, effort, authorized gear types, or harvest levels.

- ❑ Designed to mitigate some other environmentally negative effect (e.g., cap, closed area, bag limit).
- ❑ Designed to mitigate a negative economic or social effect.
- ■ Applies to only a small area of the total EEZ.

n. What resource(s) would the management measure likely effect, either positively or negatively?
- ❑ Physical EFH or Ecosystems
- ■ Biological Resources (target, non-target species)
- ❑ Protected Resources (mammals, ESA-listed)
- ❑ Economic, social, cultural

o. If the management measure is mitigating or offsetting an effect on a resource, identify that resource.
- ❑ Physical EFH or Ecosystems
- ❑ Biological Resources (target, non-target species)
- ❑ Protected Resources (mammals, ESA-listed)
- ❑ Economic, social, cultural

Part C

Keeping in mind the responses provided in part B above, briefly answer the following questions. Please focus on the issues of importance; if there are no potential effects, say 'no anticipated effects'. Remember both positive and negative effects.

26. Groundfish
    a. How does any change in catch relate to harvest specifications and the risk that overfishing will occur? Can the proposed measure reasonably be expected to adversely affect managed fish species?

<u>Non-overfished stocks</u>

No adverse impacts are anticipated for non-overfished stocks south of 40°10' N. latitude - shelf rockfish, bocaccio, and nearshore rockfish. An increase in the number of boats fishing in this area is not expected due to the remoteness of the Western CCA but an increase in number of trips, catch and a redistribution of depth of catch is expected as a result of the increased depths.

Allowing access to deeper depths inside the CCA is expected to increase the number of groundfish trips between 10 percent to 20 percent particularly out of Ventura and Los Angeles given their proximity to San Nicolas and Santa Barbara Islands. This would provide additional revenues to boat crews in the form of fish processing and tips.

Some Commercial Passenger Fishing Vessels (CPFV) operating in the CCA target migratory species (yellowtail, tuna, and white seabass) which are found in deeper depths where rockfish retention is prohibited. Allowing rockfish retention in deeper depths is expected to provide some more opportunities for targeting migratory species and increase revenues.

Having access to deeper depths is important to anglers because it spreads effort into deeper waters, reducing pressure on shallower nearshore rockfish species, and provides greater access to highly desirable deeper nearshore (copper rockfish) and shelf rockfish (vermilion rockfish) which are not accessible under the current 20 fathom depth restriction.

No additional increase in mortality of non-overfished stocks is expected by changing depth limits inside the CCA because RecFISH model projections for the southern management area assumes that the allowable fishing depths inside the CCA are the same as outside. Impacts are expected to remain well within annual catch limits and/or non-trawl allocations and pose a low risk to overfishing (Table C-43; Table C-44; Table C-45; Table C-46; and Table C-47; Table C-48).

No additional increase in mortality is expected for bronzespotted rockfish because they are found between 41 fathoms and 205 fathoms – outside the depth range of the proposed action.

CDFW performs monthly tracking on recreational species. In the event that encounters are tracking higher than anticipated, CDFW could take inseason action through its state process to implement shallower depth restrictions to reduce interactions.

Overfished species (Cowcod)

No adverse impacts are anticipated for cowcod south of 40°10' N. latitude beyond those already accounted for in the integrated alternatives. No additional increase in mortality is expected because the RecFISH model projections for the entire southern management area assume that the allowable fishing depths inside the CCA are the same as outside. In the two years prior to CCA implementation, thousands of anglers were interviewed by the Marine Recreational Fisheries Statistics Survey (MRFSS) program and 17 cowcod were reported, 5.9 percent of which were encountered in depths less than 40 fathoms (i.e., 1 of 17). From 2004-2009, in the areas open to 60 fathoms outside the CCA, 6.8 percent of cowcod encounters occurred in waters less than 40 fathoms (2 fish out of 29).

An evaluation of more recent data (2010-2015) of discards observed by onboard observers reveals that 7.3 percent of cowcod were encountered in depths of 30 fathoms or less (Table C-62). Because these data were collected by an onboard observer, they are assumed to have a low degree of uncertainty. A similar analysis was conducted on all cowcod encounters from both onboard observers and angler reported catches for Private/Rental and CPFV modes from 2012 to 2016 (Table C-63). Although these data have a slighter greater uncertainty because they rely in part on an angler's ability to accurately identify cowcod, they show a similar trend of increasing cowcod encounters in depths greater than 40 fathoms.

CDFW performs weekly tracking on cowcod in addition to other species. In the event that encounters are tracking higher than anticipated, CDFW could take inseason action through its state process to implement shallower depth restrictions to reduce interactions.

Table C-62. Number of cowcod discarded by depth bin on Commercial Passenger Fishing Vessels (CPFV) from 2010 to 2015. Data are for fish encountered south of Point Conception (34°27' N. latitude) where depth data was recorded by an onboard sampler. Data from RecFIN; detailed depth data for 2016 are not available from RecFIN.

Depth Bins (fm)	Number of Fish	Percent of Encounters
0-10	4	7.3%
11-20	0	0.0%
21-30	0	0.0%
31-40	7	12.7%
41-50	30	54.5%
51-60	14	25.5%
>60	0	0.0%
Total	**55**	**100%**

Table C-63. Number of cowcod encountered (kept or released) by depth bin on Commercial Passenger Fishing Vessel (CPFV) and Private/Rental Boats from 2012 to 2016 (does not include data from PR2 mode for 2012 or 2013) from CRFS sample data. Data are for fish encountered south of Point Conception (34°27' N latitude) where depth data was recorded. Data are from CDFW/CRFS.

Depth Bins (fm)	Number of Fish	Percent of Encounters
0-10	1	0.8%
11-20	5	3.8%
21-30	7	5.3%
31-40	22	16.7%
41-50	79	59.8%
51-60	16	12.1%
>60	2	1.5%
Total	**132**	**100%**

This management measure poses a low risk of overfishing cowcod given that mortality has consistently remained well below the ACL (previously OY) since 2003. No increase in cowcod mortality is expected as a result of this action (Table C-50).

The 2014 cowcod rebuilding analysis evaluated the tradeoffs of time to rebuild under higher harvest levels (Table C-51). This rebuilding analysis showed that large changes in mortality and exploitation rates did not have an appreciable effect on rebuilding times. For example, increasing the baseline ACT by over 500 percent (23.0 mt) is only expected to add three years to rebuilding. Given that no increase in mortality is expected, the proposed change is not expected to have an effect on the rebuilding progress of the stock on time to rebuild or rebuilding progress.

b. Will this management measure change catch of groundfish stocks compared to past catches and management reference points? If no, describe in a few sentences why not. If yes, what stocks would be substantially affected?

As noted previously, this management measure is not expected to make substantial changes to catch of target or overfished stocks compared to past catches and management reference points. As noted previously, RecFISH model projections assume that the allowable fishing depths inside the CCA are the same as outside.

Under the current regulations, 40.4 mi^2 (or less than 1 % of the entire CCA) is open to fishing in 20 fathoms or less. Increasing the depth to 30 fathoms depth restriction would increase the fishable area within the CCA to 101.5 mi^2 (2.0% of CCA). Under a 40 fathoms depth restriction, the area would increase to 150.4 mi^2 (Table C-52 and Table C-53).

27. Other Fish

    a. Will this management measure affect catch of non-groundfish species? If no, describe in a few sentences why not. If yes, is the magnitude of the change substantial and to what stocks? How is this catch monitored? Are the affected stocks managed under another federal FMP or by a state? Do other management plans include harvest specifications? Is it possible to assess the contribution of the measure, if any, to overfishing risk of a non-groundfish stock?

According to the 2016 WCGOP Total Mortality Report, few non-groundfish species (e.g., California halibut and California sheephead) are encountered as bycatch in the California recreational fishery. Catch of these non-groundfish species is not expected to change as a result of this management measure. California halibut and California sheephead are both shallow dwelling species that are already accessible under the baseline depth restrictions. Therefore, simply modifying allowable depths is not expected to increase catches of these species since they tend to be found in shallower depths in which fishing is already permitted.

Several state and Federally-managed recreational fisheries operate in this area and depths using similar gears – yellowtail, tuna, and white seabass. While this measure could have some increase, the magnitude is expected to be small. These stocks are managed under state and/or Federal Fishery Management Plans with low levels of fishery exploitation and the risk of overfishing from this management measure is expected to be low.

28. EFH and Ecosystems

    a. Will this management measure change fishing activity so as to adversely affect essential fish habitat compared to no-action effects? If no, describe in a few sentences why not. If yes, is the magnitude of the change substantial and why? Describe the mechanism linking the management measure to adverse impacts. For example, changes in fishing gear or methods; changes in the temporal and/or geographic distribution fishing effort.

This measure is not expected to change fishing activity as to adversely affect essential fish habitat (EFH) compared to the current or baseline as analyzed in the 2015-2016 FEIS. EFH which prohibits fishing with bottom contact gear is currently designated in an area off Santa Barbara Island. A state Marine Protected Area, which prohibits fishing, was also designated in this same area.

Any EFH that is currently in effect will remain in effect and not be affected by this action. The Council is contemplating modifying EFH and/or adding additional EFH areas under a separate action, but those potential modifications are only applicable to trawl gear, and would therefore have no effect or bearing on this action.

b. Can the proposed measure reasonably be expected to adversely affect vulnerable marine or coastal ecosystems, including but not limited to, deep coral ecosystems?

No anticipated effects. Fishing activity occurs in shallow depths where deep sea coral ecosystems are not found. An evaluation of NOAA Deep Sea Coral database reveals that no deep sea corals have been observed around Santa Barbara Island, San Nicolas Island or Cortes Bank under baseline depths (Figure C-22; Figure C-24; and Figure C-28); some observations have been documented at Tanner Banks (Figure C-26). Increasing the depths to 30 fathoms or 40 fathoms is not expected to adversely affect coral ecosystems because recreational fishing gear has minimal effect on sensitive habitats unlike other gears such as trawl gear. As previously mentioned, fishing already occurs in these depths and areas for state managed fisheries so no additional negative effects are expected simply as a result of this change.

c. Can the proposed measure reasonably be expected to adversely affect biodiversity or ecosystem functioning (e.g., benthic productivity, predator-prey relationships, etc.)?

No anticipated effects. Fishing activity currently occurs in these areas and increasing allowable fishing depths is not expected to have any effect on biodiversity of ecosystem functioning.

29. Marine Mammals and ESA Species

a. Will this management measure result in adverse effects to ESA-listed species and/or non-listed marine mammals and seabirds? If no, describe in a few sentences why not. If yes, is the magnitude of change substantial and why? Describe the mechanism linking the management measure to adverse impacts. For example, changes in fishing gear or methods; changes in the temporal and/or geographic distribution fishing effort.

No anticipated effects. This management measure is not expected to affect ESA-listed species and/or non-listed marine mammals and seabirds because they are not vulnerable to recreational fishing gear.

30. Social and Economic

a. Will this management measure change the distribution of catch opportunity among user groups, fishing communities, states, or regions? If no, describe in a few sentences why not. If yes, is the magnitude of the change substantial? Why is it substantial? For example, which user groups are likely to see increased catch opportunity? Which may lose catch opportunity?

Although changes are proposed under separate actions for the recreational and fixed gear commercial fisheries, no change in distribution of catch is expected between user groups. Management measures for both fisheries are designed to ensure they remain within their respective allocations. This management measure is expected to provide a positive economic impact for vessels fishing inside the CCA with an estimated 10 percent to 20 percent increase in the number of trips and increased revenue to boat crews from fish processing and tips.

b. Can the proposed action reasonably be expected to significantly affect public health or safety?

No anticipated effects.

31. Cumulative effects

Past fishery and non-fishery actions have created the baseline conditions. For fishery management actions, consider current (put into place recently but the effects may not be visible) or "reasonably foreseeable future items (actions that the Council is moving forward with). For Specs, consider the 19/20 preferred alternative and the routine management measures.

Repeat each set of questions for affected resources (Groundfish, other fish, EFH, ecosystems, ESA species, marine mammals, social, and economic).

a. Does the proposed management measure have non-negligible adverse effects to the resource? *If none then stop and proceed to the next resource.*
b. Is it likely that any current or future fishery management actions may have overlapping effects with this management measure on the resource?
c. Is it likely that any current or future non-fishery management actions may have overlapping effects with this management measure on the resource?
d. Qualitatively or quantitatively, add the effects in (a), (b), and (c) projected to the end of 2020. Can the sum of the effects be considered 'significant'? Consider both positive and negative effects.
e. Whether significant or not, what is the proposed new management measure's contribution to the total effect? E.g., the incremental impact from this management measure to the cumulative effects on groundfish is negligible/high/medium

Groundfish – Changes are being considered to canary, cabezon, and lingcod bag limits, California scorpionfish seasons (year-round in SMA), and stock complex changes. Although a similar action is being contemplated for the commercial fixed gear fishery in this same area, the incremental impact from this management measure to the total cumulative effects on groundfish is negligible.

Other Fish – There are no cumulative effects to state managed species because there are no other recreational actions being contemplated that would affect other fish in this area. The incremental impact from this management measure to the total cumulative effects on other fish species is negligible.
EFH – There are no cumulative effects to EFH because no changes are proposed to existing EFH inside the CCA as part of this management measure. Under a separate processes, the Council is considering modifying EFH along the west coast and removing the trawl RCA. Given that both these actions are limited to trawl gear, and not fixed gear, the incremental impact from this management measure to the total cumulative effects on EFH is negligible.

Ecosystem – There are no cumulative effects to ecosystems because the proposed management measure is not expected to adversely affect vulnerable marine or coastal ecosystems or adversely affect biodiversity. The incremental impact from this management measure to the total cumulative effects on the ecosystem is negligible.

ESA species – There are no cumulative effects to ESA species as a result of this action. Although leatherback sea turtles and humpback whales do occur in this geographic area they are not commonly encountered with recreational gear. The incremental impact from this management measure to the total cumulative effects on ESA species is negligible.

Marine mammals – There are no cumulative effects to marine mammals as a result of this action. Although humpback whales do occur in this geographic area they are not commonly encountered with recreational

gear. The incremental impact from this management measure to the total cumulative effects on marine mammals is negligible.

Social – There are no cumulative social effects because this management measure is not expected to change distribution of fishing effort among user groups. The incremental impact from this management measure to the total cumulative effects on social impacts is negligible.

Economic – This measure is expected to have a positive cumulative economic effect by increasing revenues for the recreational fishery in southern California. The incremental impact from this management measure to the total cumulative effects on economic impacts is negligible.

32. Other

    a. Are the proposed action's effects on the quality of the human environment likely to be highly controversial? (science of the effects, not the perception)

The proposed action on the quality of the human environment will not likely be highly controversial because cowcod is rebuilding much quicker than expected and this proposed management measure will still keep over 97 percent of the CCA closed to fishing.

    b. Are the proposed action's effects on the human environment likely to be highly uncertain or involve unique or unknown risks?

No the proposed action's effects on the human environment are not likely to be highly uncertain or involve unknown or unique risks.

33. MSA National Standards

    a. Describe how the management measure is consistent with the 10 MSA National Standards.

This management measure proposes to replace the depth-based inner boundary of the western CCA with a waypoint based on a 30 or 40 fathom Rockfish Conservation Area (RCA) depth contour line. The intent of the RCA is to prevent overfishing, while at the same time protecting OFS by preventing fishing in areas where these species of concern are more likely to be found. This management measure would not jeopardize this concept, and at the same time would allow the fishing communities to better access target stocks to help them achieve their harvest limits. Additionally, this management measure has very little chance of causing any of the impacted species to become overfished, or for overfishing to occur. This would address National Standard 1.

This management measure is also consistent with National Standard 2 because it is based on the best scientific information available which suggests that cowcod is nearly rebuilt and higher levels of mortality are not expected to jeopardize its rebuilding progress.

Inherent in the RCA system, the goal of minimizing bycatch of species of concern and non-target species has been addressed. This management measure improves the RCA method by providing slight modifications that improve monitoring of fishing activity, thus meeting National Standard 9.

C.6.7 Removal of Daily Vessel Quota Pound (QP) Limits

Part A

1. Describe the new management measure.
    - What stocks will it affect? What fisheries will it affect? What is the geographic scope?

The following species with daily QP limits will be affected: bocaccio (south); cowcod (south); darkblotched; Pacific halibut; Pacific ocean perch; yelloweye rockfish, and Pacific halibut. The only fishery that will be affected is the shorebased trawl IFQ sector, with a geographic scope of Washington, Oregon, and California.

2. What was considered in order to optimize the performance of this measure?

Vessel limits in vessel accounts restrict the amount of QPs that any vessel can catch or hold. Annual QP vessel limits are a set percentage of the IFQ sector allocation, and NMFS calculates and publishes a table annually showing the quota pound equivalents. Unused QP vessel limits, also called ‘‘daily vessel limits,’’ apply to overfished species and cap the amount of overfished species QPs any vessel account can have sitting available in their account on a given day, which is lower than the annual QP vessel limit. If a vessel account owner held the full daily vessel limit amount available in their account and then caught 20,000 pounds, they could bring in 20,000 more pounds from a quota share or other vessel account, up to the daily and annual vessel limit.

The Council and NMFS established daily vessel limits to prevent hoarding of available overfished species QPs in any one vessel account, since the IFQ sector allocations of some overfished species are so low. Full evaluation of the current impacts of this provision is difficult because it requires an assessment of the QP account balances in every account for each day of the year and for those accounts that were at the daily limit and later acquired additional QP, a determination of the source of that additional QP. The daily limits are set equal to the control limits.

While the annual vessel QP limit limits the amount of used and unused QP in a vessel account, the daily limit limits the amount of unused QP that can be in a vessel account at any one time. Daily limits attempt to limit a person’s ability to acquire additional QP from others before those QP are needed. Theoretically, QP that would be in excess of the daily limit are left on the market for others to acquire. Because daily limits are set at the level of the QS control limits (Table C-64) they have no effect on those who only use QP from their own QS account.

Table C-64. Accumulation limits for species for which there is a daily QP limit.

	QP Limit		QS Control Limit	Daily QP Limit	
	Percent	2017 Pounds	Percent	Percent	2017 Pounds
Remaining Overfished Species and Pacific Halibut					
Cowcod South of 40°10' N.	17.7%	546	17.7%	17.7%	546
Pacific halibut (IBQ) North of 40°10' N.	14.4%	20,860	5.4%	5.4%	7,822
Yelloweye rockfish	11.4%	276	5.7%	5.7%	138
Recently Rebuilt Species (Expected to be Removed from the Daily QP Limit List)					
Bocaccio rockfish South of 40°10' N.	15.4%	102,668	13.2%	13.2%	88,001
Darkblotched rockfish	6.8%	76,096	4.5%	4.5%	50,358
Pacific ocean perch North of 40°10' N.	6.0%	179,858	4.0%	4.0%	119,905

For cowcod, because all of the accumulation limits are set at the same level (QP, QS, and daily) it is not clear that the daily limit has any effect. Additionally, for any daily limit, there are a few work arounds which limit the policies effectiveness in encouraging QP to remain on the market until needed. First, sales contracts can be signed but the QP transfers not implemented until a vessel account has room under the daily limit. Second, entities can temporarily acquire trawl permits and use them to establish a second vessel account in which they can store QP (similar to what risk pools do).

If a vessel does not land more than the daily limit during the year, then the daily limit is not constraining. Table C-65 indicates that for the remaining overfished species and Pacific halibut, from 2011 through 2017 there has been only one instance of a vessel landing more than the daily limit. With respect to recently rebuilt species, there has generally been at least one vessel landing more than the daily limit each year for Pacific ocean perch but far less for bocaccio and darkblotched rockfish. The greatest number of encounters occurred for widow rockfish, for which daily limits were removed on December 26, 2017.

Because daily limits do not constrain the total catch during a year but just the process of QP transfer, if in the future there was a need to reinstate the policy that action could be taken without substantially disrupting the fishery.

Table C-65. Total number of vessels with catch of daily limits species and number of vessels with annual deliveries in excess of the daily limits.

		2011	2012	2013	2014	2015	2016	2017	Total Encounters with Daily Limit (2011-2017)
Remaining Overfished Species and Pacific Halibut									
Cowcod South of 40°10' N.	Total # Vessels	4	7	11	11	8	7	8	
	# Vessels > Daily Limit	0	0	0	0	0	0	0	0
Pacific halibut (IBQ) North of 40°10' N.	Total # Vessels	79	76	76	68	70	72	74	
	# Vessels > Daily Limit	0	1	0	0	0	0	0	1
Yelloweye rockfish	Total # Vessels	14	14	16	19	11	15	24	
	# Vessels > Daily Limit	0	0	0	0	0	0	0	0
Recently Rebuilt Species (Expected to be Removed from the Daily QP Limit List)									
Bocaccio rockfish South of 40°10' N.	Total # Vessels	10	13	19	16	10	8	11	
	# Vessels > Daily Limit	0	0	0	0	1	0	1	2
Darkblotched rockfish	Total # Vessels	86	91	86	81	85	79	86	
	# Vessels > Daily Limit	0	0	0	0	0	0	1	1
Pacific ocean perch North of 40°10' N.	Total # Vessels	70	73	69	64	69	69	73	
	# Vessels > Daily Limit	1	3	0	1	1	1	2	9
Species Previously Removed from the Daily QP Limit List									
Canary rockfish	Total # Vessels	56	54	55	59	53	53	66	
	# Vessels > Daily Limit	0	1	0	0	3	1	1	6
Widow rockfish	Total # Vessels	63	68	67	61	62	63	71	
	# Vessels > Daily Limit	1	0	2	3	4	4	2	16

3. What and when was the Council's decision and how did it arrive at the decision?

Now that bocaccio and darkblotched rockfish and Pacific ocean perch are rebuilt, the Council has proposed to remove the daily vessel limit, which were designed to apply to overfished species, through the 2019-2020 biennial specifications package. The Council slated removal of the daily QP limit for possible inclusion as a management measure for the 2019-2020 biennium during the November 2017 PFMC meeting, based on the recommendation of the Community Advisory Board (CAB) recommendation (Agenda Item F2a Supplemental CAB Report 1).

4. Is there any other background information that was important to the Council's decision? For example, has this measure been previously discussed by the Council, if so what was the outcome?

Daily QP limits for the rebuilt canary and widow rockfish were removed in prior rulemakings.

Part B

1. What is the objective of this management measure?
    - Does it have a conservation purpose? (e.g., managing catch within ACLs? mitigating impacts to habitat or protected species?) Does it have a social/economic purpose? (e.g.,

allowing increased opportunity to catch target species? Does it have a social making fishing opportunity among different user groups more equitable?)

This management measure is intended to streamline administrative burden for participants by reducing a limit on daily holding of quota pounds. This may have some social/economic benefit for participants, and may potentially allow for increased attainment of IFQ allocations if vessel behavior changes in response to the elimination of the daily limits; however the analysis above demonstrates the current limits many not have been constraining to most vessels. This may result in workload burden/cost savings to the NMFS in terms of no longer having to track daily quota pound usage in the vessel accounting system.

2. The following screening is intended to help NMFS understand the broad implications of the management measure and to determine the appropriate NEPA compliance strategy.

a. How would you describe this new management measure (may select more than one)

☒Technical correction or a change to a fishery management action or regulation, which does not result in a noticeable change in any of the following: fishing location, timing, effort, authorized gear types, or harvest levels.

- ❑ Has potential for noticeable change to any of the following: fishing location, timing, effort, authorized gear types, or harvest levels.
- ❑ Designed to mitigate some other environmentally negative effect (e.g., cap, closed area, bag limit).

☒Designed to mitigate a negative economic or social effect.

- ❑ Applies to only a small area of the total EEZ.

b. What resource(s) would the management measure likely effect, either positively or negatively?

- ❑ Physical EFH or Ecosystems
- ❑ Biological Resources (target, non-target species)
- ❑ Protected Resources (mammals, ESA-listed)

☒Economic, social, cultural

c. If the management measure is mitigating or offsetting an effect on a resource, identify that resource.

- ❑ Physical EFH or Ecosystems
- ❑ Biological Resources (target, non-target species)
- ❑ Protected Resources (mammals, ESA-listed)

☒Economic, social, cultural

Part C – Keeping in mind the responses provided in part 2 above, briefly answer the following questions. Please focus on the issues of importance; if there are no potential effects, say ‘no anticipated effects’. Remember both positive and negative effects.

1. Groundfish
    a. How does any change in catch relate to harvest specifications and the risk that overfishing will occur? Can the proposed measure reasonably be expected to adversely affect managed fish species?

The IFQ sectors may be able to increase their attainment of their respective allocations with little to no risk of overfishing the bocaccio (south); cowcod (south); darkblotched; Pacific halibut; Pacific ocean perch; yelloweye rockfish, and Pacific halibut stocks. The proposed measure cannot reasonably be expected to adversely affect managed fish species.

b. Will this management measure change catch of groundfish stocks compared to past catches and management reference points? If no, describe in a few sentences why not. If yes, what stocks would be substantially affected?

No, the measure is not expected to change catch of groundfish stocks, as the measure was put in place to prevent individual hoarding of quota pounds but was not expected and has not been demonstrated to impact catch of any stocks. Vessel limits will continue to remain in place that are expected to keep individual vessel fishing levels constant throughout the next biennium.

2. Other Fish
    a. Will this management measure affect catch of non-groundfish species? If no, describe in a few sentences why not. If yes, is the magnitude of the change substantial and to what stocks? How is this catch monitored? Are the affected stocks managed under another federal FMP or by a state? Do other management plans include harvest specifications? Is it possible to assess the contribution of the measure, if any, to overfishing risk of a non-groundfish stock?

    No, this management measure would only affect quota pound account managers operations with respect to bocaccio (south); cowcod (south); darkblotched; Pacific halibut; Pacific ocean perch; and yelloweye rockfish IFQ, and Pacific halibut IBQ pounds.

3. EFH and Ecosystems
    a. Will this management measure change fishing activity so as to adversely affect essential fish habitat compared to no-action effects? If no, describe in a few sentences why not. If yes, is the magnitude of the change substantial and why? Describe the mechanism linking the management measure to adverse impacts. For example, changes in fishing gear or methods; changes in the temporal and/or geographic distribution fishing effort.

No, this management measure would only affect quota pound account managers operations and is not expected to alter fishing activity in any way. Thus, no changes are expected that would adversely affect essential fish habitat compared to the no-action effects.

b. Can the proposed measure reasonably be expected to adversely affect vulnerable marine or coastal ecosystems, including but not limited to, deep coral ecosystems?

No.

c. Can the proposed measure reasonably be expected to adversely affect biodiversity or ecosystem functioning (e.g., benthic productivity, predator-prey relationships, etc.)?

No.

4. Marine Mammals and ESA Species
    a. Will this management measure result in adverse effects to ESA-listed species and/or non-listed marine mammals and seabirds? If no, describe in a few sentences why not. If yes, is

the magnitude of change substantial and why? Describe the mechanism linking the management measure to adverse impacts. For example, changes in fishing gear or methods; changes in the temporal and/or geographic distribution fishing effort.

No, this largely administrative management measure would only affect quota pound account managers operations and is not expected to alter fishing activity in any way.

5. Social and Economic
    a. Will this management measure change the distribution of catch opportunity among user groups, fishing communities, states, or regions? If no, describe in a few sentences why not. If yes, is the magnitude of the change substantial? Why is it substantial? For example, which user groups are likely to see increased catch opportunity? Which may lose catch opportunity?

No, this largely administrative management measure would only affect quota pound account managers operations and is not expected to alter fishing activity in any way. Because quota share ownership and subsequent annual distribution of quota pounds are not affected by the daily quota pound limit, the measure is not expected to change the distribution of catch opportunity at all.

    b. Can the proposed action reasonably be expected to significantly affect public health or safety?

No.

6. Cumulative effects

Past fishery and non-fishery actions have created the baseline conditions. For fishery management actions, consider current (put into place recently but the effects may not be visible) or "reasonably foreseeable future items (actions that the Council is moving forward with). For Specs, consider the 19/20 preferred alternative and the routine management measures.

Repeat each set of questions for affected resources (Groundfish, other fish, EFH, ecosystems, ESA species, marine mammals, social, and economic).

Social and economic:

    a. Does the proposed management measure have non-negligible adverse effects to the resource? *If none then stop and proceed to the next resource.*

None.

The incremental impact from this management measure to the cumulative effects on groundfish is negligible.

7. Other
    a. Are the proposed action's effects on the quality of the human environment likely to be highly controversial? (science of the effects, not the perception)

No.

b. Are the proposed action's effects on the human environment likely to be highly uncertain or involve unique or unknown risks?

No.

8. MSA National Standards
    a. This management measure is primarily relevant to National Standards 5 and 7:
        i. (5) Conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose.
        ii. (7) Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.

Eliminating daily limits may provide quota pound account owners and managers with additional flexibility for account operations that may result in increased efficiency in the utilization of quota pounds on a daily basis. Annual quota pound usage will continue to be restricted, so annual utilization is not expected to change significantly with the elimination of the daily limit. This management measure will potentially decrease the costs to account operators of maintaining operations under the daily limit, and will eliminate potentially unnecessary duplication with the annual vessel quota pound limit and quota share accumulation limits. This may result in workload burden/cost savings to the NMFS in terms of no longer having to track daily quota pound usage in the vessel accounting system.

C.6.8 Modify the Incidental Lingcod Retention Ratio in the Salmon Troll Fishery

Description of the Proposed Management Measures

****Fuller analysis will be forthcoming in a separate WDFW report****

This proposed management measure applies to the ocean salmon troll fishery and would be an adjustment to the existing incidental allowance for landing lingcod subject to a ratio to the number of Chinook. The alternatives under consideration are:

- No Action: Retain the current trip limit of one lingcod per 15 Chinook salmon.
- Alternative 1: 1 lingcod for every 5 Chinook salmon, retain 10 lingcod trip limit

Both apply only to trolling in the area north of 40° 10' N. latitude ("the north"), allow for a "plus one" lingcod (i.e., one lingcod in addition to those allowed by the number of Chinook landed), and are subject to open access monthly limit for lingcod. The current limit for the North is 300 lbs. per month for January-April and December and 700 lbs. per month for May through November.[15] The No Action limit was first implemented in 2009. This is the first time the Council has revisited the measure.

As a basic illustration of the difference between Alternative 1 and No Action, **Figure C-29** plots the allowable lingcod per trip increases with the numbers of Chinook landed for each. As shown, Alternative 1 would allow trollers to retain the maximum 10 lingcod at 45 Chinook landed compared to 135 Chinook landed under the current ratio.

Figure C-30 provides a sense of the frequency distribution of trips in terms of the number of Chinook landed in the three states over 2009-2017. The median and mean are both plotted together with the 10th–90th percentile interval. Alternative 1 would bring the 10 lingcod limit down toward the more typical trips (marked by the mean and median). Under the current ratio, the 135 Chinook needed to reach the 10 lingcod is beyond the 90th percentile except for California in 2014. Note that the analysis using numbers of Chinook is complicated by data availability. All of Washington's fish ticket records in PacFIN report Chinook in numbers of fish. Oregon's only report landings by weight. California's include numbers of fish but only for 2009-2013. The numbers of fish for Oregon and California for 2014-2017 in **Figure C-30** are based on average weight numbers published in the Council's Ocean Salmon Fisheries "Blue Book" Salmon Review Appendix D.[16]

Figure C-31 uses the same method of displaying frequency distributions for the number of Chinook troll trips vessels made over 2009-2017 in each state. **Figure C-32** displays the total number of trips reporting landings of troll caught Chinook in the north.

What each alternative theoretically allows and what is actually landed are different considerations. For instance, PacFIN records identify only three vessels making a total of three landings of lingcod with troll gear from California north of 40° 10' N. latitude.

Further analysis was not completed in time for inclusion in this draft. Additional analysis will be published in a separate report. The potential for increased yelloweye bycatch is one of the primary factors that will be

[15] *See Table 3:* http://www.westcoast.fisheries.noaa.gov/publications/fishery_management/groundfish/public_notices/nmfs-sea-18-05-revised.pdf

[16] https://www.pcouncil.org/wp-content/uploads/2018/04/2018_App_D_SalmonBlueBook.xlsx.

evaluated. As was the focus when last analyzed as part of the 2009-2010 management measures, the potential for inducing more troll effort or targeting of lingcod. Given the lack of participation so far in areas off California, the analysis will focus mainly on Washington and Oregon.

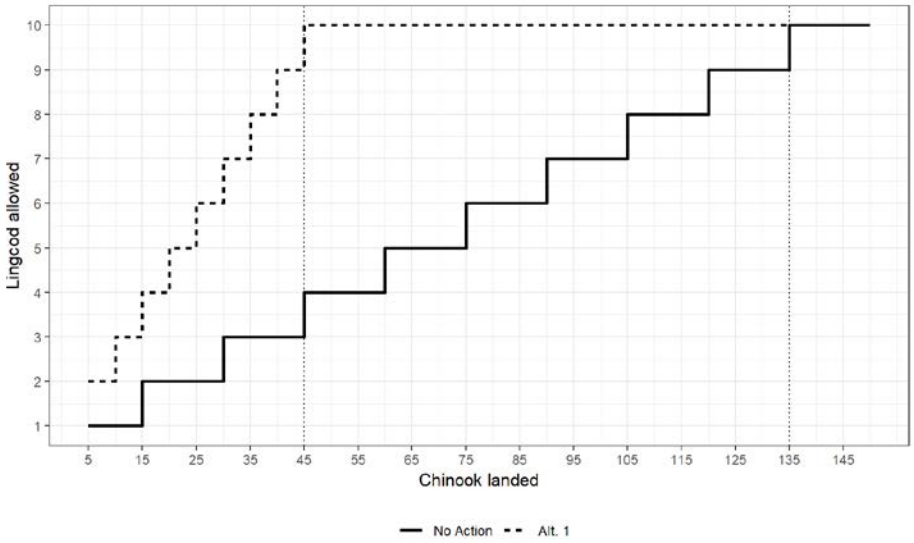


Figure C-29. Alternative 1 compared to No Action based on number of lingcod each would allow under a range of Chinook landings. The vertical dotted lines mark the number of Chinook at which the alternatives hit the 10 lingcod per trip max.

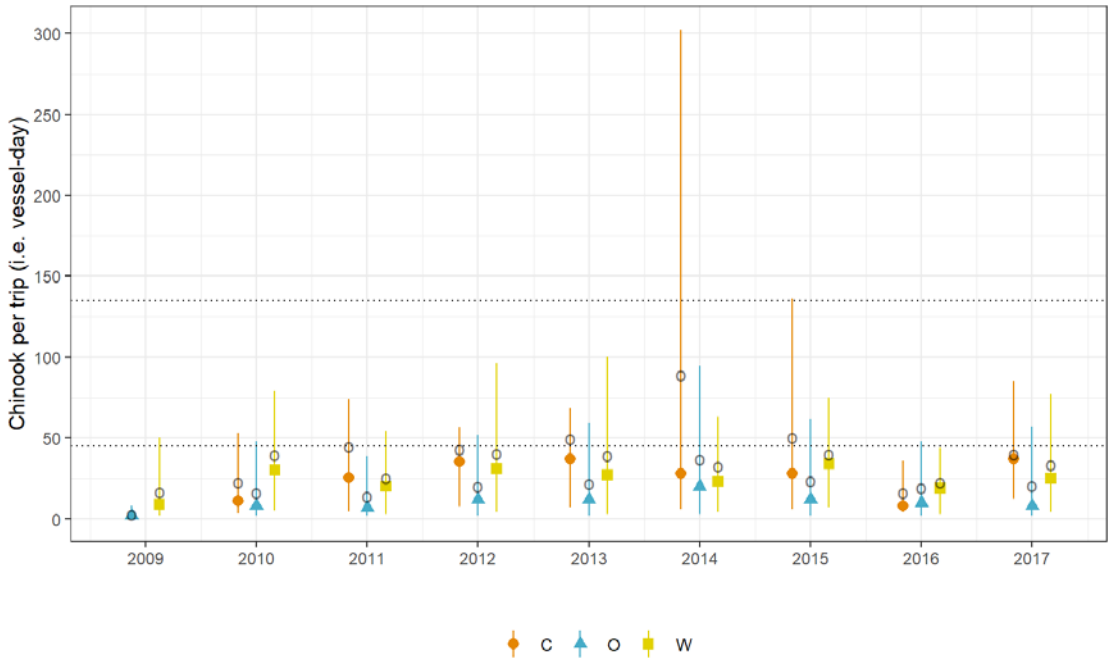


Figure C-30. Mean (gray circles) and median (state specific symbols) Chinook per trip by state and year with 10th-90th percentile range (solid lines) for each state. Horizontal dotted lines mark the number of Chinook at which Alternative 1 and No Action hit the 10 lingcod per trip max.

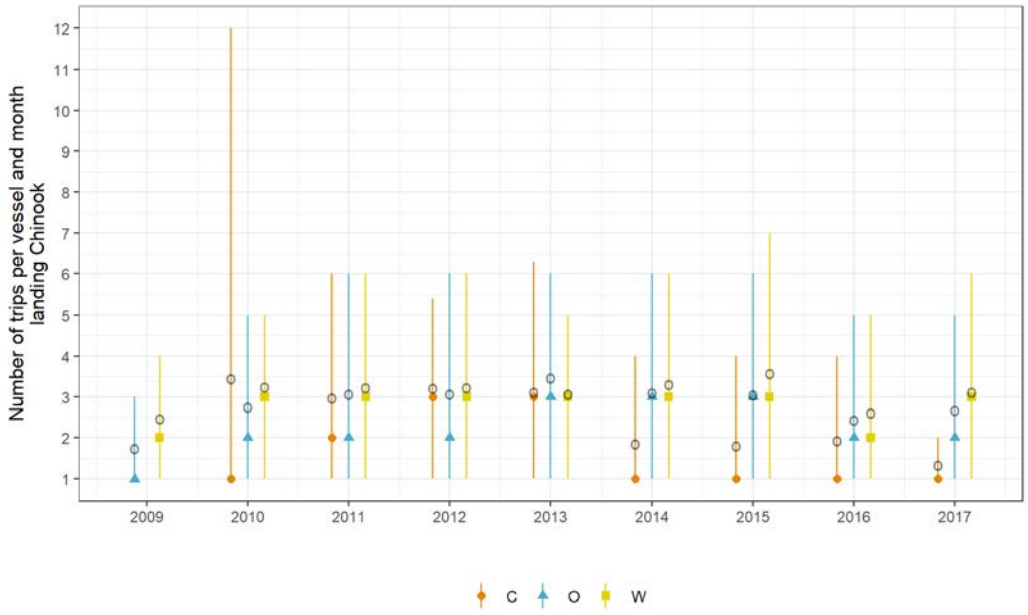


Figure C-31. Mean (gray circle) and median (state specific symbol) number of troll Chinook trips by vessel per month with 10th-90th percentile range (solid lines) for each state.

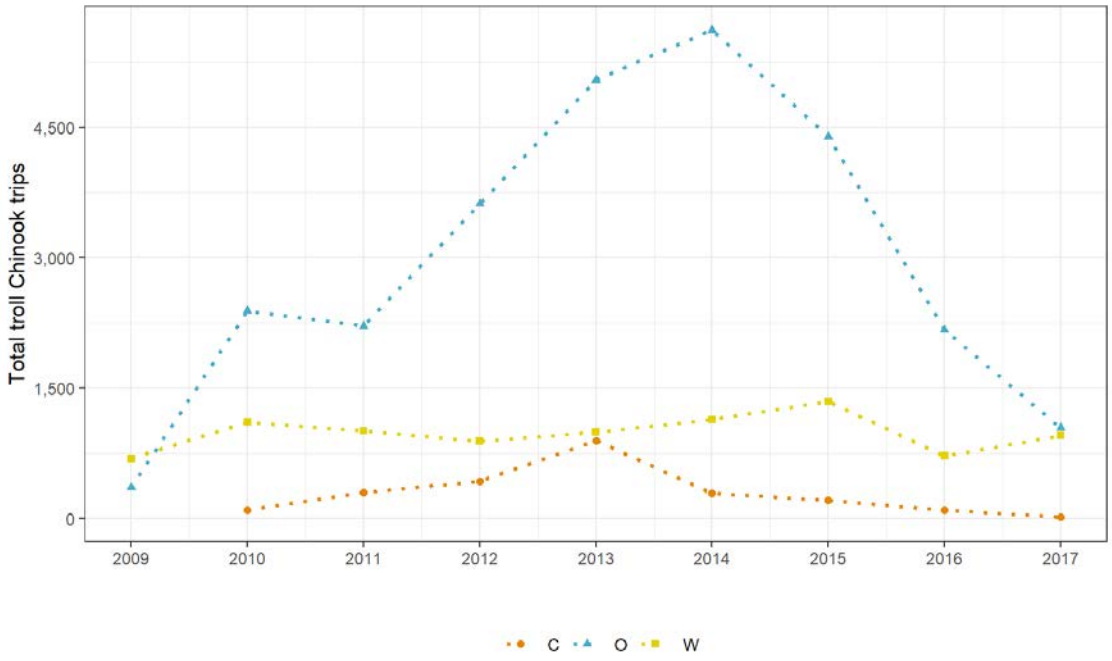


Figure C-32. Total troll Chinook trips by state and season.

C.7 *Literature Cited*

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