

DRAFT APPENDIX B

ADDITIONAL MANAGEMENT MEASURE ANALYSIS AND NEW MANAGEMENT MEASURES ANALYSIS

2017-2018 GROUND FISH HARVEST SPECIFICATIONS AND MANAGEMENT MEASURES INCLUDING CHANGES TO GROUND FISH STOCK DESIGNATIONS (AMENDMENT 27 TO THE PACIFIC COAST GROUND FISH FISHERY MANAGEMENT PLAN)

**Description and Analysis for Council Decision-Making Prepared by
Pacific Fishery Management Council
and National Marine Fisheries Service**

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This document contains additional analysis for selected management measures (Section B.1), preliminary analysis for new management measures (Section B.2), and new management measures analysis that were excluded from the preliminary preferred alternative.

B.1 Additional Analysis

Several measures are designated in the groundfish Fishery Management Plan (FMP) and in regulation as routine. Routine in this context means those measures that have previously before been analyzed and implemented in regulation. Additional analysis was requested for some routine measures that were proposed to be adjusted in the 2017-2018 biennium and are presented in Section B.1.

B.1.1 Updates to Rockfish Conservation Area Coordinates in California

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 better align fathom lines with their corresponding fathom isobaths. In doing so the stocks and fisheries that will be affected would be those included in the nearshore, shelf, and slope rockfish complexes, as well as some flatfish. These RCA depth contour line modifications are proposed for areas that extend from the Northern Management Area to the Central Management Area.

The current depth contours specified in regulation at 50 CRF 660.71 – 660.73 are intended to approximate the fathom isobaths throughout the extent of the RCAs. To allow better access to target species while maintaining the intent of the fathom lines, better alignment of these fathom lines with their corresponding fathom isobaths is necessary for waters off California for 2017-2018. Charts delineating the areas for proposed modifications are provided in Attachment A and proposed modified waypoint coordinate tables are provided in Attachment B.

The 30 fathom depth contour line is proposed to be modified in the following areas: 1) north of the Ten Mile State Marine Reserve in the Northern Management Area, 2) near the Navarro River in the Northern Management Area, and 3) the SE Farallons in the San Francisco Management Area. One modification is proposed for the 40 fathom depth contour line at Salt Point in the San Francisco Management Area and one for the 150 fathom depth contour line in the Monterey Bay Canyon in the Central Management Area.

2. 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 socioeconomic purpose? (e.g., allowing increased opportunity to catch target species? making fishing opportunity among different user groups more equitable?)

The primary objective of this management measure is to allow better access to target species by more accurately defining depth contours used for defining closed areas. By more accurately defining the depth contours these proposed changes increase the overall combined fishing area by 79.15 km². Conversely, the overall RCA will decrease by this same amount. Additionally, by having a more accurate agreement of the depth contours and actual fishable areas, the mortality generated from fishing effort better fits the bycatch model estimates that assume that estimated mortality is derived from specific fishing areas and depth structures defining those areas. Further, these measures aim to maintain the intent of the fathom lines, while at the same time keeping the harvest levels of these 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. The intent of the RCA is to protect a complex of species, such as overfished species by minimizing bycatch such as bocaccio, cowcod, darkblotched, and yelloweye rockfishes. Modifications to these depth contour line modifications provide better opportunity to the fishing communities, helps participants to achieve their fishing harvest levels by providing larger fishing areas, better aligns projected model impacts with actual impacts, and makes for more efficient fishing operations.

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

Public input from constituents was solicited to identify areas in need of possible modifications. These depth contour modifications are proposed for areas that extend from the Northern Management Area to the Central Management Area. Several areas were identified as potential candidates for modification in that these identified existing waypoints used to approximate the depth contour appear to be somewhat dissimilar to the intended depth contour for that specific area. Modifications range from adding one or more waypoints,

moving an existing waypoint, and/or deleting a waypoint. When the proposed depth contour modifications were examined by California's Law Enforcement Division (LED) personnel, LED agreed that all proposed modifications were reasonable and enforceable.

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

Boundary line coordinate changes have been made numerous times in the past under routine Council actions. As such, 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 their modifications improves the system, while at the same time establishing and providing fair and equitable opportunities for harvesters and their communities and to improve the data that will be used in bycatch models (see #2 above).

5. Is there any other background information that was important to the Council's decision? As appropriate, summarize Council discussion of this measure, and any conclusions reached, during the biennial process.

As stated above (#4), the Council regularly examines the appropriateness of the coordinates defining the boundary lines used to define closed areas through the harvest specifications and management measures process. When deemed appropriate, the Council has supported recommended modifications.

6. 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? How does any change in catch relate to harvest specifications and the risk that overfishing will occur?

These boundary line changes may change the harvest patterns of the fishing community in that they allow access to more fishing area(s) previously closed off to the fishing community. However, these changes are expected to be relatively minor, even where a modest amount of fishable area will be available. These changes may result in a modest increase in catch of target groundfish stocks compared to past catches or any of the harvest specifications approved for 2017-2018 while remaining with the annual catch limits (ACL).

7. 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 very specific localized area basis, no major changes among user groups and fishing communities are anticipated. These modifications have the potential to improve fishing operations to a small degree, because of the modest increases to fishing areas involved, thus helping the participants and those fishing communities they serve. By providing the fishing fleets increased access to additional fishing areas, participants may be better able to improve the efficiency of their operations. It is anticipated that no negative impacts will be experienced by other fishing groups as a result of these modifications.

8. Will this management measure affect catch of nongroundfish 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 nongroundfish stock?

It is not anticipated that the catch of non-groundfish species will change as a result of these modifications because, 1) these modifications will make very modest increases to fishable areas, and 2) 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, only now being allowed to expand their fishing area slightly.

9. Will this management measure change fishing activity so as to adversely affect to essential fish habitat compared to current or baseline 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.

With the exception of one area modification, no adverse effects to essential fish habitat (EFH) are expected, as a result of the increased area(s) by this management measure. This is anticipated because the bottom profile in the additional areas would be essentially the same as the currently fishable area and no identified sensitive habitat elements would be subjected to fishing activities. One possible area where a modification may have an impact is the Monterey Bay Canyon area, because the increased area will allow participants to fish in much deeper areas than were before accessible. However, this area is closed to trawl gear, which is the gear more likely to have an impact on the bottom habitat. Those who would be able to fish in this enlarged area would do so with existing non-trawl gears, which is not likely to adversely affect the essential fish habitat compared to the current effects.

10. Will this management measure result in 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.

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

The intent of the RCA is to protect overfished species by preventing fishing in areas where these species of concern are more likely to be found. This management measure would not jeopardize the safeguards of the RCA, and at the same time would allow the fishing communities slightly better access to help them achieve their harvest limits. By providing the fishing community a greater area to fish, this increases the likelihood that participants will more efficiently reach their individual harvest targets, and the fishery sectors' harvest limits will be more quickly attained. This would address National Standard 1.

Adjustments are necessary because discrepancies exist between current and proposed depth contours, resulting in lost fishing ground, lost revenue, and differences in actual versus predicted bycatch. By incorporating these modifications, this improves fishery managers' ability to predict catch, resulting in improved best available science for future management of the stocks. This, therefore, meets National Standard 2.

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 A

Coordinate tables for the various RCA modifications.

30 Fathom RCA Changes

Modification #1: North of the Ten Mile State Marine Reserve – Northern Management Area

Table 1. Proposed 30 fathom RCA line change adjacent to the Ten Mile State Marine Reserve.

	Boundary Line	Coordinates
ID	Name	Degrees, decimal minutes
139	Current waypoint (keep)	39°39.60', 123°49.14'
	Proposed modification (add new waypoint #1 between waypoints #139 and #140)	39°37.50', 123°49.20'
140	Current waypoint (keep)	39°34.43', 123°48.48'

Modification #2: Navarro River – Northern Management Area

Table 2. Proposed 30 fathom RCA line change at the Navarro River.

	Boundary Line	Coordinates
ID	Name	Degrees, decimal minutes
142	Current waypoint (keep)	39°21.25', 123°50.54'
	Proposed modification (add new waypoint #1 between waypoints #142 and #143)	39°13.00', 123°47.65'
	Proposed modification (add new waypoint #2 between waypoints #142 and #143)	39°11.06', 123°47.16'
	Proposed modification (add new waypoint #3 between waypoints #142 and #143)	39°10.35', 123°46.75'
143	Current waypoint (keep)	39°8.87', 123°46.24'

Modification #3: SE Farallon – San Francisco Management Area

Table 3. Proposed 30 fathom RCA line change at the SE Farallon.

	Boundary Line	Coordinates
ID	Name	Degrees, decimal minutes
163	Current waypoint (keep)	37°40.13', 122°57.30'
164	Current waypoint	37°42.59', 122°53.64'
	Move waypoint #164	37°39.85', 122°49.90'
165	Current waypoint (keep)	37°35.67', 122°44.20'

40 Fathom RCA Changes

Salt Point – San Francisco Management Area

Table 4. Proposed 40 fathom RCA line change at Salt Point.

	Boundary Line	Coordinates
ID	Name	Degrees, decimal minutes
119	Current waypoint (keep)	38°40.60', 123°28.22'
	Proposed modification (add new waypoint #1 between waypoints #119 and #120)	38°30.57', 123°18.6'
120	Current waypoint (keep)	38°21.64', 123°8.91'

150 Fathom RCA Changes

Monterey Bay Canyon – Central Management Area

Table 5. Proposed 150 fathom RCA line change at the Monterey Bay Canyon.

	Boundary Line	Coordinates
ID	Name	Degrees, decimal minutes
247	Current waypoint (keep)	36°48.83', 121°59.14'
	Proposed modification (add new waypoint #1 between waypoints #247 and #248)	36°47.60', 121°58.88'
	Proposed modification (add new waypoint #2 between waypoints #247 and #248)	36°48.24', 121°51.40'
	Proposed modification (add new waypoint #3 between waypoints #247 and #248)	36°45.84', 121°54.21'
	Proposed modification (add new waypoint #4 between waypoints #247 and #248)	36°45.77', 121°57.61'
248	Current waypoint (keep)	36°44.81', 121°58.28'

Attachment B

Proposed 30 Fathom RCA Line Changes - North of Ten Mile SMR

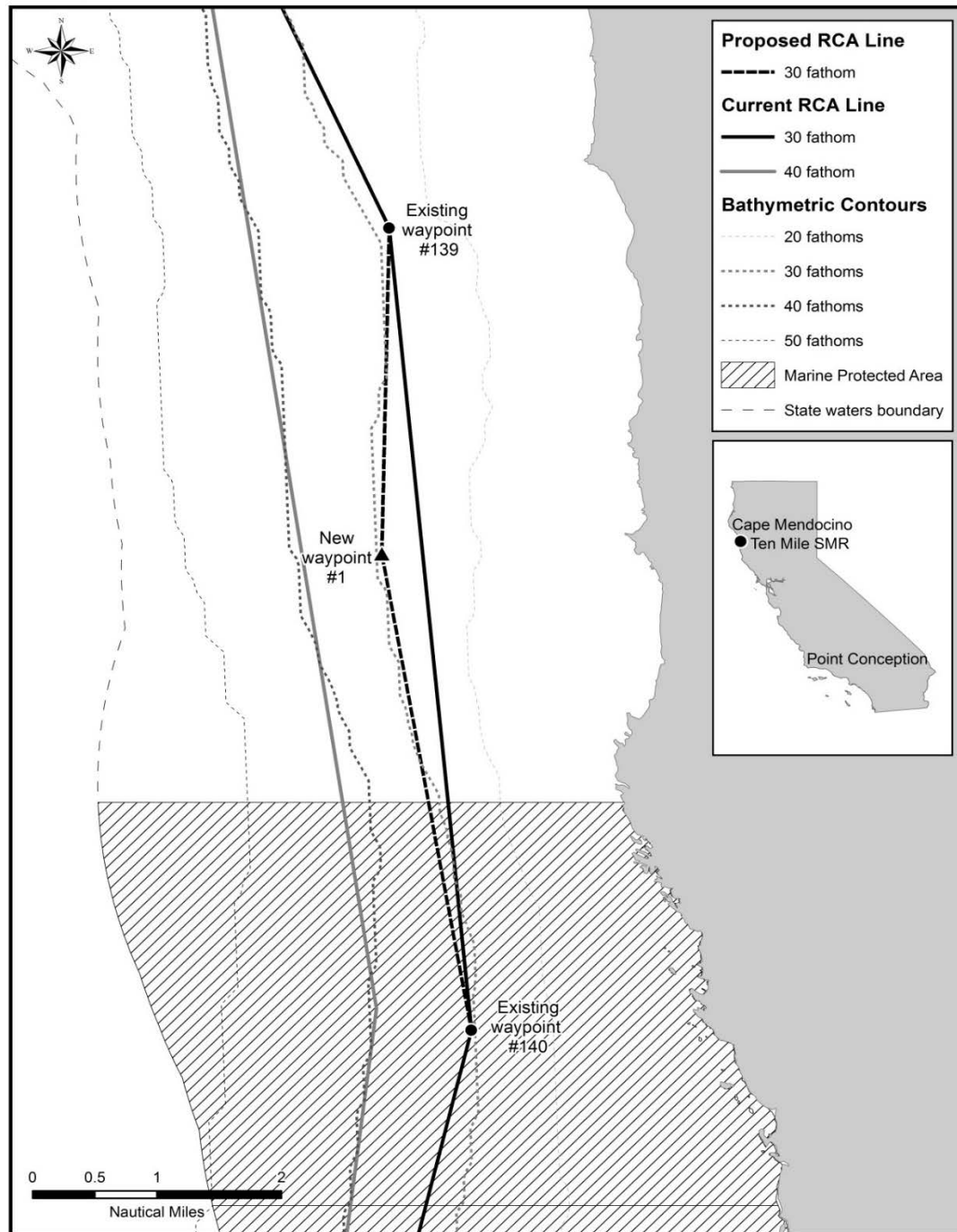


Figure 1. Proposed 30 fathom RCA line change adjacent to the Ten Mile State Marine. This proposed change would increase this fishing area by 2.25 km².

Proposed 30 Fathom RCA Line Changes - Navarro River

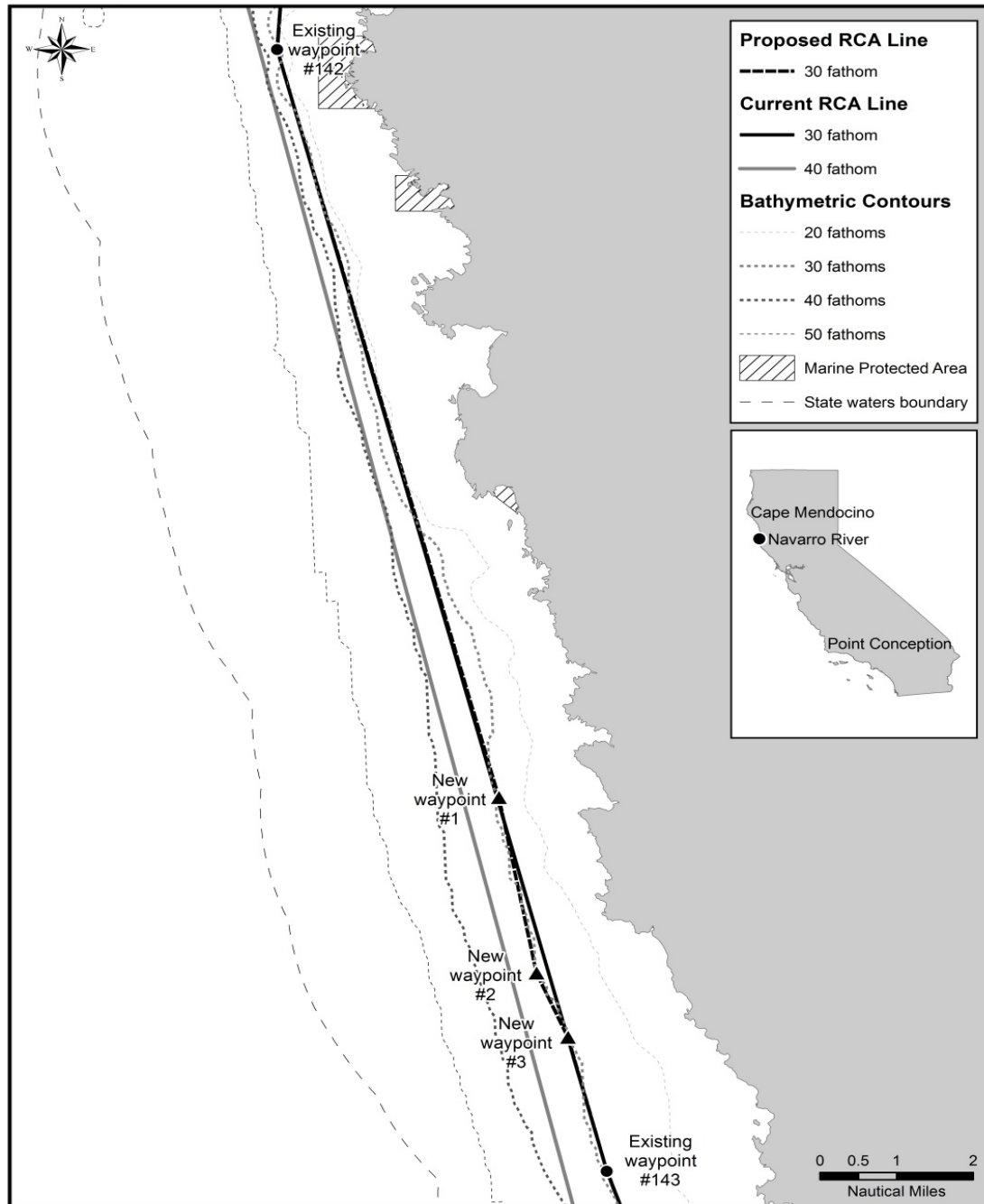


Figure 2. Proposed 30 fathom RCA line change at the Navarro River. . This proposed change would increase this fishing area by 0.59 km².

Proposed 30 Fathom RCA Line Changes - SE Farallon

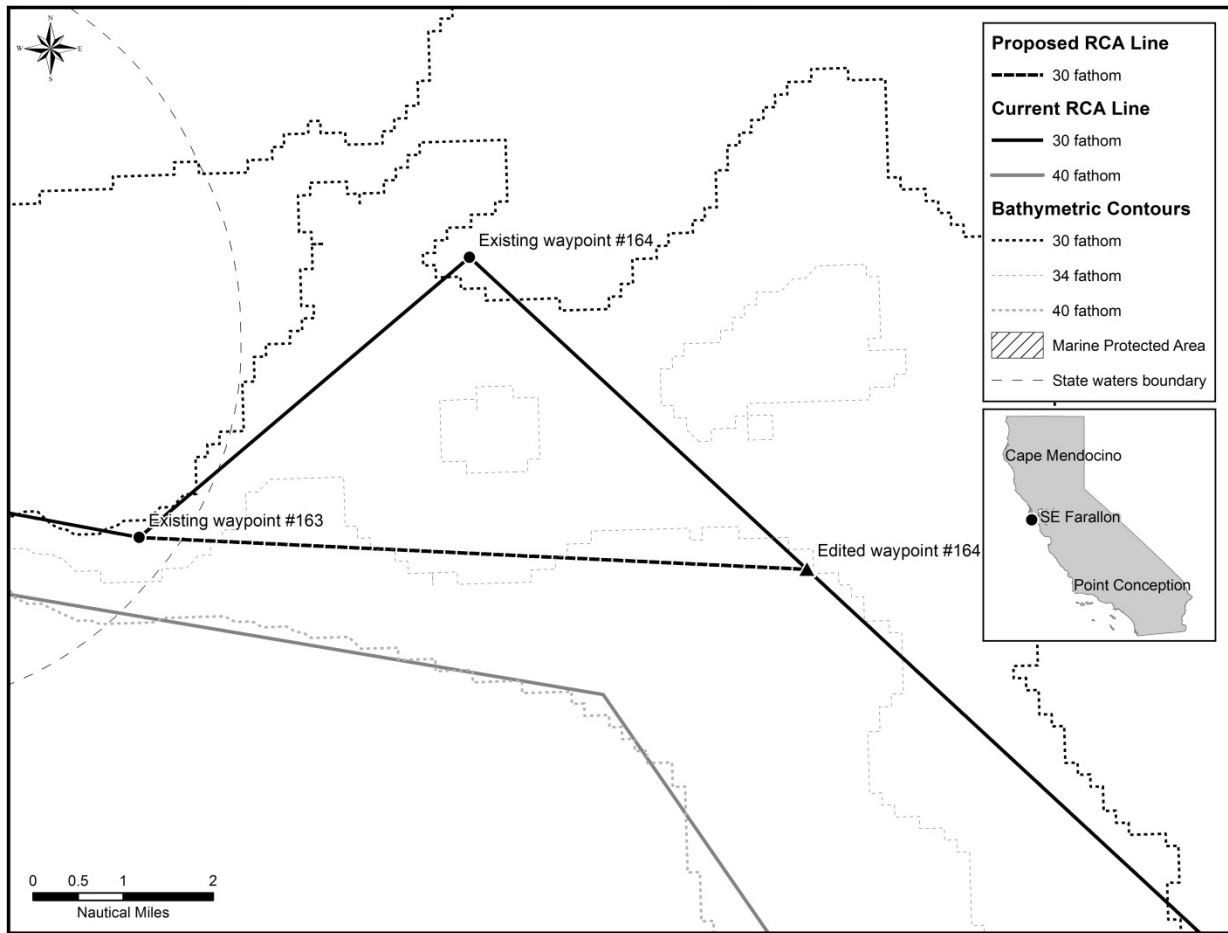


Figure 3. Proposed 30 fathom RCA line change at the SE Farallon. This proposed change would increase this fishing area by 26.14 km².

Proposed 40 Fathom RCA Line Changes - Salt Point

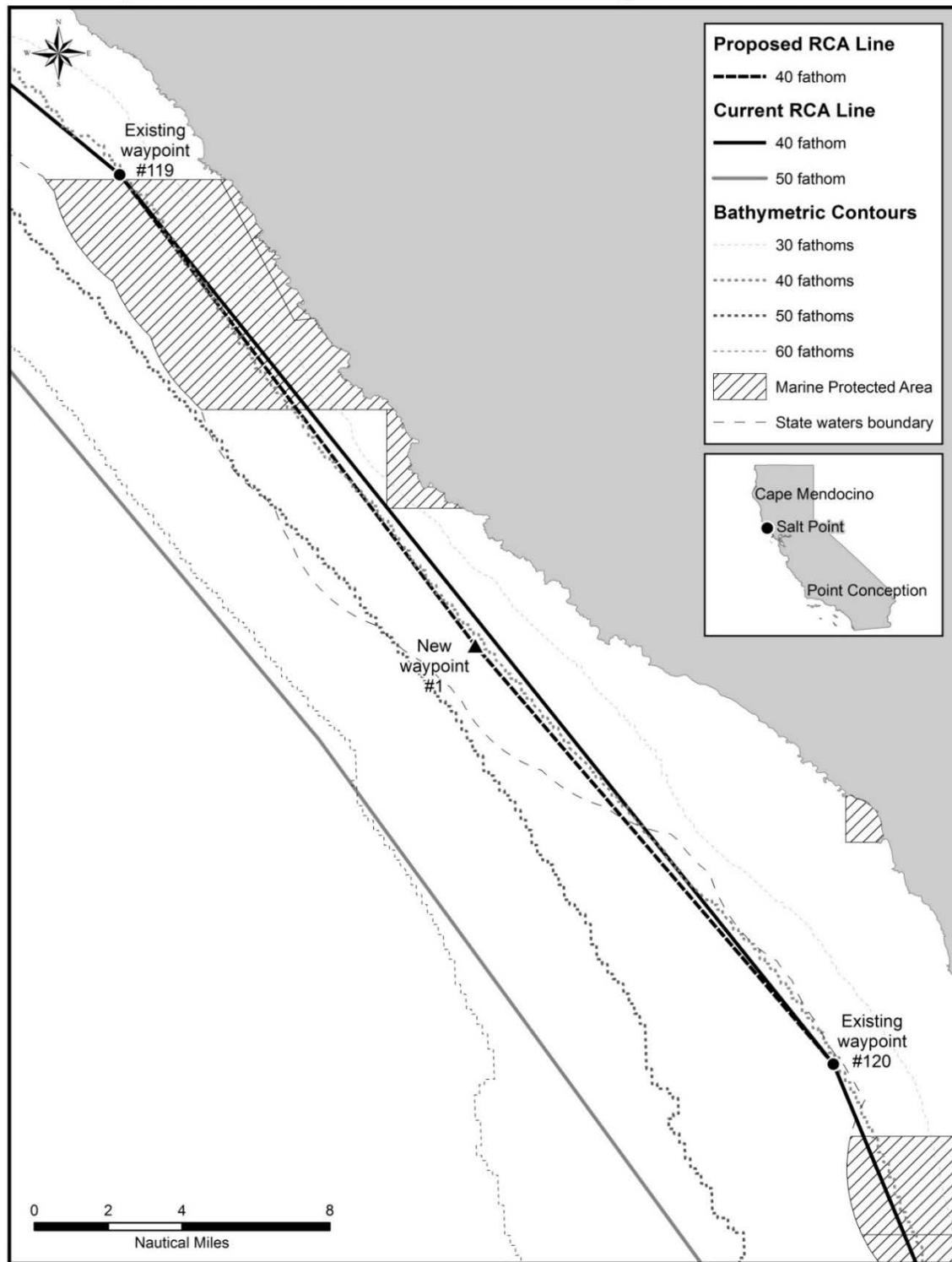


Figure 4. Proposed 40 fathom RCA line change at Salt Point. This proposed change would increase this fishing area by 15.89 km².

Proposed 150 Fathom RCA Line Changes - Monterey Canyon

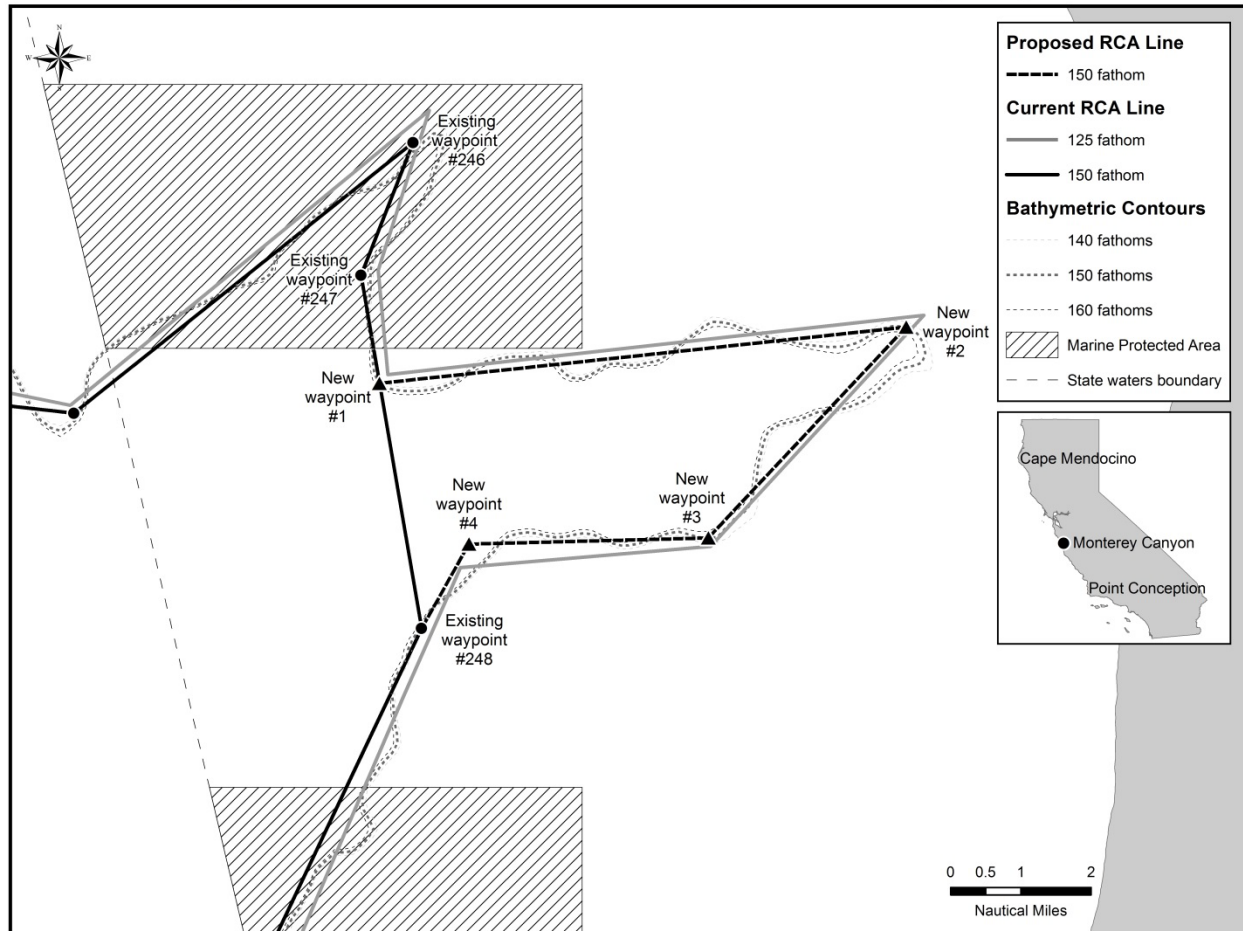


Figure 5. Proposed 150 fathom RCA line change at the Monterey Bay Canyon. This proposed change would increase this fishing area by 34.28 km².

B.1.2 Canary Retention in the Limited Entry and Open Access Fixed Gear Fisheries

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

The proposed management measure is to allow retention of canary rockfish for the limited entry and open access fixed gear fisheries, as the stock has been declared rebuilt (Thorson and Wetzel 2015). Retention of canary rockfish in the fixed gear fisheries would be applicable to limited entry (LE) and open access (OA) participants in both the nearshore and non-nearshore sectors, but primarily for areas north of Monterey, California. As shown in Figure 6, Monterey is the southern boundary of canary rockfish. The Council's preliminary preferred trip limits for these sectors were set to allow retention of the majority of incidental catch and as such allowing retention of canary rockfish is not expected to affect other stocks because no behavioral changes are expected as a result of the trip limits (e.g., extra effort or targeting). The sectors are expected to use the same fishing tactics with the only difference being that they will be able to retain, instead of discard, their incidental catch (described more under question #3).

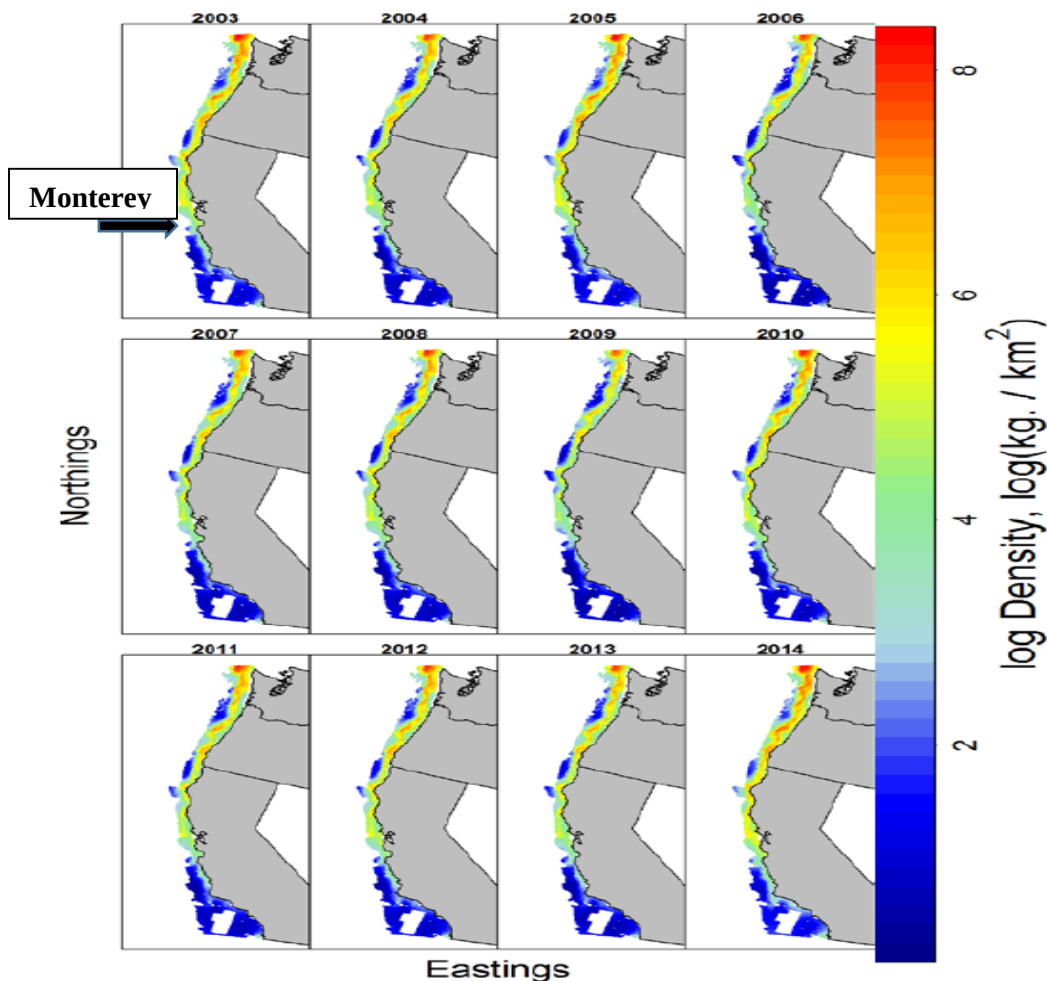


Figure 6. Spatial distribution of canary rockfish estimated from a geostatistical delta-GLMM used in the 2015 canary rockfish stock assessment (Thorson and Wetzel 2015).

2. 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 socioeconomic purpose? (e.g., allowing increased opportunity to catch target species? making fishing opportunity among different user groups more equitable?)

The objective of this measure is to allow retention of canary rockfish in the fixed gear fisheries which will provide economic benefits, as it would allow fishermen to retain and sell their incidental catches instead of having to discard them. Simultaneously, the measure will also reduce bycatch mortality. With current non-retention rules, there is no value to canary rockfish catches and a large percentage of the discarded catch dies (i.e., 100% for the non-nearshore fishery and ~40% for the nearshore fishery) and is thus wasted. Under the Council's preliminary preferred trip limits (described under question #3), the fixed gear fisheries would be allowed to retain and sell nearly 16 mt instead of having to discard. Assuming the average price per pound of \$2.82, 16 mt of sold catch would equate to \$98,767 of ex-vessel revenue. The assumed average price per pound used vermilion rockfish as proxy, which are similar in size and color to canary rockfish, because there is no price information on canary rockfish due to non-retention rules.

While the primary gains are economic, allowing retention of canary rockfish would also increase the scientific information used to assess and manage the stock. With current non-retention rules, removals of canary rockfish can only be verified on observed trips; thereby total removals from the entire fleet are uncertain since they are based on extrapolations of observed trips (with coverage rates of less than 15%) to non-observed trips. If permitted to retain canary rockfish, then a majority of the catch from both observed and non-observed trips would be landed dockside and documented on fish tickets which are mandatory for all landings, which would increase the certainty in total removals. It would also allow for better collection of biological samples (e.g., length and age compositions) taken dockside, which are important for understanding population structure (e.g., percentage of old vs. young fish) and to detect recruitment pulses (e.g., influx of small fish determines how productive the future stock will be, and thereby better inform future sustainable harvest limits).

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

To optimize the performance of the proposal to allow retention of canary rockfish in the fixed gear fisheries, the Council was provided a range of alternative OA trip limits (Table 6) that provided performance metrics for the following goals for the nearshore fishery: (1) percentage of catch that would be discarded and harvested (if retention of majority of incidental catch is the main goal); (2) total lbs. landed (if the goal is maximize catch and economic benefits within allocation); and (3) regional impacts (to show benefits to Oregon, Northern California (North of 40°10' N lat.), and the remainder of California). Washington was not included since they do not have a nearshore fishery (prohibited via state rule). LEFG trip limits have negligible effect to nearshore impacts because nearly all nearshore participants are OA (although state permit limited). The Council's preliminary preferred trip limit of 150 lbs./2 months for OA (grey shading; Table 6) was set with the goal to allow the majority of nearshore catch to be retained (i.e., 95 percent harvested, 5 percent discarded) while still being precautionary (i.e., 15 mt projected total).

Unlike with the nearshore fishery, trip limits of varying degrees are not expected to have much influence over non-nearshore canary rockfish impacts for either LEFG or OA. This is because canary rockfish are very rarely encountered in the open depths of the non-nearshore fishery (whom must fish seaward of the non-trawl RCA): (1) total mortality for both LEFG and OA has been less than one mt total per year; (2) 96 percent of observed non-nearshore trips had zero canary rockfish per trip; and (3) 99.9 percent of trips had less than 100 lbs. As such, Council's preliminary preferred trip limits of 150 lbs./2 months for OA and 300 lbs./2 months for LE are expected to allow harvest of all the rare incidental catches, but not have much influence to total removals, which are projected to still be within one mt. In short, allowing retention of canary rockfish will convert the one mt of historical discard mortality to one metric ton of harvest, which means that total removals (harvested + discard mortality) are expected to remain constant. The Council could have considered higher trip limits for LEFG but the

impacts would have been the same; since canary rockfish are so rarely encountered, higher trip limits would not result in more catch.

No biological concerns are expected with allowing retention of canary rockfish since the projected impacts are well within the canary rockfish shares for both the nearshore fishery (15 mt projected, 100 mt share) and non-nearshore fishery (1 mt projected, 46.5 mt share). Projections and model descriptions for the nearshore and non-nearshore fishery are described in greater detail in Appendix A and [Agenda Item F.6.a, Supplemental GMT Report 2, April 2016](#).

Since the preliminary preferred trip limits were set to allow harvest of the majority of incidental catch, allowing retention of canary rockfish is not expected to change attainment rates of other stocks because no behavioral changes are expected (e.g., extra effort or targeting); they are expected to use the same fishing tactics with the only difference being that they will be able to harvest, instead of discard their incidental catch.

Table 6. Projected total mortality for the nearshore fishery for alternative OA bimonthly trip limits and 300 lbs. for the LEFG. The Council PPA is 150 lbs./2 months (grey) for OA.

14% random targeting (as hypothesized to have occurred during 1995)							14% targeting - regional lbs harvested		
OA Trip Limit	LBs Harvested	LBs Discarded	LBs Total	% Harvested	% Discarded	Total Mort (mt)	N 42°	40°10'- 42°	S 40°10'
0	0	25,550	25,550	0.0%	100.0%	6.1	0	0	0
10	6,205	19,894	26,099	23.8%	76.2%	7.6	953	995	4,257
25	12,637	14,288	26,925	46.9%	53.1%	9.2	1,941	2,027	8,669
50	19,928	8,372	28,300	70.4%	29.6%	11.1	3,062	3,196	13,671
100	27,714	3,336	31,050	89.3%	10.7%	13.4	4,258	4,444	19,012
150	32,055	1,745	33,800	94.8%	5.2%	15.0	4,925	5,140	21,990
200	35,322	1,227	36,549	96.6%	3.4%	16.3	5,427	5,664	24,231
250	38,310	989	39,299	97.5%	2.5%	17.6	5,886	6,144	26,281
300	41,105	945	42,050	97.8%	2.2%	18.9	6,315	6,592	28,198

Totals are for LE and OA vessels combined for the nearshore fishery

LE trip limit fixed at 300 lbs per period

Regional values were partitioned from the total based on average (2010-2014) total mortality (15.4% to N 42°; 16.0% to 40°10'- 42°; 68.6% to S 40°10')

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

The proposal to allow retention of canary rockfish was included in the list of proposed changes to management measures forwarded by the Council for further analysis at the November Council meeting. Preliminary preferred trip limits of 150 lbs./2 months for OA and 300 lbs./2 months for LE were set by the Council at the April meeting with the intent of allowing fishermen to retain a majority of their incidental catches. These limits were based on the trip limit alternatives as described under question #3 due to the rebuilding of the canary rockfish stock.

5. Is there any other background information that was important to the Council's decision? As appropriate, summarize Council discussion of this measure, and any conclusions reached, during the biennial process.

As previously stated, the Council desired further analysis of the proposal to allow retention of canary rockfish due to the 2015 canary rockfish stock assessment, which declares the stock being rebuilt and thus capable of supporting higher harvest levels. Given the higher harvest levels, there is greater potential to allow harvest opportunities for canary rockfish by the FG fisheries.

6. **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? How does any change in catch relate to harvest specifications and the risk that overfishing will occur?**

As detailed under question #3, allowing retention of canary rockfish is only expected to influence catches of canary rockfish because preliminary preferred trip limits were set with the goal of allowing retention of incidental catches, and not to promote targeting. Since they will only be retaining their incidental catches instead of having to discard them, no changes to fishing behaviors are expected to occur (e.g., amount of effort or areas fished). Therefore, catches of non-canary rockfish groundfish stocks are not expected to change if allowed to retain canary rockfish.

In addition, projected mortality of canary rockfish is expected to be within the respective the nearshore and non-nearshore canary rockfish shares under the preliminary preferred trip limits for OA and LEFG. For the non-nearshore, the projected mortality is 1 mt and the canary rockfish share for this fishery is 46.5 mt. For the nearshore, the projected mortality is 15 mt and canary rockfish share for this fishery is 100 mt. Since both sectors are projected to stay within their respective shares by a fair degree, there are minimal biological concerns with allowing retention of canary rockfish in the FG fisheries.

7. **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?**

Allowing retention of canary rockfish is expected to change current catch patterns. Instead of having to discard their catches, fishermen would be allowed to land the majority of their catch (described under question #3), which could result in a gain of \$98,767 ex-vessel value (if the full 16 projected mt are landed). This would benefit fishermen within the canary rockfish range, which is primarily north of Monterey, California (Figure 6).

The projected impacts associated with allowing retention of canary rockfish in the FG fisheries were helpful to the Council when they set their preliminary preferred two-year canary allocations for 2017-2018. The Council took the projected impacts for the nearshore (i.e., 15 mt) and non-nearshore (i.e., 1 mt) for their preliminary preferred trip limits and added buffers for model uncertainty (e.g., potential for unexpected targeting). The canary shares were established as 100 mt for the nearshore and 46.5 mt for the non-nearshore.

8. **Will this management measure affect catch of nongroundfish 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 nongroundfish stock?**

As detailed under question #1, allowing retention of canary rockfish is only expected to influence catches of canary rockfish because the trip limits were set with the goal of allowing retention of incidental catches, and not to promote targeting. Since they will only be retaining their incidental catches instead of having to discard them, no changes to fishing behaviors are expected to occur (e.g., amount of effort or areas fished). Therefore, their catches of other non-groundfish stocks (e.g., salmon) are not expected to change if allowed to retain canary rockfish.

9. **Will this management measure change fishing activity so as to adversely affect to essential fish habitat compared to current or baseline 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 adverse effect to essential fish habitat are anticipated compared to the current effects of the fishery because no substantial changes to fishing area or intensity are anticipated from this measure. If fishing pressure from targeting were to increase beyond projected levels, those targeting canary rockfish would presumably be using jig gear in the mid-water column (above sensitive rock habitats) since canary rockfish are semi-pelagic (mid-water).

10. Will this management measure result in 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.

As detailed under question #1, allowing retention of canary rockfish is only expected to influence catches of canary rockfish because the preliminary preferred trip limits were set with the goal of allowing retention of incidental catches, and not to promote targeting. Since they will only be retaining their incidental catches instead of having to discard them, no changes to fishing behaviors are expected to occur (e.g., amount of effort or areas fished). Therefore, their catches of ESA-listed species, mammals, and birds are not expected to change if allowed to retain canary rockfish.

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

Allowing retention of canary rockfish in the fixed gear fisheries will be consistent with achieving the goals of National Standards 1, 2, 8, and 9. National Standard 2 is met because the best available science (i.e., the 2015 stock assessment) determined the stock to have become rebuilt and is now able to support increased harvest. National Standard 9 is met because fishermen will be able to retain instead of discard a majority of their incidental catches. National Standard 8 is met because these additional harvest opportunities will benefit fishermen and communities. And finally, National Standard 1 is met because increase harvest will result in more optimal yield, but while staying within biological acceptable harvest guidelines.

B.1.3 Adjustments to the Trawl Rockfish Conservation Area North of Cape Alava

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 expand the area north of Cape Alava (48° 10' N. lat.) to non-tribal bottom trawl fishing, which has been closed to non-treaty bottom trawling since 2007 (Figure 1). Specifically, the trawl Rockfish Conservation Area (RCA) seaward boundary will be changed from 150/200 fm modified fm to 150 fm and the shoreward boundary will be changed from shore to 100 fm (Table 7). The proposed RCA configuration will be consistent with the RCA currently south of Cape Alava to 45°46' N. lat. Note that above 48° 10' N. lat., the 200 fathom and the 200 fm modified RCA line are the same.

Table 7: Current and proposed RCA boundaries by bimonthly period for north of Cape Alava

RCA	JAN-FEB	MAR-APR	MAY-JUN	JUL-AUG	SEPT-OCT	NOV-DEC
Current	Shore-200 fm modified	Shore-200 fm	Shore-150 fm		Shore-200 fm	Shore-modified 200 fm
Proposed	100 fm-150 fm					

As shown below in Figure 7, Washington state waters (0-3 nm) will still remain closed to any commercial trawling even though the shoreward RCA will change from shore to 100 fm.

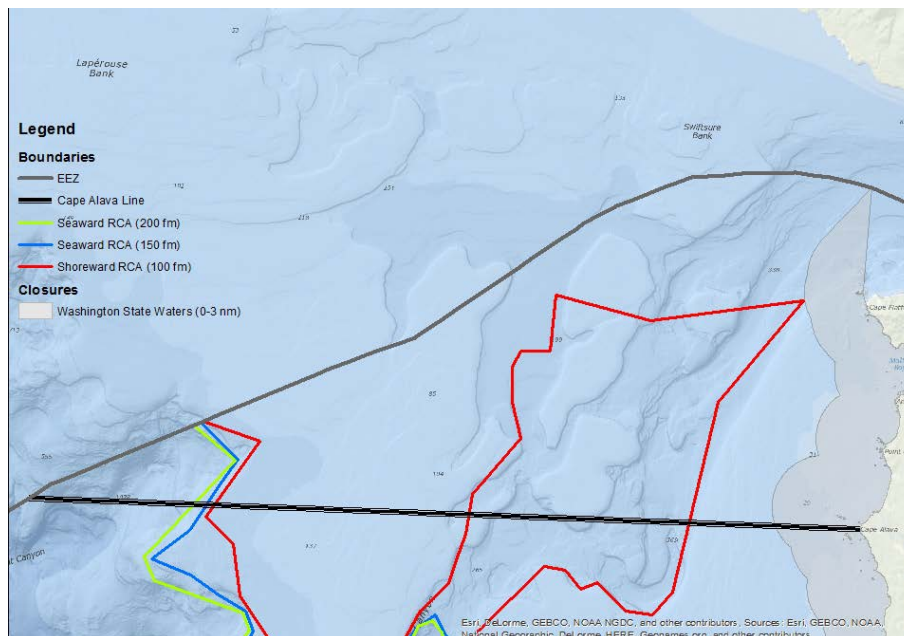


Figure 7: Current and proposed RCA boundaries north of Cape Alava to non-tribal bottom trawling.

Since the closure was implemented to reduce bycatch of overfished stocks (i.e., yelloweye rockfish and canary rockfish), the closure may no longer be necessary since bycatch of these stocks is now primarily managed and controlled under individual accountability; however, potential impacts associated with

reopening the area had to be investigated in greater detail than other proposed changes to management measures within the biennial harvest specification process due to the possible bycatch and EFH implications.

The proposed action to reopen areas north of Cape Alava is expected to primarily affect attainments of groundfish stocks that were historically encountered in the area. This includes targeted stocks (e.g., arrowtooth flounder, Pacific cod, Dover sole) and bycatch stocks (e.g., canary and yelloweye rockfish), but may also affect impacts to protected non-groundfish species. Projected impacts are described in greater detail under question #6 for groundfish, question #9 for non-groundfish, and question #10 for protected species.

2. 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 socioeconomic purpose? (e.g., allowing increased opportunity to catch target species? making fishing opportunity among different user groups more equitable?)

The objective of this management measure is to reopen the area north of Cape Alava to non-tribal bottom trawl fishing to allow increased access of target species while allowing individual accountability to mitigate bycatch. This area was initially closed to fishing in 2007 in order to reduce bycatch of canary and yelloweye rockfish. However, with the rebuilding of canary rockfish, along with the individual accountability of the IFQ program, the opening of the area would allow for increased opportunity to catch target species and potentially provide more expansive fishing grounds for northern based trawlers. By reopening the area, it will provide IFQ participants greater flexibility to access their portfolios of target stocks given differential bycatch constraints.

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

The goals and intent of the IFQ program were considered to optimize the performance of the proposed action to reopen the area north of Cape Alava. Specifically, the IFQ program was adopted to provide participants the opportunity and flexibility to safely catch their individual allocations within the confines of their bycatch allowances - without the need of the historical regulations that were used to manage the pre-IFQ fishery (e.g., trip limits, gear restrictions, and area closures such as the closure north of Cape Alava). Reopening the area north of Cape Alava will better meet the purpose and intent of the IFQ program.

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

At the April 2016 meeting, the Council chose to reopen the area north of Cape Alava as their preliminary preferred alternative (PPA), with their final preferred alternative (FPA) to be decided in June 2016 for potential adoption for 2017-2018. The Council's rationale for their PPA is described under the next question.

5. Is there any other background information that was important to the Council's decision? As appropriate, summarize Council discussion of this measure, and any conclusions reached, during the biennial process.

In setting their PPA to reopen the area north of Cape Alava, the Council considered that the closure is a relict management mechanism used to control bycatch of yelloweye and canary rockfish in the historical pre-IFQ trawl fishery. Now that individual accountability is the primary mechanism used to control bycatch, the north of Cape Alava closure may no longer be necessary, and having it remain may impeded the flexibility of individuals to best obtain their diverse portfolios of target stocks. In addition, the Council also considered that the area north of Cape Alava is currently open to tribal trawlers, thus reducing potential implications to essential fish habitat (EFH).

6. 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? How does any change in catch relate to harvest specifications and the risk that overfishing will occur?

The proposed action to open the area north of Cape Alava is expected to influence mortality of groundfish, as well as non-groundfish stocks and protected species (described in later questions). Different methods were used to project impacts for stocks that are: (1) mainly targeted and harvested (“target species”), (2) stocks that a large portion were discarded (“mixed species”), and (3) mainly bycatch or incidental species (“bycatch species”) due to differences in the availability of informative data. For target species (e.g., Dover sole, sablefish), logbooks were used because haul specific landings and locations north and south of Cape Alava were recorded, and their total landings could be verified against fish tickets. For bycatch species, observer data was used since discards could not be verified via logbooks because only a portion of the fleet was observed. For mixed stocks (e.g., spiny dogfish), both logbook and observer data used together could provide a more complete picture of potential impacts. The methods used to project total removals using both approaches are described in the Appendix to this document.

Logbook Estimates of Target and Mixed Stocks

Target stocks (as well as landings of mixed stocks) can be used to estimate potential landings if the area north of Cape Alava (outside of the proposed RCA) were to be opened to commercial bottom trawling. Haul-specific landings with associated start/end coordinates are recorded in state trawl logbooks, and confirmed by fish tickets at the dock. More specifics on this methodology can be found in Section 1 of the Appendix.

Table 8 shows the number of hauls and vessels fishing off the Washington Coast north and south of Cape Alava from 2002-2006. On average, the area south of Cape Alava saw almost four times the number of hauls and double the amount of vessels that were seen north of Cape Alava. However, since the closure in 2007, there has been an overall decrease in the number of hauls (by 9.6 percent) and vessels (by 31.6 percent) south of the Cape Alava line (Table 9 hauls compared to Table 8 total hauls). The significant drop seems to align with the implementation of the IFQ program, which had the intended consequence of reducing fleet size.

Therefore, if the RCA was changed to reflect the current RCA south of Cape Alava, the potential effort could range from zero (if no one moves to the area) to approximately 1282 hauls and 16 vessels (if the same decline seen in the south from the historical to recent average occurs) to the historical average of 1418 hauls and 23 vessels (or higher). However, of the 57 vessels that fished north of Cape Alava from 2002-2006 (“Alava trawlers”), only 21 vessels are still active in the IFQ fishery (made at least one landing from 2011-2015), which is a 63.2 percent decrease. In comparison, only 30 of the 79 vessels are still active that fished south of Cape Alava prior to the closure in 2007 (62 percent decrease).

Table 8: Number of hauls and vessels fishing off the Washington Coast north and south of Cape Alava line from logbooks, 2002-2006

Year	North		South	
	Number of Hauls	Number of Vessels	Number of Hauls	Number of Vessels
2002	1777	24	4127	50
2003	1542	31	4047	51
2004	1191	24	3956	36
2005	1580	20	4243	36
2006	1002	15	4531	37
Average	1418	23	4181	42

Table 9: Number of hauls and vessels fishing off the coast of Washington, South of Cape Alava, 2007-2014 from logbooks

Year	Number of Hauls	Number of Vessel
2007	4252	43
2008	4178	40
2009	4821	37
2010	3931	31
2011	3469	25
2012	3180	22
2013	3683	20
2014	2710	15
Average	3778	29

Note that during this time period, an average of 2 mt of canary and 0.2 mt of yelloweye rockfish were landed. However, the trawl allocation during that time period for both species was very small and therefore, this small area accounted for a significant portion of the mortality. For example, the limited entry non-whiting trawl allocation (which would now be the IFQ fishery allocation) in 2005 and 2006 for canary and yelloweye rockfish was 8.0 and 0.4 mt, respectively. Therefore, the landings (not including additional discard mortality) north of Cape Alava could have accounted for $\frac{1}{4}$ of the overall canary rockfish allocation and half of the yelloweye rockfish allocation at the time before the closure. However, canary rockfish is

now rebuilt with the IFQ sector's PPA allocation set at 1014.1 mt, therefore the risk of canary IFQ allocation is minimal. Further discussion on yelloweye will be discussed below within the bycatch species section.

If the effort trends seen south of Cape Alava were to apply to the landings north of Cape Alava from 2002-2006 (Table 10), groundfish impacts could range from zero (if no vessels fish north of the line) to the values listed in Table 11, based on effort reductions seen in the number of hauls south of Cape Alava and the number of active "Alava trawlers".

Table 10: 2002-2006 logbook landings (mt) of the top ten species by volume (on average) north of Cape Alava.

Species	2002	2003	2004	2005	2006	Average
Arrowtooth Flounder	492.9	522.7	843.0	585.1	135.3	515.8
Pacific Cod	434.1	584.9	0.0	309.6	121.8	290.1
English Sole	192.2	261.2	0.0	143.7	85.5	136.5
Petrale Sole	84.9	107.2	0.0	85.5	71.2	69.8
Unidentified Skate a/	97.1	111.6	0.0	50.8	64.8	64.9
Sablefish	32.7	41.0	72.0	110.1	38.7	58.9
Dover Sole	91.4	0.0	66.6	0.0	102.3	52.1
Spiny Dogfish	61.1	8.6	7.4	20.1	44.4	28.3
Rex Sole	24.2	24.2	0.0	22.4	10.2	16.2
Yellowtail Rockfish	36.9	27.2	0.0	9.3	5.4	15.8

a/ Longnose skate was not required to be sorted individually until 2009; therefore a majority of this is most likely longnose skate.

Table 11: Range of predicted landings (mt) for species based on reduction percentages in haul effort seen south of Cape Alava from 2002-2006 to IFQ years (2011-2014) and reduction in active vessels that fished prior to the closure compared to the IFQ years.

Species	Projected Landings Based on Reduction in Active “Alava Trawlers” (63.2 percent decrease)	Projected Landings Based On Haul Effort in South (22 percent decrease)
Arrowtooth Flounder	189.8	402.3
Pacific Cod	106.7	226.3
English Sole	50.2	106.5
Petrale Sole	25.7	54.4
Dover Sole	23.9	50.6
Unidentified Skate	21.7	45.9
Sablefish	19.2	40.6
Spiny Dogfish	10.4	22.1
Yellowtail Rockfish	6.0	12.7
Rex Sole	5.8	12.3

Observer-based (WCGOP) projections for Mixed and Bycatch Stocks

For targeted stocks that are primarily harvested, logbooks are an effective means for determining potential removals north and south of Cape Alava because their landings were recorded by location. However, logbooks are less effective for projecting removals for stocks that were primarily discarded (e.g., yelloweye rockfish) or had mixed landings and discards (e.g., arrowtooth flounder that is sometimes marketable, other times not) because their discards were not recorded on logbooks.

Accordingly, projections of “mixed” and “bycatch” stocks were developed entirely using WCGOP observer data (and not logbooks). A full description of this observer-based projection method is described in the Appendix, and contains: (1) historical effort north and south of Alava; (2) historical removals from a subset of observer coverage (not total) from north and south of Alava; (3) recent removals from south of Cape Alava from those who used to fish to the north before the 2007 closure (“Alava trawlers”); (4) projections for mixed and bycatch stocks for north, south, and total as compared to recent removals (all from the south). In general, projections were made based on what “Alava trawlers” (those that fished at least once north of Cape Alava) have been recently removing south of Alava during the IFQ era (2011-2013). Since projections are based on the recent removals, total mortality is known (100 percent monitoring), and also reflect recent lower bycatch fishing practices (e.g., rockfish excluders, avoidance) and fleet consolidation. To project removals south of Cape Alava, recent total removals (all south) were reduced to reflect a portion

of their catch and effort migrating north based on historical patterns. To project removals north of Cape Alava, the portion of their recent removals (from the south) that were assumed to migrate northward were calibrated to reflect differences in the historical encounter rates between the two areas (similar to an exchange rate, and shown as the “species correction factor”). Impacts for stocks more prevalent in the north increased, whereas impacts decreased for stocks more prevalent to the south (e.g., longnose skate).

As shown in Table 12, impacts to arrowtooth flounder, spiny dogfish, Pacific halibut (while not a groundfish, shown since an IFQ species), and yelloweye rockfish are expected to increase if the open area north of Cape Alava is expanded. Impacts to big skate and longnose skate are projected to decrease.

Table 12: Predicted change in mortality (mt) for bycatch and mixed (bycatch/landings) groundfish stocks if the open area north of Cape Alava is expanded for non-treaty bottom trawling (methods described in Appendix). EC denotes groundfish designated as ecosystem component species.

Species	Actual removals (mt)			Predicted removals (mt)				Comparison (mt)	
	N Alava 02-06 avg	S Alava 02-06 avg	S Alava 11-13 avg	Species Correction Factor a/	N Alava b/	S Alava c/	Total	Current	Change
Arrowtooth F.	141.5	128.5	1221.3	2.45	928.4	842.7	1771.0	1221.3	549.8
Spiny Dogfish	61.2	47.8	191.2	2.85	169.0	131.9	300.9	191.2	109.7
S. Ratfish (EC)	12.0	11.7	28.8	2.29	20.4	19.9	40.3	28.8	11.5
P. Halibut (IFQ)	14.1	22.2	33.9	1.41	14.8	23.4	38.2	33.9	4.3
Skate Unid	18.2	37.8	147.4	1.07	49.0	101.7	150.7	147.4	3.4
Yelloweye RF	0.07	0.03	0.02	5.14	0.04	0.02	0.05	0.02	0.03
Big Skate (EC)	1.7	5.2	27.9	0.75	6.5	19.3	25.7	27.9	-2.2
G. Grenadier (EC)	0.0	2.1	9.4	0.00	0.0	6.5	6.5	9.4	-2.9
Longnose Skate	6.5	15.7	338.3	0.92	96.6	233.5	330.0	338.3	-8.3

a/ Species correction factor= (02-06 avg N Alava) / [(02-06 avg S Alava x 0.45 (31% hauls N / 69% hauls S))]

b/ Predicted N = (11-13 avg S Alava) x 0.31 (% of '02-'06 hauls north) x species correction factor

c/ Predicted S = (11-13 avg S Alava) x .69 (% of '02-'06 hauls south)

Overall Groundfish Impacts

With the opening of the area north of Cape Alava, there are seem to be no apparent significant issues based on the logbook and observer data for a few reasons: (1) stocks that have historically high landings or are projected to increase have low IFQ attainment rates (e.g., arrowtooth flounder and Pacific cod) and can absorb that growth; (2) impacts to IFQ species with high attainments rates (e.g., sablefish and Petrale sole) will continue to be controlled by individual accountability and therefore, only the area of catch may change if vessels move to the proposed open area; and (3) while yelloweye rockfish impacts are projected to more than double (i.e., 0.02 mt to 0.05 mt), the absolute difference in metric tons is negligible (.03 mt) relative to the IFQ allocation (1.1 mt in 2017 and 1.15 mt in 2018). However, these projections are quite uncertain because they are based on attempting to predict fishing behavior, rely on the individual accountability of the fleet, and the ability to avoid yelloweye rockfish.

Upon investigation into yelloweye rockfish, the observer-based projected impacts (0.05 mt; Table 12) are less than the historical logbook average to the north (0.2 mt) and also less the historical average for observed trips (0.1 mt) for both the south (0.03 mt) and north (0.07 mt) combined (also from Table 12). While the yelloweye rockfish projection of 0.05 mt may appear low based compared to the logbook average of 0.2

mt, the projection appears reasonable considering the fleet has consolidated and has also lowered their yelloweye rockfish bycatches.

For example, yelloweye rockfish impacts have decreased by 4.2 fold: (1) based on ratio of the northern logbook catch (0.2 mt) to partial northern observer removals (0.07 mt), there would be a 2.8x factor for expanding partial observer catch to total logbook catch; (2) if the 2.8x expansion factor is applied to historical southern removals (0.03 mt), the total historical southern removals would be 0.084 mt; (3) expanded total southern removals (0.084 mt) are 4.2x greater than their recent total southern removals (0.03 mt), or conversely, the recent fishery has 4.2x lower bycatch for yelloweye rockfish. In addition to having 4.2 fold lower bycatch, the number of trawlers who used to fish north of Cape Alava has been reduced by 29 percent (20 of 28 remain based on observed coverage; described in the Appendix to this document). The historical logbook average of 0.2 mt does not account for the fleet consolidating due to the IFQ program and changing their fishing behavior to have lower bycatch of yelloweye rockfish. If these factors are considered, then the adjusted historical logbook average for north becomes 0.03 mt $[(0.2 \text{ mt original} / (4.2x \text{ lower bycatch})) \times 0.71 \text{ (percent remaining from observer)}]$. If this 0.03 mt adjusted logbook average is added to their recent removals to the south (0.02 mt), the total is 0.05 mt, which is the same as the original projection (0.05 mt; Table 12) that is based entirely on observer data (described in Appendix).

In summary, three alternative methods were used to project potential yelloweye rockfish impacts because high bycatch of yelloweye rockfish was a primary reason north of Cape Alava was closed in 2007. While the observer-based approach (Table 12) and modified logbook approach (paragraph above) have the same projection (0.05 mt total) and better account for recent lower bycatch fishing practices and fleet consolidation than the historic logbook average (0.2 mt average for the north), future impacts could be similar to the higher historic logbook average if the fleet fishes in a similar fashion as occurred historically. In addition, impacts could be even higher if an extreme catch event were to occur. Specifically, the area north of Cape Alava is prime habitat for yelloweye rockfish and there is always a risk of a “lightning strike” tow occurring, which could not only impact the individual vessel, but the fleet as a whole. However, the IFQ fleet only utilized 0.04 mt of their 1.08 mt yelloweye allocation in 2015 and therefore, even if a large amount of catch were to happen, the risk of exceeding the IFQ allocation is low. Venturing north of Alava would an individual risk call in regards to exceeding one’s individual bycatch allowance (e.g., QS or annual vessel QP limit), as intended with the development of the IFQ program.

7. 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 proposed action is expected to affect the distribution of where IFQ removals occur for the IFQ fleet. Currently, there is little trawl activity out of Washington as a majority of the IFQ trawl fleet is out of Astoria. However, by reopening the area, there could be additional opportunity for vessels out of northern ports to land underutilized species (i.e. Pacific cod, Dover sole, English sole). Due to the uncertainty of the analysis, the magnitude of this change is difficult to quantify. If there are currently vessels who have large amounts of quota pounds for underutilized species (that are marketable), there could be an increase in catch opportunity for those vessels. There is no obvious loss in catch opportunity, unless there are increases in bycatch of yelloweye rockfish, which if at large amounts (i.e. lightning strike) could potentially close the fleet if the trawl allocation is exceeded.

8. 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?

Expanding the open area north of Cape Alava may alter the mortality of non-groundfish species as there were differences in encounters between the north and south areas (Table 13). To project if mortality is expected to increase or decrease for non-groundfish stocks, the historical removal ratios between the north and south areas were weighted to account for effort in the southern area (i.e., 69 percent of historical hauls) being 2.2 times greater than to the north (i.e., northern removals were multiplied by 2.2). This weighting was necessary to give an equal footing to effort, as reopening north of Cape Alava is expected to result in portion of current southern effort migrating north. In other words, the historical removal ratios based on over double the effort to the south would be biased low if not properly weighted.

As shown in Table 13, impacts for seven of nine prevalent (i.e., > 1 mt of removals) are projected to decrease. Removal ratios less than 1 reflect a potential decrease (less prevalent to the north) and those above 1 reflect a potential increase (more prevalent to the north) if effort from South of Cape Alava were to migrate northward.

Table 13: Projected change in removals for non-groundfish species if the area north of Cape of Alava were expanded to non-treaty bottom trawling.

Species (WCGOP list)	Historical removals		Potential Change		
	S Alava 02-06 avg	N Alava 02-06 avg	Weighted N Alava removals	Removal Ratio (Weighted N / Historical S)	Change
Anemone Unid	1.15	0.04	0.09	0.1	Decrease
Brown Cat Shark	0.68	0.01	0.01	0.0	Decrease
Dungeness Crab	21.98	3.16	6.95	0.3	Decrease
Eelpout Unid	1.11	0.00	0.01	0.0	Decrease
Invertebrate Unid	1.74	1.01	2.23	1.3	Increase
Sea Star Unid	1.47	0.47	1.04	0.7	Decrease
Shark Unid	1.53	0.01	0.02	0.0	Decrease
Tanneri Tanner Crab	5.76	0.04	0.10	0.0	Decrease
Walleye Pollock	0.06	3.51	7.73	138.6	Increase

Northern removals were weighted by 2.2 fold since historical effort was 2.2x higher S than N

9. **Will this management measure change fishing activity so as to adversely affect to essential fish habitat compared to current or baseline 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.**

By opening up the area north of Cape Alava, there could be potential adverse impacts to EFH compared to current effects. Currently, tribal trawling vessels are permitted to fish within their respective usual and accustomed areas (U&As), which includes the entire area north of Cape Alava (Figure 8; grey shaded area). Per communication with the Makah tribe, there is an allowance of up to ten bottom trawl vessels in the U&A; only seven are currently active. In a process outside of the biennial harvest specifications cycle, there is a separate EFH/RCA review ongoing at the Council level. While there are no new proposed closures within the area (as tribal U&As are currently excluded from changes), the current EFH closed area would remain in regulation (Figure 9). However, this would only continue to protect against bottom

trawling effects on EFH in a minimal areas outside of the proposed RCA. Since both the tribal and non-tribal fisheries have similar fishing strategies, it may be reasonable to expect that both would have similar footprints, and thus new EFH impacts would not be great unless a large surge of effort from non-tribal trawling were to occur.

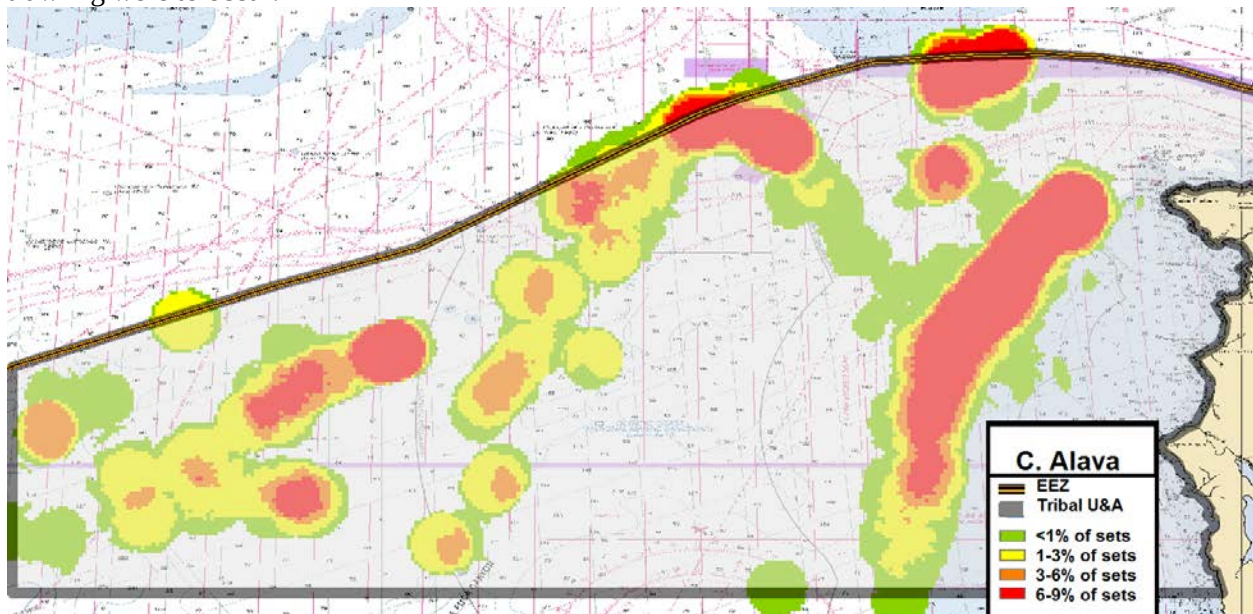


Figure 8: Non-tribal trawl footprint based on WCGOP observer data north of Cape Alava prior to the closure in 2007. Non-tribal hauls that do not follow the “rule of at least 3 vessels” are not shown for data confidentiality purposes.

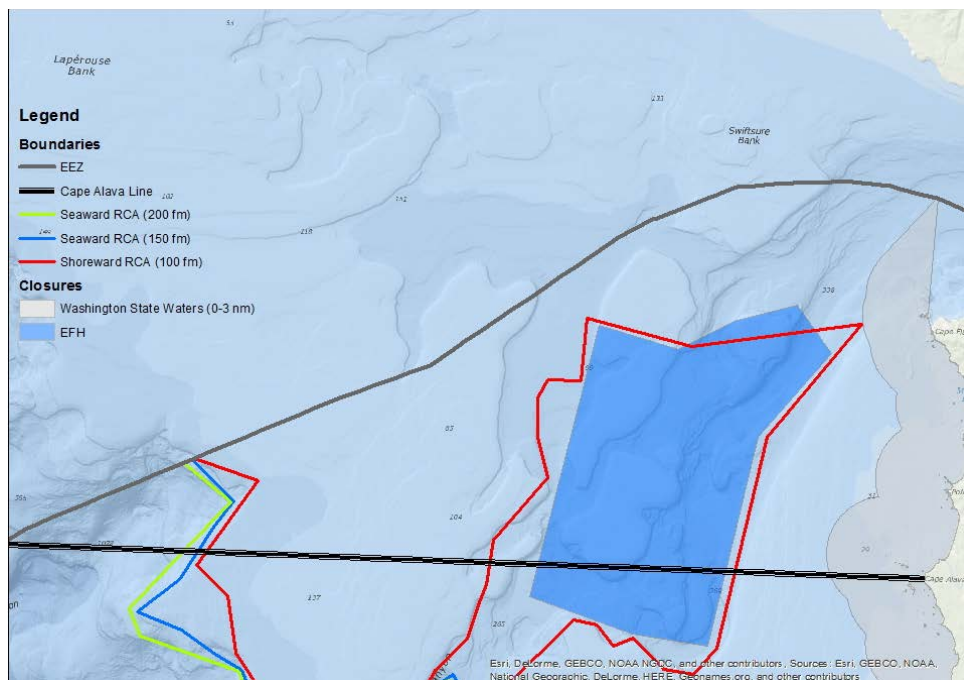


Figure 9: EFH closed area in relation to current and proposed RCA boundaries.

Within the area north of Cape Alava, there are several high relief areas that are of particular importance to some groundfish species. While RCAs are intended to provide protection for overfished rockfish, the implementation of this RCA has in essence, provided almost a decade worth of recovery to bottom trawling (except for the tribal activity). The proposed RCA modifications though would still result in a significant amount of the high relief (i.e. rocky substrate) being protected from bottom trawl gears as seen in Figure 10.

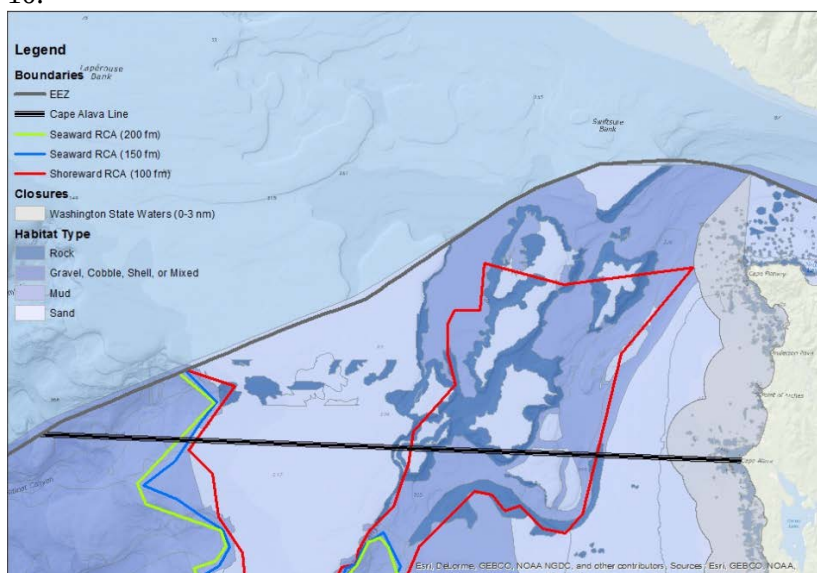


Figure 10: Current and proposed RCA boundaries in relation to habitat type¹

¹ Data courtesy of Oregon State University, active Tectonics & Seafloor Mapping Lab, the Oregon Department of Fish and Wildlife, NOAA Biogeography Branch, and the Nature Conservancy (<https://fortress.wa.gov/dnr/managementgis/msp/index.html>)

10. Will this management measure result in 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.

Expanding the open area north of Cape Alava may alter the mortality of protected species. To project if mortality is expected to increase or decrease for protected finfish (Table 14) , the historical removal ratios between the north and south areas were weighted to account for effort in the southern area (i.e., 69% of historical hauls) being 2.2 times greater than to the north (i.e., northern removals were multiplied by 2.2). This weighting was necessary to give an equal footing to effort, as reopening north of Cape Alava is expected to result in portion of current southern effort migrating north. In other words, the historical removal ratios based on over double the effort to the south would be biased low if not properly weighted to standardize for differences for differences in effort between the two areas. Removal ratios less than 1 reflect a potential decrease (less prevalent to the north) and those above 1 reflect a potential increase (more prevalent to the north) if effort from South of Cape Alava were to migrate northward.

As show in Table 14 impacts to three of four protected finfish are projected to remain the same or decrease if the open area north of Cape Alava is expanded to non-treaty trawling. Green sturgeon impacts may increase if a portion of current effort from the south migrates northward, as historical encounter rates were greater to the north than south (i.e., weighted removal ratio is above 1).

Table 14: Projected change in removals for protected finfish species if the area north of Cape of Alava were expanded to non-treaty bottom trawling.

Species (WCGOP list)	Historical removals		Potential Change			
	S Alava 02-06 avg	N Alava 02-06 avg		Weighted N Alava	Removal Ratio (Weighted N / Historical S)	Change
Green sturgeon	0.03	0.02		0.05	1.8	Increase
Eulachon smelt	0.00	0.00		0.00	0.0	Same
King (Chinook) salmon	0.15	0.16		0.35	2.3	Decrease
Silver (Coho) salmon	0.00	0.00		0.00	0.0	Same

Northern removals were weighted by 2.2 fold since historical effort was 2.2x higher S than N

Impacts to marine mammals are not expected to change. Jannot et al. (2009) provides species-specific estimates of marine mammals, turtles, and birds takes in the non-whiting trawl fisheries from 2002-2009, which includes a portion of years when the area north of Cape Alava was open (i.e., pre-2007). While estimates are not available for the area north of Cape Alava, marine mammals interactions for the entire non-whiting bottom trawl fishery were generally low for all of northern California, Oregon, and Washington combined. The eight year totals (2002-2009 combined) were: 15 California sea lions (N. of 40°10'), 1 Risso dolphin (N. of 40°10'), 25 Stellar sea lions (coastwide), and zero other whales. Since reopening N. of Cape of Alava could potentially shift effort northward (but not increase total effort), no changes to marine mammals takes are expected; however, if total effort were to increase, there could be potential for more encounters.

For the same rationale as with marine mammals, projected impacts to birds and turtles are also not expected to change. Further, the total impacts will likely be zero for leatherback turtles (i.e., zero were encountered in the entire LE trawl fishery from 2002-2009) and low for birds. Total LE trawl impacts to birds from 2002-2009 were zero for brown pelicans, black-footed albatross, Brand's cormorant, southern shearwater, gulls, and "other birds". Of birds that were encountered in the coastwide LE trawl fishery, the impacts were low (i.e., 1 common murre, 8 Leach's storm petrel, and 1 northern fulmar. In general, trawls have low encounter rates of birds throughout the coast and in total.

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

Expanding the non-treaty trawl grounds north of Cape Alava is expected to better fulfill the objectives of the trawl rationalization program. By opening more grounds, trawlers will be given greater flexibility to efficiently and safely access their portfolios of healthy target stocks within the confines of their individual bycatch or limiting species allowances.

As such, the proposed action is consistent with following National Standards associated with adoption of the trawl IFQ program: NS 1 as it will provide greater flexibility to increase volumes of harvest target stocks within bycatch constraints; NS 5 as they may able to more efficiently access their target stocks; and NS 10 to provide greater flexibility to fish more safely.

Appendix

Alternative methods for projecting mortality for target species, bycatch species, and mixed species associated with expanding the open area north of Cape Alava to non-treaty trawl

As described under question #6 (impacts to groundfish), different methods were used to project impacts to stocks for stocks that were historically harvest prevalent versus historically discard prevalent due to differences in the availability of informative data. Section 1 describes the methods used to evaluate impacts using logbooks for target and mixed stocks, and section 2 describes projecting impacts to mixed and bycatch stocks using WCGOP observer data.

Section 1: Logbook Approach

Using the state trawl logbooks from Oregon and Washington from 2002-2014 (excluding midwater gear), estimates of effort outside of the proposed RCA north and south of Cape Alava off the coast of Washington prior to the closure were analyzed. Only those records with a recorded latitude coordinate north of the Washington/Oregon border were included in this analysis. These vessels were considered to be the possible pool of vessels that may access the area north of Cape Alava. Hauls (and resulting landings) north and south of Cape Alava were assigned based on if either the set or up latitude coordinate was north of 48° 10' N. lat. Due to recording errors in the logbooks (e.g. no end coordinates recorded, coordinates on land), several filters were applied to the haul level data to best estimate the effort that occurred shoreward of 100 fm or seaward of 150 fm (the proposed RCA closure) from 2002-2006. These included: removing all hauls that intersected land or the Puget Sound; removing any hauls that were occurred within the area North of Cape Alava but outside of 200 fm (as these trips could still occur with the proposed changes, no observable effort happen strictly between 150 and 200 fm); removing any hauls that were completely within the RCA between 100 and 150 fm or Washington state waters. There were other hauls that overlapped the RCA but these could be due to transiting; however, this would simply result in a possible overestimation of effort in the period below.

Section 2: WCGOP Data Approach

Projected impacts for discard prevalent species were determined via the use of observer data because only landings data could be verified via the use of logbooks. Ideally, the historical total discards that occurred north and south of Cape Alava prior to the 2007 closure would be assumed to be similar to what future

discards would be if the area north of Cape Alava were reopened (with a scaling factor to account for reduced effort due to fleet consolidation). However, historical total discards north and south of Cape Alava prior to the 2007 closure are unknown since only a portion of trips were observed. While extrapolations of total historical discards were made by expanding catch from observed trips to non-observed trips, these estimates were only available for broad areas (e.g., north of 48°10' N. lat.) and not specific to the areas north and south of Cape Alava. Accordingly, the methodology to predict future discards if the area north of Cape Falcon focused on utilizing the historical observer data set of partial discards to scale recent discards that are fully known (due to 100% observer coverage).

In order to model the potential impacts associated with reopening the area north of Cape Alava, vessels that fished at least once north of Cape Alava prior to the 2007 closure were assumed to resume activity within the proposed opening in their historical patterns. These vessels are hereafter referred to as “Alava trawlers”. Based on observer data, these Alava trawlers primarily fished south of Cape Alava from 2002-2006, with an average of 31 percent of hauls fished north and 69 percent south of 48° 10' N. lat. (Table 15). Of the 28 Alava trawlers who were historically active, 20 remain active today in open waters south of Cape Alava.

Therefore, removals of the 20 remaining Alava trawlers in the areas south of Cape Alava were projected to be 69 percent of recent average (2011-2013) as they historically fished 69 percent of their hauls in the southern area. To project removals in areas north of Cape Alava, three steps were taken: (1) their recent average removals from the south (2011-2013) were multiplied by 31 percent to simulate the proportion of these removals migration north based on historical patterns; (2) species-specific correction factors (similar to a CPUE) were applied to these recent southern removals migrating north based on (a) historical removal ratios in the northern vs southern area due to differences in encounter rates between the areas (i.e. pounds of species X landed in the north compared to pounds of species X landed in the south), and (b) historical effort ratios between the areas in order to standardize difference in historical effort. For the latter component, since the effort in the south (69 percent of trips) was nearly double what the amount of trips in the north was from 2002-2006 (31 percent), the effort component of the correction factor (i.e. the denominator) was 31 percent/69 percent= 0.45, which in essence doubles the weight of northern catches to adjust for the movement of effort.

In summary, the projection methods utilize recent discard information that is fully known (and incorporates fleet reductions), and migrates a portion of these total discards (all southern) northward after adjusting it to more resemble historical northern discards (based on the historical encounter ratios between the two areas (similar to an exchange rate). The portion of total discards that are expected to remain to the south were left the same.

Note that all analyses exclude hauls that occurred north of Cape Alava and beyond the 200 fm seaward RCA boundary because this area has remained open the entire timeframe (not part of the 2007 closure); therefore, catch and effort from that area is not expected to change with the reopening of the shallower waters north of Cape Alava. Furthermore, if deep water effort north of Cape Alava were to shift shallower, the effects are expected to be negligible since less than one percent of observed hauls occurred in that deep water area.

Table 15: Number and percent of observed hauls fished north and south of Cape Alava prior to the 2007 closure for the Alava trawlers (those that fished at least once north of Cape Alava).

Year	Number of Observed Hauls		Percent of Observed Hauls	
	North	South	North	South
2002	337	654	34.0%	66.0%
2003	112	218	33.9%	66.1%
2004	211	756	21.8%	78.2%
2005	450	950	32.1%	67.9%
2006	302	617	32.9%	67.1%
Average	282	639	31.0%	69.0%

B.1.4 Adjustments to the Non-Trawl Rockfish Conservation Area in California

1. 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 non-trawl Rockfish Conservation Area (RCA) from Cape Mendocino (40°10' N. lat.) to the U.S./Mexico Border. The non-trawl RCAs are currently 30 fm to 150 fm between 40°10' N. lat. and 34°27' N. lat. and 60 fm to 150 fm south of 34°27' N. lat., which is also applicable around islands. This action would modify the seaward RCA for the area between 40°10' N latitude and 34°27' N. latitude from 150 fm to 125 fm. This management measure would also modify the shoreward RCA south of 34°27' N. lat. from 60 fm to 75 fm. These modifications would only apply to non-trawl commercial fisheries. Modifications to depth restrictions in the recreational fishery are being proposed (see Chapter 4), but this proposed action will have no effect on those actions.

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 non-trawl RCA in the proposed area has not been modified since 2007, additional analysis is provided here to help inform potential impacts of this action.

RCAs were originally established in the early 2000s to protect bocaccio and canary rockfish which, at the time, had recently been declared overfished. These area closures were intended to close off areas to fishing in the main portion of the species' depth range to reduce encounters and mortality, allowing the stocks to rebuild more quickly. At that same time reduced trip limits (including no retention) were implemented to reduce catches (and overall mortality) which would also help the stocks rebuild more quickly. Unfortunately implementing RCAs also greatly reduced access to many healthy target stocks which were found in similar depths. As a result, an important shelf rockfish fishery which used to operate south of 40°10' N. lat. was severely impacted. 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.

In 2015, canary rockfish was declared rebuilt and the newest bocaccio stock assessment indicated that the stock is expected to be rebuilt by January 1, 2016. Given that both of these stocks are rebuilt or rebuilding more quickly than anticipated, 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 "core" of the non-trawl RCA and 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 affect nearshore and shelf rockfish species in California south of 40°10' N. lat. Modifications to the shoreward RCA will allow access to deeper nearshore species (blue, brown, copper, olive rockfishes) and shelf rockfish species (chilipepper, greenblotched, Mexican, vermilion). Modifications to the seaward RCA will allow access to shelf rockfish species and sablefish. It is unlikely that blackgill rockfish will be affected by this modification because it tends to be found at deeper depths which are currently open to fishing.

This management measure will likely affect bocaccio and canary rockfish. Currently, bocaccio can be retained and commercial trip limits have been implemented to limit harvest amounts. Canary rockfish is currently prohibited in commercial fixed gear fisheries because it has been overfished; however, the Council is contemplating allowing retention of canary rockfish now that it has been declared rebuilt.

This management measure may have a small likelihood of increasing encounters of cowcod (south of 34°27' N. lat.) and yelloweye rockfish (between 40°10' N. lat. and 34°27' N. lat.). Because both of these stocks are still overfished and are not allowed to be retained in the nontrawl commercial fixed gear fishery, it is likely that fisherman will actively try to avoid and/or minimize interactions with these stocks. Individuals who participate in the Trawl Individual Fishing Quota program and utilize gear switching would also be affected by this management measure, but because individuals are fully accountable for both retained and discarded catch no increased in impacts is expected for these species as a result of this management measure.

2. 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 socioeconomic purpose? (e.g., allowing increased opportunity to catch target species? 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 historical fishing opportunity to fleets in California whose fisheries were severely curtailed due to implementation of the RCAs in the early 2000s while still maintaining protection for the core distribution of cowcod and yelloweye rockfish.

It should be noted that 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 that same opportunity.

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

The original intent of the RCAs and the need to further restrict access to these areas given the more optimistic outlooks on overfished stocks was considered to optimize performance of this measure. Because many stocks have been declared rebuilt (canary rockfish, widow rockfish, and petrale sole), or are rebuilding much quicker than anticipated (bocaccio and cowcod), it is appropriate to revisit the non-trawl RCA and modify them to allow access to healthy target stocks while still maintaining the “core” depth which will provide protections as stocks continue to rebuild.

4. What was the Council’s decision and how did it arrive at the decision?

The latest stock assessment indicates that the canary rockfish stock has rebuilt and is no longer overfished. The latest assessment for bocaccio suggests that as of January 1, 2016 the stock has also rebuilt to healthy levels, although the stock has not yet been declared rebuilt. Cowcod was last assessed in 2013 and at that time it was rebuilding much faster than anticipated and was expected to rebuild by 2020 (48 years ahead of schedule). Yelloweye rockfish is rebuilding as expected and no change to rebuilding progress is expected as a result of this action.

5. Is there any other background information that was important to the Council’s decision? As appropriate, summarize Council discussion of this measure, and any conclusions reached, during the biennial process.

The Council has routinely modified RCAs for both the trawl and non-trawl fisheries both during inseason actions and during biennial specifications. In 2014, NMFS recommended liberalizations to the trawl RCA north of 40°10' N. lat.² 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. lat. and between 42° N. lat. and 40°10' N. lat. respectively to allow access to target stocks, mainly nearshore species and lingcod.

² http://www.westcoast.fisheries.noaa.gov/publications/nepa/groundfish/misc_ea/rca_ea_3_4_14.pdf

6. 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? How does any change in catch relate to harvest specifications and the risk that overfishing will occur?

This management measure is expected to increase catch of chilipepper and other healthy shelf rockfish species by allowing access to depths in which they are more prevalent. The non-trawl fisheries are currently managed with cumulative trip limits, and any increases in catch are expected to remain within allowable harvest limits.

Chilipepper 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 (canary rockfish and bocaccio). Since canary rockfish has been declared rebuilt and bocaccio is anticipated to reach a rebuilt status soon, allowing some access back inside the RCA is appropriate to access abundant healthy stocks like chilipepper and yellowtail rockfish and at the same time does not jeopardize the stock status of canary rockfish and bocaccio.

Also, the non-trawl RCA shoreward boundary south of 34°27' N. latitude would be changed from 60 fm to 75 fm. For the same reasons as above under this PPA, better access would be afforded to stocks such as chilipepper and yellowtail rockfish for the non-trawl IFQ fixed gear fleet. It is anticipated that this shoreward boundary modification would not affect the nearshore fixed gear fishery since its target strategy is to fish in as shallow waters as possible to sustain its live-fish fishery. The additional 15 fm, therefore, would probably not benefit the nearshore fishery to any marked degree, if at all. For participants in the shelf rockfish fishery, some increase in canary rockfish bycatch could occur, particularly in areas shoreward of the RCA. Because canary rockfish is now rebuilt and two year allocations are expected to be higher, any increase is expected to remain well within allowable limits.

Table 16 summarizes the No Action 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 non-trawl allocations.

Table 16. Summary of projected impacts under No Action compared to Non-trawl allocations (excerpted from Table 4-36)

Stock	Management Area	Total Mortality (mt)	Non-Trawl Allocation (mt)
Chilipepper rockfish	South of 40°10' N. lat.	0.3	647.8
Lingcod	South of 40°10' N. lat.	5.1	683.7
Minor nearshore rockfish	South of 40°10' N. lat.	0.1	1,159.9
Minor shelf rockfish	South of 40°10' N. lat.	.1	1,409.9
Widow	Coastwide	0	161.2

In a separate decision, the Council is also considering increasing trip limits for shelf rockfish in the open access fishery between 40°10' N. lat. and 34°27' N. lat. Even under a higher trip limits minimal increase in projected impacts is expected to occur and there is no risk to exceeding the non-trawl allocation.

The Council is also considering allowing canary rockfish retention in non-trawl fixed gear commercial fisheries. While the exact trip limit has yet to be decided, some increase in canary rockfish mortality is expected, but should remain well within the non-trawl allocations given the expected increase in the ACL

now that the stock has rebuilt. Modifying the RCAs may increase encounters of canary rockfish, but cumulative trip limits will limit the amount of canary rockfish that can be legally landed. As a result, once a trip limit is reached, fisherman will likely avoid encountering canary rockfish, as it becomes financially burdensome spending extra time sorting and discarding any additional canary rockfish.

Bocaccio is currently managed in the non-trawl fixed gear fisheries using cumulative trip limits, which limit the amount of fish that can be legally landed. In a separate action, the Council is also considering increasing trip limits because the stock is rebuilding more quickly than anticipated (and is likely already rebuilt as of January 1, 2016), resulting in increased discarding. Modifying the non-trawl RCA will provide greater access to this stock, but landings will be limited under cumulative trip limits. Even under the higher trip limits contemplated, there is a very low (if any) risk to exceeding the non-nearshore HG (182.1 in 2017; 170.7 in 2018) for bocaccio as a result of this management measure.

Yelloweye rockfish is an overfished stock that is encountered primarily in northern California, north of 40°10' N. lat. Few encounters occur south of 40°10' N. lat., and no encounters occur south of 34°27' N. lat. Yelloweye rockfish predominantly occur over high relief pinnacles in northern waters, outside the area contemplated under this action. While some encounters can occur, they are expected to be rare. For perspective, yelloweye rockfish mortality under No Action the California for the nearshore fishery south of 40°10' N. lat. is projected to be 0.1 mt, compared to 0.5 mt in northern California and 1.4 mt in Oregon. However, the Council did allocate an additional 0.1 mt to the nearshore fishery, allowing access to deeper depths, which could likely be accommodated within the allowable allocation.

Cowcod is also an overfished rockfish which is encountered primarily south of 34°27' N. lat. It cannot be retained in the non-trawl fixed gear fishery. Cowcod is currently managed under a non-trawl allocation which is shared by both the commercial and recreational fisheries. The nontrawl allocation for 2017 and 2018 is 2.6 mt, of which the recreational fishery is projected to take 2.2 mt. This leaves 0.4 mt as a buffer to account for any increased encounters with cowcod as a result of this action. Given that the “core” RCA will still be intact, this will provide protection for those depths in which cowcod are most frequently encountered. As discussed previously, RCAs were not implemented to protect cowcod. While they do provide some added protection, the primary cowcod habitat has already been closed by two Cowcod Conservation Areas (CCA) - which encompass 4,300 square miles specifically to protect cowcod.

Cowcod is rebuilding faster than anticipated and in 2015 NMFS implemented an ACL of 10 mt and an ACT of 4 mt. In the event that cowcod encounters exceed the ACT, there is sufficient residual between the ACT and ACL to accommodate any overage.

These management measures may have a very small likelihood of increasing encounters of cowcod (south of 34°27' N lat.) and yelloweye rockfish (between 40°10' N lat. and 34°27' N lat.). Because both of these stocks are still overfished and are not allowed to be retained in the non-trawl commercial fixed gear fishery, it is likely that fishermen will actively try to avoid and/or minimize interactions with these stocks. Individuals who participate in the Trawl Individual Fishing Quota program and utilize gear switching would also be affected by this management measure, but because individuals are fully accountable for both retained and discarded catch no increased impacts are expected for these species as a result of this management measure.

- 7. 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 south of 40°10' N. lat., particularly in ports like Bolinas which used to have a very strong historical fishery for chilipepper. As highlighted in the EIS, California's groundfish fleet is unique and is comprised of many more non-trawl fixed gear fishermen compared to the other states and many of these fishermen relied on chilipepper as a staple in their fishery portfolios. When the RCAs went into effect, some ports lost these fisheries and suffered financial losses. Restoring access to areas where chilipepper are accessible to non-trawl fishermen will have a positive effect on these ports although the exact amount cannot be quantified.

IFQ Vessels

With the gear switching option available to IFQ vessels and the non-IFQ fixed gear fleet operating close to this area, the projected impacts from No Action were examined. From 2011 to 2013, WCGOP observed set data by IFQ vessels exercising the gear switching option revealed that 99.8 percent of those sets took place in waters 200 fm or deeper. The current non-trawl 150 fm seaward depth restriction was in place during this time frame. Therefore, if a shift of the non-trawl RCA seaward boundary into 125 fathoms 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 fishing much deeper than the current 150 fm seaward restriction. A reason for this is because the majority of the landings (92 percent by weight) from this fishery is a result of targeting sablefish.

Figure 11 depicts the areas where IFQ vessels that utilized the gear switching option fished (i.e. set data) in relation to the non-trawl RCAs from 2011 to 2013 between 40°10' N. latitude and 34°27' N. latitude. Due to confidentiality issues, this illustration uses generalized blocked areas 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 150 fathom boundary than they actually did. This is not the case; it is a mapping artifact needed to address confidentiality rules. The blocked areas also do not show fishing effort differences. Also, there are some areas that had just a few sets and therefore are excluded from these maps, again because of confidentiality issues.

Non-IFQ Vessels

Additional examination of WCGOP observed sets by the non-IFQ fixed gear fleet reveals that 46.6 percent of those sets took place in waters shallower than the shoreward RCA boundary of 30 fathoms and 53 percent in waters deeper than 150 fathoms. Of those sets made in waters deeper than 150 fathoms, the vast majority of them (99.2 percent) were made in waters from 175 fathoms and deeper because of targeting sablefish. However, as almost half of the observed sets were made shoreward of the non-trawl RCA, it can be anticipated that at least some of those vessels would probably utilize a seaward modification to better allow them to target chilipepper and possibly yellowtail rockfish. As a result of this proposed action, encounters of canary rockfish may increase. Because canary rockfish is now rebuilt, the Council is considering managing this stock with bimonthly cumulative trip limits for the non-IFQ fixed gear limited entry and open access sectors. These trip limits are designed to allow retention of this species that beforehand was a discarded bycatch, thus keeping the mortality within acceptable limits. Encounters of bocaccio may increase under the proposed action. Bocaccio is currently managed in the non-trawl fixed gear fisheries using cumulative trip limits, which limit the amount of fish that can be legally landed. Modifying the non-trawl seaward RCA will provide greater access to this stock, but landings will be limited under cumulative trip limits. In a separate action, the Council is also considering increasing trip limits because the stock is rebuilding more quickly than anticipated resulting in increased discarding. Even under the highest trip limits contemplated, there is an extremely low risk of exceeding the non-nearshore HG (182.1 in 2017; 170.7 in 2018) for bocaccio as a result of this management measure. Landings can be easily tracked inseason and action can be taken if needed to slow or reduce catches. As indicated above, a small likelihood of increased encounters of cowcod and yelloweye rockfish may occur, but for the reasons outlined above, no increase in impacts is expected for these species as a result of this management measure.

Figure 12 depicts the areas where non-IFQ fixed gear vessels fished (i.e. set data) in relation to the non-trawl RCAs from 2011 to 2013 between 40°10' N. latitude and 34°27' N. latitude. Figure 13 depicts the areas where non-IFQ fixed gear vessels fished (i.e. set data) in relation to the non-trawl RCAs from 2011 to 2013 south of 34°27' N. latitude (Figure 13). Due to confidentiality issues, these illustrations use generalized blocked areas 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 150 fathom boundary than they actually did. This is not the case; it is a mapping artifact needed to address confidentiality rules. The blocked areas also do not show fishing effort differences. Also, there are some areas that had just a few sets and therefore are excluded from these maps, again because of confidentiality issues.

This measure is not expected to negatively impact any user groups. In some portions of the state, the recreational fishery is already allowed to operate in depths being contemplated in this management measure. This measure would also not have any effect on allocations (taking fish from one sector and giving it to another) so it would not affect any other sector's allowable harvest levels or ability to harvest those fish. Further, this management measure would likely have a positive benefit on local ports to help maintain a constant supply of product to processors and help support local infrastructure (ice houses, fuel docks, etc.), which would ultimately benefit all sectors in the groundfish fishery.

Information the CDFW received from its public meetings held at the end of 2015 and beginning of 2016 indicated that some non-IFQ fixed gear vessels would utilize a seaward RCA adjustment. Thus, this would be a likely outcome of a seaward RCA boundary modification as it would benefit some fishermen, especially those fishing north of the San Francisco and Bolinas areas of central California, as stated above. However, the number of vessels (i.e. how many trips) that would be redirected due to that additional 25 fathoms on the seaward side of the modified RCA is unclear. Except for the Fort Bragg complex, the number of non-IFQ fixed gear vessels that typically land shelf rockfishes is quite small, totaling less than 15 in 2015 for all ports south of the Fort Bragg complex south to the Bodega Bay area. And for the reasons also stated above, IFQ vessels would in all likelihood not utilize the shoreward boundary modification south of 34°27' N. lat. because their target species (sablefish) is not found in these shallower depths. It is not known how many vessels that participate in the shelf rockfish fishery may utilize the additional 15 fm.

8. 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?

Non-trawl fixed gear fisheries are subject to federal observer coverage by the West Coast Groundfish Observer Program (WGCOP). WGCOP documents and calculates both landings and discards annually. According to the 2014 WGCOP total Mortality Report, few non-groundfish species are encountered in the fixed gear fisheries coast wide³. California halibut, Dungeness crab, California sheephead, and deep sea 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. Deep sea sole are found in very deep depths already accessible and modifying the depth restrictions will have no effect. California halibut tend to be found in shallower waters and are already accessible under the No Action depth restrictions. California sheephead are a shallower dwelling species found primary in southern California and are already accessible under the No Action depth restrictions. Therefore simply modifying allowable depths is not expected to increase catches of these species as they all reside in depths in which fishing is already permitted.

³ Data are summarized coastwide and are not stratified north and south of 40°10' N. lat.

9. **Will this management measure change fishing activity so as to adversely affect to essential fish habitat compared to current or baseline 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 some areas that are already open to fishing under No Action. 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.

10. **Will this management measure result in 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. While salmon do occur in the area south of 40°10' N. lat., they are predominantly encountered with trawl gear, not fixed gear. As outlined in the current Salmon Biological Opinion, the majority of bycatch in the non-trawl groundfish fisheries occurs between Cape Falcon and Cape Blanco, Oregon (85 percent), with 15 percent taken between Cape Blanco and 40°10' N. lat. between 2009 and 2013⁴. So while there have been some bycatch in the non-trawl groundfish fishery south of 40°10' N. lat., the amount has been comparatively insignificant and this management measure is not expected to change this. Salmon are predominantly encountered by the mid-water whiting fishery and bottom trawl fisheries which operate in different areas than those contemplated under this action.

11. **Describe how the management measure is consistent with the 10 MSA National Standards. (Note: Council staff will identify those National Standards that need to be addressed in this response the week of January 4th.)**

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., chilipepper). Prior to bocaccio and canary rockfish being declared overfished, the non-trawl fixed gear fisheries used to support a vibrant chilipepper 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 and that bocaccio is expected to have rebuilt as of January 1, 2016. Further, this management measure leaves in place the 'core' RCA, which would continue to provide protection to cowcod and yelloweye rockfish in the species' known adult common depth distribution. This action is also consistent with conservation requirements and takes into account the importance of fishery resources to fishing communities. Many coastal communities in California are comprised with non-trawl fishermen who depend on income from fixed gear fisheries. This measure will re-establish access to many important healthy shelf rockfish stocks which will benefit local economies.

⁴ http://www.pcouncil.org/wp-content/uploads/2015/05/D3a_NMFS_Rpt1_SalmonBycatch_JUN2015BB.pdf

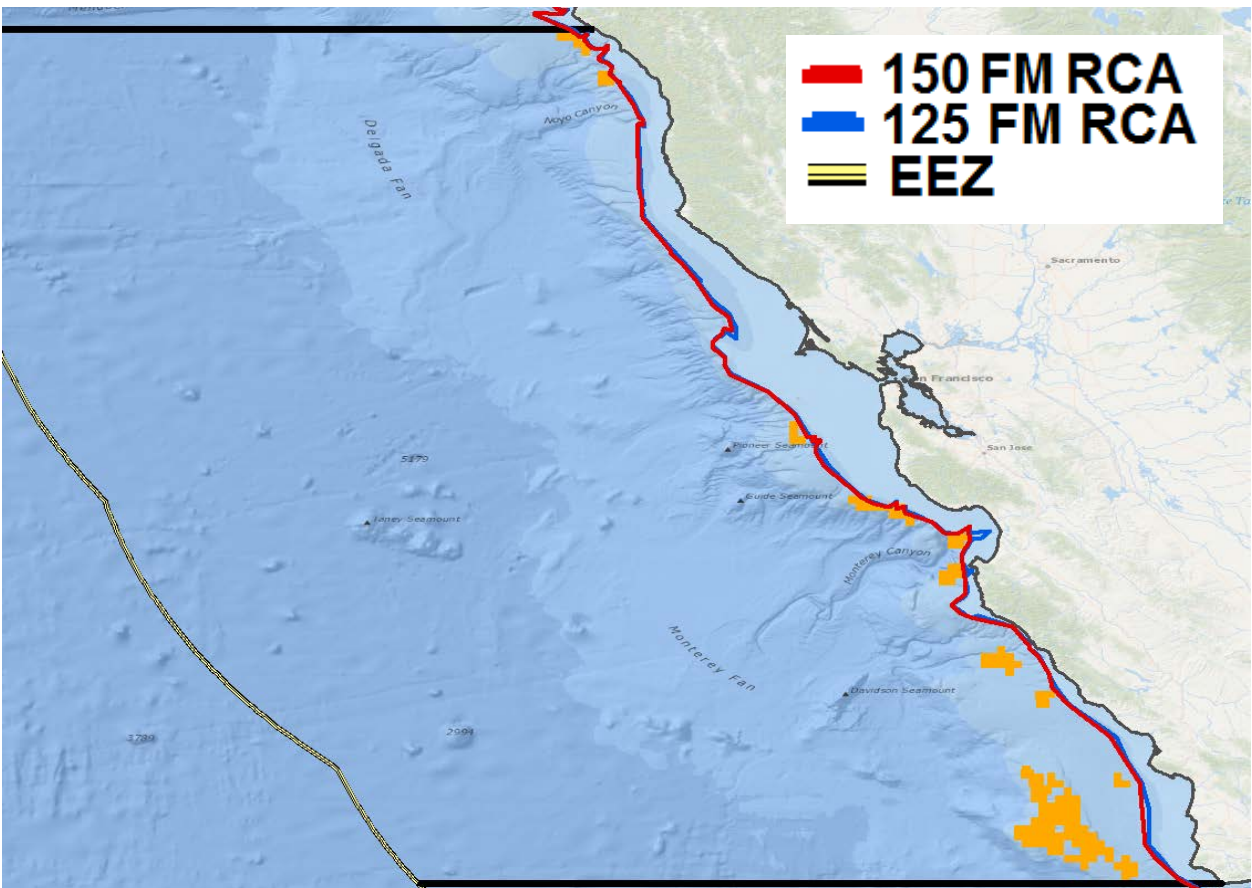


Figure 11. IFQ vessel activity (gear switching sets) between 40°10' N. latitude and 34°27' N. latitude that illustrates that IFQ vessels tend to concentrate fishing effort seaward of the 150 fathom line, even though at this mapping scale it may appear that some fishing took place very close to the 150 fathom line. This is a mapping artifact needed to address confidentiality rules.

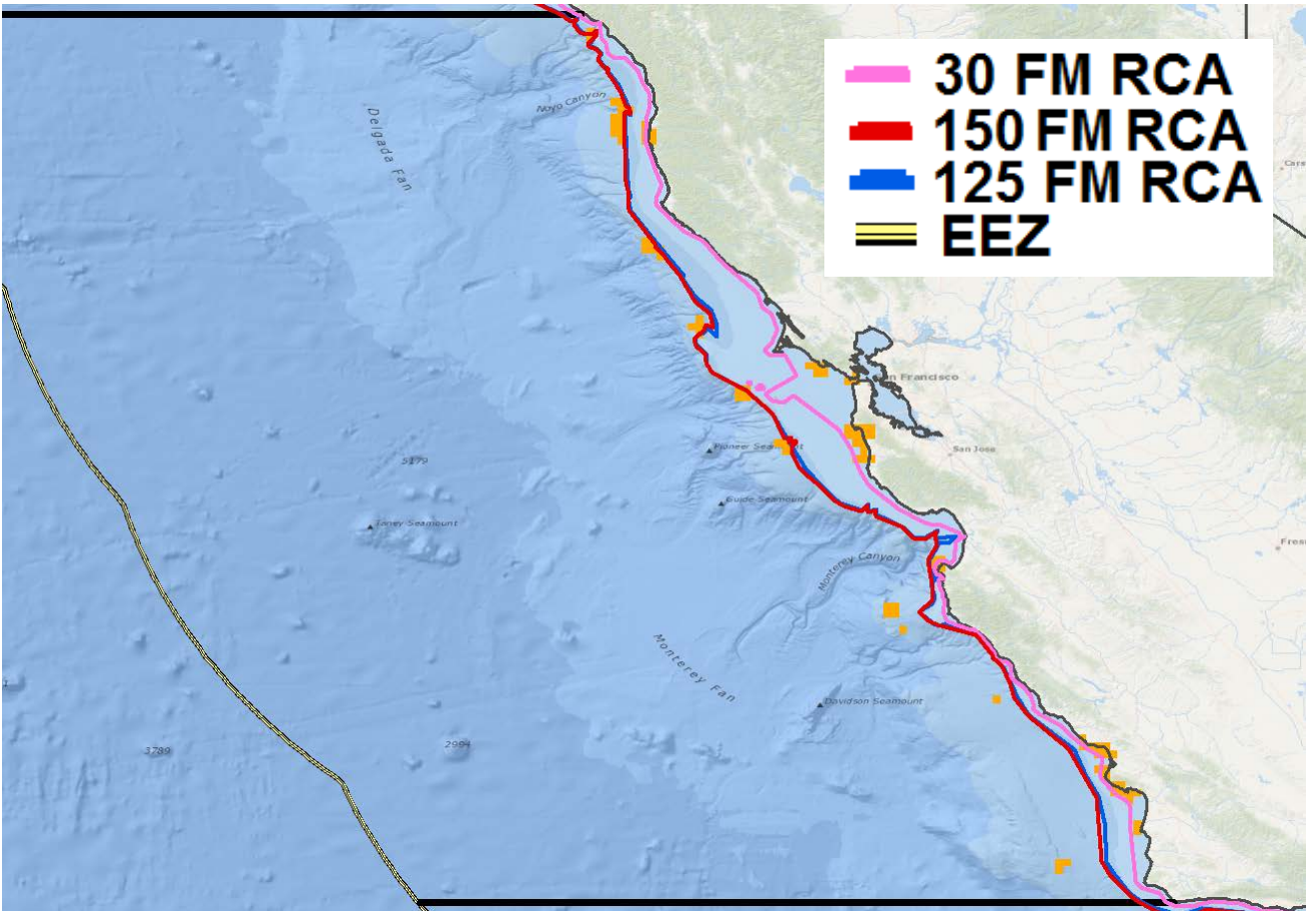


Figure 12. Non-IFQ fixed gear vessel activity between 40°10' N. latitude and 34°27' N. latitude that illustrates a mixed fishing pattern in that some of these vessels fished seaward of the 150 fathom line. At this mapping scale it appears that some fishing took place very close to the 150 fathom line. This is a mapping artifact needed to address confidentially rules.

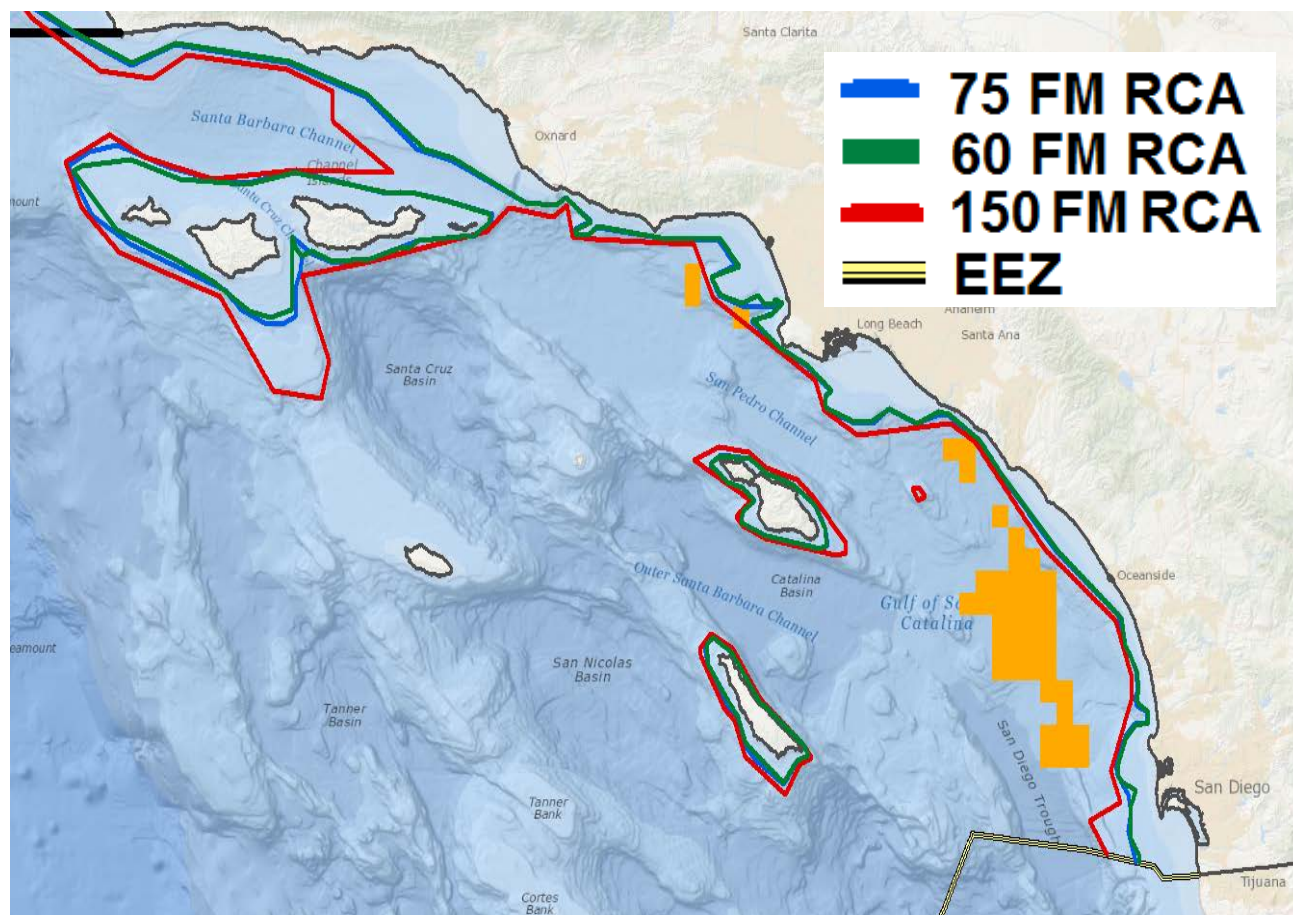


Figure 13. Non-IFQ fixed gear vessel activity south of 34°27' N. latitude that illustrates vessels tend to concentrate fishing effort seaward of the 150 fathom line, even though at this mapping scale it may appear that some fishing took place very close to the 150 fathom line. This is a mapping artifact needed to address confidentially rules.

B.2 New Management Measures

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 is adopted several new management measures under the preliminary preferred alternative for implementation in 2017-2018 (Table 17).

Table 17. New Management Measures under Consideration for Implementation in 2017-2018.

Section	Management Measure	Description	FMP Change	Section
B.2.1	Big Skate FMP Classification	Change classification from EC to “in the fishery”	Yes	0
B.2.3	Oregon Flatfish Fishery	Allow the targeting of flatfish species, other than Pacific halibut, seaward of the seasonal depth restriction	No	B.2.3
B.2.4	New Inseason Process for California	Grant NMFS authority to change routine management measures in the recreational and commercial fisheries based upon attainment or projected attainment of a Federal harvest limit for black rockfish, canary rockfish, and yelloweye rockfish	Yes	0
B.2.5	Overfished Species Hotspot Closures for California Recreational	Establish areas closed to recreational fishing to reduce overfished species bycatch	No	B.2.5
B.2.6	Petrale Sole and Starry Flounder Seasons	Exempt petrale sole from the season and depth restrictions in the California recreational groundfish fishery	No	0

B.2.1 Classification of Big Skate in the Fishery Management Plan

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

This management measure would reclassify big skate from being an ecosystem component (EC) species to “in the fishery” and manage it with species specific management under the Fishery Management Plan (FMP). This measure will only affect big skate. While all fisheries under the preferred alternative would be required to have a sorting requirement for big skate, only the Shorebased Individual Fishing Quota (IFQ) fishery would be affected as it lands the vast majority of big skate and will continue to be managed by trip limits. The geographic scope is coast wide.

- 2. 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 socioeconomic purpose? (e.g., allowing increased opportunity to catch target species? making fishing opportunity among different user groups more equitable?)**

The objective of this management measure is to be able to actively manage big skate within the fishery, as new evidence shows it is being targeted and sold in greater amounts than previously thought (Table 18). When it was classified as an EC species in the 2015-2016 Biennial Specifications process, it was not known that a majority of the unspecified skate (i.e. USKT) was actually big skate. In order for a stock to be classified as an EC species (according to National Standard Guideline 1), (a) they are not be determined to be subject to overfishing, approaching overfished, or overfished; (b) not be likely to become subject to overfishing or overfished, according to the best available information, in the absence of conservation and management measures; and (c) not generally be retained for sale or personal use. As big skate are being targeted and therefore generally retained for sale, it can no longer be considered an EC species. There is no socioeconomic purpose.

- 3. What was considered in order to optimize the performance of this measure?**

Historical targeting of big skate overall and by vessel was used to determine both the trawl and non-trawl allocation as well as the bimonthly trip limits to be used to manage big skate catch within the shorebased IFQ fishery. A historical time period of 2010 to 2014 was used due to the sorting requirement for longnose skate (from the remaining USKT market category) being put into place in 2009. It appeared that there was some lag in sorting in 2009, and therefore the decision was made to only consider 2010 and forward. In order to assess landings of big skate within the USKT market category, observed species compositions from port samplers in Oregon (98 percent) and catch monitors in Washington (95.2 percent) were applied to landings of USKT (and other skate, i.e. OSKT, where applicable) in both states from 2010 to June 1, 2015. At that time, the Council adopted a sorting requirement for big skate and each state created an individual market category (BSK1 for OR and BSKT for WA). However, a big skate market category (BSKT) has existed in California and is assumed to contain all big skate landed and therefore no proportions were applied to the USKT category for California. Tribal landings were determined by using an eight percent species composition, as longnose skate is not required to be sorted individually in tribal landings. Table 18 shows the landings, discard, and total mortality in metric tons for incidental open access (IOA), non-trawl, trawl, and tribal sectors from 2010-2015. Discard mortalities were queries from the West Coast Groundfish Observer Program (WCGOP) Groundfish Estimated Mortality (GEMM) product with 2014 used as a proxy for 2015 (data not available at time of analysis).

Table 18. Historical Mortality of Big Skate by Sector from 2010 to 2015 in mt.

	IOA			Non-Trawl			Trawl			Tribal		
Year	Landings	Discard	Total	Landings	Discard	Total	Landings	Discard	Total	Landings	Discard	Total
2010	3.0	0.0	3.0	16.2	1.6	17.8	173.2	28.8	202.0	3.8	0.1	3.8
2011	5.2	0.6	5.7	9.7	2.7	12.4	236.1	35.9	272.0	5.5	0.1	5.5
2012	1.1	0.1	1.1	3.3	6.7	10.1	227.7	30.6	258.3	12.4	0.0	12.4
2013	3.8	0.0	3.8	6.4	5.1	11.5	123.6	36.5	160.1	10.3	0.0	10.3
2014	2.0	0.0	2.1	8.9	3.3	12.2	354.3	43.8	398.1	9.7	0.0	9.7
2015	3.8	0.0	3.8	3.3	3.3	6.6	276.7	43.8	320.4	16.9	0.0	16.9

4. What was the Council’s decision and how did it arrive at the decision?

The Council’s decision was to bring big skate back into the fishery and manage it with stock-specific harvest specifications. Furthermore, 95 percent trawl and 5 percent non-trawl allocations were recommended, which would allow for historical levels of targeting by the trawl fishery and bycatch allowance for non-trawl while achieving optimum yield. A sorting requirement would be implemented for all sectors, and trip limits will be determined for the shorebased IFQ fishery only, which will continue to be managed inseason. The Council arrived at this decision based on input from the Groundfish Advisory Panel (GAP) and the Groundfish Management Team (GMT) as well as examining the information presented at the November 2015 Council meeting showing the historical landing trends, the Productivity-Susceptibility score of big skate (in comparison to longnose skate), as well as the life history characteristics. The latter two considerations were critical in determining whether to manage big skate with species specific management or to place it in a complex with longnose skate, which would be an indicator species.

5. Is there any other background information that was important to the Council’s decision? As appropriate, summarize Council discussion of this measure, and any conclusions reached, during the biennial process.

Information provided under question 4 contains all relevant background materials.

6. 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? How does any change in catch relate to harvest specifications and the risk that overfishing will occur?

This management measure may only slightly reduce catches of big skate compared to past years (specifically 2014) as catches at that time were unrestricted.

7. 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?

While more formal allocations are to be put into place for trawl and non-trawl fisheries, there will most likely be little to no change in the distribution of catch opportunity. The allocations between sectors were based on historical landings and therefore should adequately cover landings (targeting and bycatch) in the future. Based on preliminary allocations for 2017-2018, trip limits should be similar to those seen in 2016. However, trip limits can be adjusted inseason to allow for additional opportunity or to decrease effort to keep mortality within the ACL. Furthermore, the harvest specifications for big skate are based off a

Category 2 DB-SRA assessment from 2014. If a new assessment were to be done in the future, an increase or decrease in the ACL could result in higher or lower trip limits.

8. **Will this management measure affect catch of nongroundfish 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 nongroundfish stock?**

This management measure is not expected to affect catch of nongroundfish species as fishing for big skate is already occurring and no significant change in distribution is expected.

9. **Will this management measure change fishing activity so as to adversely affect to essential fish habitat compared to current or baseline 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 have any adverse effects on EFH compared to current/baseline impacts. Fishing for big skate is already occurring and distribution of fishing is not expected to shift.

10. **Will this management measure result in 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 have effects on ESA-listed species and/or non-listed marine mammals and seabirds. Fishing for big skate is already occurring and distribution is not expected to change, and currently there are little to no impacts. Furthermore, the majority of fishing occurs within the IFQ fleet that is under 100 percent observer coverage which would provide any evidence of increases in encounters with ESA-listed species or non-listed mammals or seabirds.

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

NS1- This measure is consistent with NS1 as it provides the trawl fishery (specifically those vessels in the shorebased IFQ) access to recent historical landing amounts and the non-trawl fishery a bycatch allowance therefore promoting the attainment of optimum yield.

NS2- The re-designation of big skate from an EC species to “in the fishery” and managing with species-specific harvest specifications is based on the recent, and therefore best, scientific information available. In the previous biennial specifications cycle, the best information available was that big skate was a non-target species and there were no conservation concerns which resulted in its classification as an EC species. However, with the new evidence in 2015 that the USKT category actually contained a majority of big skate, new conservation and management measures needed to be put into place to manage it in the fishery to prevent any overharvesting or other conservation concern while allowing for sufficient take.

NS3- Big skate will be managed coast wide as a single stock, as opposed to being managed within a complex with longnose skate. Due to differences in life history, location, and PSA scores, the Council concluded that it would be more effective to manage as a single species. Furthermore, there are no known differences in stock populations along the coast which supports a coast wide management strategy.

NS9- By managing big skate as a single species and providing allocations and trip limits that allow for historical levels of targeting or bycatch, this management measure is consistent with NS9 as it allows for the bycatch mortality to be minimized since fishermen will most likely not have to discard big skate in any amounts significantly greater than recent history.

B.2.3 Oregon Recreational Flatfish Fishery

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

This management measure would allow the targeting of flatfish species, other than Pacific halibut, seaward of the 40 fathom seasonal depth restriction in the Oregon recreational groundfish fishery. This measure has been included in previous EIS, however, has not been implemented as it has been intended to primarily be an alternative opportunity should the main recreational groundfish fishery. The previous analysis, or lack thereof, has been deemed inadequate for continued use, therefore, it is included as a new management measure in this cycle. The primary stocks that will be affected by this management measure are species of flatfish, other than Pacific halibut, such as species in the Other Flatfish Complex such as Pacific sanddab, sand sole, and butter sole; English sole; and petrale sole. On angler trips with flatfish landed (less than 200) between 2009 and 2015 there were a total of 417 flatfish landed. Of those landed fish, 68 percent were Pacific sanddab, 18 percent were reported to be petrale sole, and six percent sand sole.

Impacts to overfished species, primarily yelloweye rockfish, and ESA listed species (such as Chinook salmon) are anticipated to be minimal. This management measure will affect the Oregon recreational groundfish fishery. The geographic scope of this management measure is waters seaward of the 40-fathom management line (as defined by waypoints) between 42° 00' N lat. (the Oregon/California border) and 46° 16' N lat. (the Oregon/Washington border).

2. 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 socioeconomic purpose? (e.g., allowing increased opportunity to catch target species? making fishing opportunity among different user groups more equitable?)

The objective of this management measure is to allow access to underutilized flatfish species (Table 19). The mortality of species within the Other Flatfish Complex has been approximately 1,000 mt out of a 4,884 mt annual ACL, leaving approximately 3,900 mt (80 percent) of the ACL unharvested. English sole has had approximately five percent ACL attainment in recent years. Petrale sole annually has over 90 percent ACL attainment; however the non-trawl allocation averages less than ten percent attainment. The annual unused non-trawl allocation is approximately 30 mt. Allowing targeting of flatfish species, other than Pacific halibut, would allow additional opportunities to access these underutilized species, and should not negatively impact any other sectors or user groups.

Additionally, this could provide some alternative angling opportunities should further restrictions, or closure, be necessary to the primary Oregon recreational groundfish fishery during the seasonal depth restrictions or during years of poor salmon abundance. This additional opportunity could also alleviate some pressure on more nearshore reef-associated species.

Table 19. Annual limits, mortality, and percent attainment of limits for the Other Fish Complex, English sole, and petrale sole, 2011-2014.

Year	Species	Other Flatfish Complex ^a	English sole	Petrale sole
2014	ACL (mt)	4,884.0	5,646.0	2,652.0
	Total Mortality (mt)	1,106.0	306.0	2,439.0
	Difference (mt)	3,778.0	5,340.0	213.0
	% ACL attainment	22.6%	5.4%	92.0%
	Non-trawl allocation (mt)			35
	non-trawl mortality (mt)			1.59
	Difference (mt)			33.41
	% non-trawl attainment			4.5%
2013	ACL (mt)	4,884.0	6,815.0	2,592.0
	Total Mortality (mt)	1,080.0	357.0	2,265.0
	Difference (mt)	3,804.0	6,458.0	327.0
	% ACL attainment	22.1%	5.2%	87.4%
	Non-trawl allocation (mt)			35
	non-trawl mortality (mt)			3.2
	Difference (mt)			31.8
	% non-trawl attainment			9.0%
2012	ACL (mt)	4,884.0	10,150.0	1,160.0
	Total Mortality (mt)	897.0	224.0	1,111.0
	Difference (mt)	3,987.0	9,926.0	49.0
	% ACL attainment	18.4%	2.2%	95.8%
	Non-trawl allocation (mt)			35
	non-trawl mortality (mt)			1.72
	Difference (mt)			33.28
	% non-trawl attainment			4.9%
2011	ACL (mt)	4,884.0	19,761.0	976.0
	Total Mortality (mt)	921.0	205.0	953.0
	Difference (mt)	3,963.0	19,556.0	23.0
	% ACL attainment	18.9%	1.0%	97.6%
	Non-trawl allocation (mt)			35
	non-trawl mortality (mt)			1.29
	Difference (mt)			33.71
	% non-trawl attainment			3.7%

^a includes Pacific sanddab, butter sole, and sand sole, among others

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

The species that will likely be targeted and encountered, their annual mortality, impacts to overfished species, and impacts to other sectors were considered in order to optimize the performance of this measure. Due to the preferred habitat of most species of flatfish (soft sandy or muddy bottom), encounters with overfished rockfish species should be minimal. However, gear restrictions, such as small hook size (Figure 14), could be added via state regulations, in order to further reduce the potential for impacts.

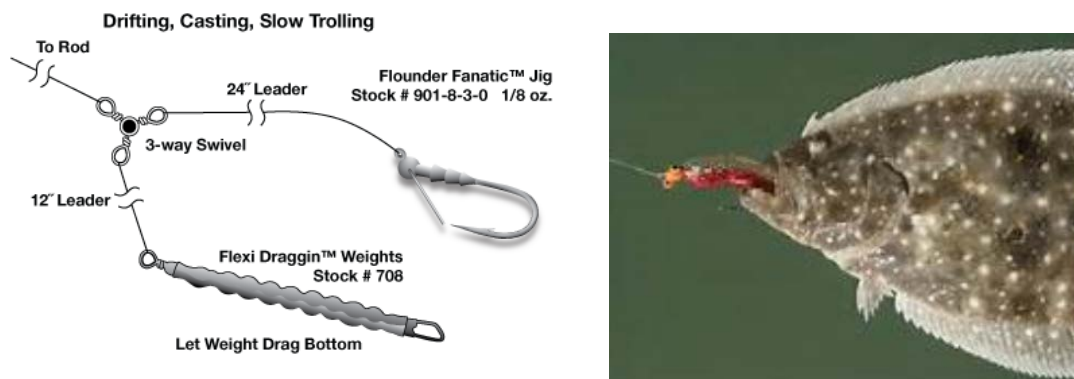


Figure 14. Terminal tackle that is often used to target flatfish species. Designed to drag small hooks on sandy bottom, away from rocks.

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

Every cycle since 2007, the Council has approved this management measure as part of the biennial harvest specifications process. By including more detailed analysis as part of new management measures this cycle, it is hoped that this will not need to be reanalyzed and reconsidered each cycle. It is believed that this management measure would allow additional opportunity to harvest underutilized flatfish species, with low potential for impacts to overfished rockfish species. Additionally, ODFW has indicated that this management measure will not be automatically implemented, rather it will be used if need arises, such as needing to close the main groundfish fishery.

5. Is there any other background information that was important to the Council's decision? As appropriate, summarize Council discussion of this measure, and any conclusions reached, during the biennial process.

There has not been much Council discussion of this management measure, as it was believed to have been available since 2007. Section 2.2.4.2 Alternative 2009-10 Management Measure Alternatives in Chapter 2 of the [2009-2010 FEIS](#), the Oregon recreational fishery section which begins on page 122 states:

“... Also, fishing for, take, retention and possession of sanddabs and “other flatfishes”, excluding Pacific halibut would be legal year round and open shoreward of 40 fathoms during any period the groundfish fishery has any depth restrictions. The flatfish fishery would not have any depth restrictions when the groundfish fishery has no depth restrictions (i.e. 40, 30, 25, and 20 fm lines)”

Section 4.5.1.8. in Chapter 4 of the same FEIS contains the information on the modeling and the model outputs for the Oregon recreational fishery, however there is no information on projected impacts to flatfish species or overfished species from allowing the flatfish fishery at all depths year round.

The same information that is contained in the 2009-2010 FEIS is in subsequent FEIS, with no additional information.

6. 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? How does any change in catch relate to harvest specifications and the risk that overfishing will occur?

This management measure would change catch of some flatfish species, likely the Other Flatfish Complex which includes Pacific sanddab, butter sole, and sand sole; English sole; and petrale sole. As shown in Table 19, annual mortality of the Other Flatfish Complex is approximately 20 percent of the ACL and English sole is approximately five percent of its ACL. The Other Flatfish Complex annually leaves approximately 3,900 mt unharvested, English sole over 5,000 mt. Increased mortality from this management measure would be a small percentage of what is currently being unharvested, therefore there is little to no chance of exceeding the ACL, and the risk of overfishing from this management measure is nominal.

Petrable sole annual attainment is approximately 90 percent of the ACL. The majority of the mortality comes from the trawl fisheries. The non-trawl fisheries have been allocated 35 mt in recent years. The annual mortality for all non-trawl sectors has been approximately two mt, just over five percent of the non-trawl allocation. While there isn't the magnitude of unharvested allocation as there is for the Other Flatfish Complex, there does still appear to be the opportunity for additional impacts without exceeding either the non-trawl allocation or the ACL. The risk of overfishing from this management measure alone is minimal.

7. 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 allow some additional opportunity for the Oregon recreational groundfish fishery. Between 2009 and 2015 there were fewer than 200 angler trips with flatfish landings combined. Annual total groundfish angler trips average over 70,000. Figure 15 shows the percentage of those trips from the Oregon recreational groundfish fishery that landed flatfish and the number of flatfish landed per day. The current daily bag limit for flatfish species, other than Pacific halibut, is 25 per angler per day; however over 70 percent (138 out of 195) of groundfish trips that had flatfish landed had only one fish. Less than five percent of trips reported landing more than ten flatfish.

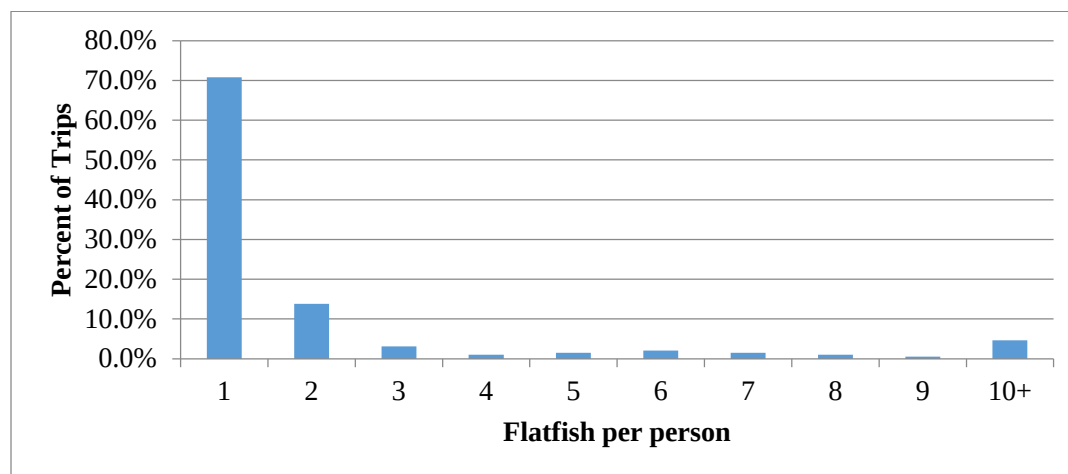


Figure 15. Percent of angler trips with number of flatfish landed per person.

Given the underutilization of the flatfish species and the impacts to flatfish under current regulations, this management measure is not anticipated to impact any other user groups or area's opportunity to harvest any of the species involved.

- 8. 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 anticipated to affect catch of nongroundfish species. The area/habitat that would likely be fished as well as the likely gear used to target these species (Figure 14) will limit the impacts to other nongroundfish species. Most species of flatfish live on soft sandy, muddy, or gravel substrates, where there is limited number of nongroundfish species. Additionally, the anticipated gear (small hooks fished benthically) is intended to attract species with small mouths that feed benthically, thereby avoiding most nongroundfish species. Activities under this management measure would be monitored via the current Oregon Ocean Recreational Boat Sampling program which provides monthly estimates of catch. Catches would be tracked along with other groundfish species.

- 9. Will this management measure change fishing activity so as to adversely affect to essential fish habitat compared to current or baseline 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 will not change fishing activity so as to adversely affect essential fish habitat. Targeting of these species in this area is currently allowed part of the year. Additionally, the habitat most species of flatfish inhabit is soft sandy or muddy bottom, which is currently not designated as EFH for groundfish species. The anticipated gear used will be lightweight recreational fishing gear, no heavy weights or lines impacting the substrate.

- 10. Will this management measure result in 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 anticipated to have minimal effects to ESA-listed species and/or non-listed marine mammals and seabirds. The current Oregon recreational groundfish fishery has no reported take of marine mammals or seabirds. There may be some encounters with ESA-listed salmon species; however the magnitude of such encounters is anticipated to be similar to the current Oregon recreational groundfish fishery. Current state of Oregon regulations prohibit retention of salmon species from groundfish gear, barbless hooks are required. Most flatfish species have small mouths; therefore the likely gear anglers will use to target flatfish species (Figure 14) will have small hooks which should further limit the potential for impacting ESA-listed species.

- 11. Describe how the management measure is consistent with the 10 MSA National Standards.**

This management measure is consistent with MSA National Standards 1 and 8. This management measure is consistent with National Standard 1 in that it allows additional opportunity to attain more the optimal yield several underutilized flatfish species. Additionally, this management measure has very little chance of causing any of the impacted species to become overfished, or for overfishing to occur. This management measure is consistent with National Standard 8 in that it takes into account the importance of fishery

resources to Oregon fishing communities. This management measure benefits Oregon fishing communities by providing alternative fishing opportunities should the main recreational groundfish fishery close or be further restricted. It would help reduce lost angler trips, and associated expenditures, by offering alternative opportunities. Additionally, this management measure may provide for additional opportunity to harvest underutilized species. It may also provide a relief valve of sorts, provides additional fishing opportunities, in poor salmon years.

B.2.4 New Inseason Process for California Recreational and Commercial

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

This management measure would grant NMFS authority to make routine inseason adjustments to restrict recreational and commercial fisheries in California outside of a Council meeting in a manner to remain within allowable limits, based upon attainment or projected attainment of a federal harvest limit (i.e., ACL, HG) for certain species - black rockfish, canary rockfish, and yelloweye rockfish.

In the recreational fishery, canary and yelloweye rockfishes are managed with state-specific Federal HGs. Any actions implemented based on attainment or projected attainment of these HGs would apply to the recreational fishery. Black rockfish is currently managed under a statewide ACL, which is shared between the commercial and recreational fisheries (i.e., there are no sector-specific HGs). Therefore, inseason action would be triggered based on attainment or projected attainment of the statewide black rockfish ACL and could apply to the recreational and/or commercial fisheries. Attainment or projected attainment of specified harvest limits will be based upon inseason monitoring and tracking employed by CDFW (further explained in #3 and Appendix A).

In this new inseason process CDFW will continue to track mortality inseason and consult with NMFS and Council staff on the progress of fisheries, including how catches of black rockfish, canary rockfish, and yelloweye rockfish are tracking, in California. The first consultation will occur after the June Council meeting. If CDFW projections indicate mortality of an aforementioned species is approaching a specified harvest limit, more frequent consultations could occur.

Once a specified harvest limit is projected to be attained or is attained, CDFW will consider the suite of routine actions which are best suited to keep mortality within allowable limits; these may include reductions to trip limits, bag limits, allowable depth, area closures, fishery closure and the affected sector(s), which may vary by management area. Through consultation with NMFS and Council staff, CDFW will provide recommendations to NMFS of the action(s) to be taken.

Although the exact notification process has yet to be determined, it could be somewhat similar to the current process of noticing changes to groundfish regulations. NMFS publishes changes in the Federal Register, in public notices posted on the West Coast Region's website, on CDFW's Groundfish Central Website⁵ and Recreational Groundfish Hotline⁶, and via CDFW news release.

While the process of taking inseason action outside of a Council meeting is new to groundfish fisheries in California, it should be noted that a similar process is utilized in management of the salmon⁷ and Pacific halibut⁸ fisheries. The processes of inseason action in those fisheries are outlined in Section 10.2 of the salmon [FMP](#) and in the Pacific halibut [Catch Share Plan](#).

The stocks that will trigger action to be taken are black rockfish, canary rockfish, and yelloweye rockfish; however, the resulting inseason action may affect other species. Actions could be species specific, area specific, or fishery specific. This management measure will affect the recreational and nearshore groundfish fisheries in California. The geographic scope of this management measure is from 42° N lat. (the Oregon/California border) to the U.S./Mexico Border.

⁵ <https://www.wildlife.ca.gov/Conservation/Marine/Groundfish>

⁶ (831) 649-2801

⁷ 50 CFR 660.409

⁸ 50 CFR 300.63⁹ http://www.pcouncil.org/wp-content/uploads/GF15_16_SpexFEISJanuary2015.pdf

Additionally, CDFW has indicated that this management measure will be used if need arises, but the intent is to utilize the regular Council inseason process whenever possible. It should also be noted that CDFW attempts to design recreational and commercial regulations to minimize the need for inseason action to the extent practicable. For example, had this new inseason process been in place since 2008, it likely may have only been used twice.

2. 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 socioeconomic purpose? (e.g., allowing increased opportunity to catch target species? making fishing opportunity among different user groups more equitable?)

The objective of this management measure is to allow NMFS to take inseason action outside a regularly scheduled Council meeting, if needed, to address management concerns and keep catches within allowable limits. This management measure will also allow for more timely management actions to be taken so that mortality can be kept within allowable limits, while providing some flexibility to reduce the likelihood of more draconian actions (e.g. fishery closure) which can adversely affect stakeholders and coastal communities.

The scope and magnitude of options available to address management issues is highly dependent on the amount of time between when an issue is identified and when corrective action(s) can be implemented. The summer months tend to be the busiest times for both the commercial and recreational fisheries in California and mortality tends to accumulate more quickly during these times. Unfortunately, after the June meeting, the Council doesn't normally hold a meeting until September, which can leave up to three months until a corrective action can be taken. Because mortality will be allowed to accrue during this time, overages tend to be of a higher magnitude requiring more severe corrective actions (e.g., closing a fishery). Allowing NMFS to take inseason action outside a Council meeting can reduce the severity of management actions and reduce negative economic impacts to the fleets and to the coastal communities which depend on the revenues generated from these fisheries.

If any allowable limits are projected to be attained inseason, action can be taken through state processes to slow and/or reduce catches in state waters (0-3 miles). CDFW can take action for groundfish fisheries utilizing a 10-day public notice period. This process was used in 2014 to close both the recreational and commercial California scorpionfish fisheries due to a projected overage of the ACL. Emergency action can also be taken through the California Fish and Game Commission; however this process cannot be implemented as quickly as the Federal process, and is effective for 180 days only, which depending on the timing, may require multiple actions to address management needs. While state regulations (Title 14, Section 189) allow for commercial regulations to become effective in state waters once published in the Federal Register; the same conformance provisions are not available for the recreational fishery.

For commercial fisheries and recreational fisheries in federal waters, Federal action can only be taken by NMFS through the Council process. For 2017-2018, CDFW is contemplating allowing access to deeper depths in the recreational fishery, with many of those areas in federal waters. As a result any action taken through the state process may not adequately address the management concern. Also, if action were taken through either state process, state and Federal regulation would be incongruent; however CDFW is able to utilize the 10-day notice to conform to Federal regulations.

To help illustrate the differences between the new management measure and the current process, two hypothetical examples are provided for the commercial and recreational fisheries. The only difference between the two is the timing of when an action impacting fisheries could occur (i.e., only at Council meetings versus outside Council meetings).

Example #1 - Commercial

On July 6, CDFW receives data showing that commercial landings of black rockfish are tracking 75% higher than expected. Based on previous years' catch trends and weather forecasts CDFW projects the attainment of the commercial sector allotment by Sept 1. The recreational fishery is tracking as projected; the ACL is projected to be exceeded unless action is taken to slow commercial catches. The next Council meeting is not until mid-September and any inseason changes will not likely go into effect until October 1 at the earliest. In this example there is a three month time lag between when a need for management action is identified and when corrective action can be implemented. Because mortality will still accrue between July and October - more drastic action, including fishery closures, may be needed to keep mortality within the ACL.

Example #2 - Recreational

CDFW increased recreational fishing opportunities by allowing for an all depth fishery in some recreational management areas and implemented deeper depth restrictions in other areas. On August 1, CDFW determines that yelloweye rockfish encounters are higher than anticipated and the HG is projected to be exceeded unless action is taken to slow catches. CDFW announces that it will modify depth restrictions for all recreational groundfish species in state waters for those management areas to reduce yelloweye encounters utilizing a 10-day public notice period. This would result in closure of the recreational fishery in most management areas. CDFW must wait until the upcoming September Council meeting to request conforming action in federal waters and then it will still take time for NMFS to implement Council recommendations. Until federal regulations are effective, fishing would still be allowed in deeper depths increasing the potential for additional encounters with yelloweye rockfish. This will result in a mismatch in state and federal regulations, increase angler confusion, and allow for mortality in excess of allowable limits.

If this new inseason process were adopted, CDFW could consult with NMFS and Council staff outside a Council meeting to recommend management actions and coordinate implementation dates so that state and federal regulations are effective concurrently. This would reduce angler confusion by having regulations implemented at the same time, prevent excess mortality from accruing by implementing changes in a timely manner, reduce the likelihood of exceeding allowable limits and avoid unnecessary draconian actions from needing to be implemented.

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

Currently inseason modifications to groundfish fisheries are recommended by the Council to NMFS which are subsequently implemented as Federal fishing regulations by NMFS. Because Council recommendations can only be made at Council meetings, there may be a lag of weeks or even months between when a fishery management issue is identified inseason and when NMFS is able to implement changes to the fishery. While the Council has the ability to schedule an emergency meeting, these are disruptive, extremely rare, and may not be a viable alternative. This new inseason process would be similar to that of the current inseason process, but would allow action to be taken outside of a Council meeting. The performance of the inseason process relies, in part, upon the reliability of the data inform the action.

Currently, CDFW tracks its groundfish species on a weekly and/or monthly basis to ensure that mortality remains within allowable limits, though data availability varies by species. CDFW closely monitors encounters of yelloweye rockfish – performing weekly and monthly tracking using preliminary California Recreational Fisheries Survey (CRFS) field reports⁹. These preliminary CRFS reports are converted into

⁹ http://www.pcouncil.org/wp-content/uploads/GF15_16_SpexFEISJanuary2015.pdf

an anticipated catch value (ACV) in metric tons using catch and effort data from previous years. This weekly "proxy" value is then used to approximate catch during the five to eight week lag time between when data are collected and when CRFS catch estimates become available. Weekly ACVs are used in catch tracking and are replaced with CRFS estimates when they become available. To date ACVs have proven to be an effective and reliable tool to closely monitor recreational yelloweye rockfish mortality inseason on a weekly basis.

Tracking of black rockfish has historically been done on a monthly basis. Starting in 2015, proxy data from the commercial fishery are available on a weekly basis and comparisons of this proxy data with PacFIN data (once available) indicate these proxies are extremely robust. In the recreational fishery black rockfish is currently tracked monthly. The majority of black rockfish catches occur in the Northern Management Area (56 percent) and the San Francisco Management Area (23 percent); given that black rockfish mortality primarily occurs in two discrete areas of the state, CDFW will continue to investigate methods that allow for more frequent tracking to reduce the month data lag.

For canary rockfish, recreational data are available monthly, however, similar to black rockfish, it may be possible investigate methods to allow for more timely monitoring. Currently, canary rockfish cannot be retained and all fish encountered must be discarded. The majority of canary rockfish encounters occur in the San Francisco Management Area (52 percent) and the Central Management Area (39 percent). Allowing retention of canary rockfish is being contemplated for 2017-18 and should retention be permitted there is uncertainty in angler behavior. Unless angler behavior changes significantly, these management areas are expected to account for the majority of canary rockfish encounters.

While black and canary rockfishes tend to be encountered at a much higher frequency than yelloweye rockfish - thousands of fish per week as opposed to tens of fish - focusing on management areas where the majority of encounters occur may allow for a more manageable data stream. CDFW will continue to explore available possibilities to reduce data lags, where feasible.

Performance of inseason action also relies upon effectiveness of notification. As noted above, the exact process of notifying the public of changes to groundfish regulations via this new inseason process has yet to be determined. As discussed previously, this process could be similar to those currently utilized for groundfish, salmon and Pacific halibut fisheries, which have worked well to date. Further, CDFW intends to utilize the department's notification process, which includes issuing news releases, website updates and the up-to-date 24 hour groundfish hotline.

Lastly, performance of an inseason action is largely based upon the expected outcome of the action being taken. For this management measure, only restrictive actions will be taken to reduce and or stop mortality from accruing. Such actions would include reductions to trip or bag limits, allowable depths, time/area closures, prohibiting retention and fishery closure which may vary by management area. All of these methods have been previously analyzed, implemented, and proven to be effective.

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

This action would provide more flexibility in managing groundfish fisheries in California. Currently, inseason action in Federal waters can only be taken within the Council process. If the need for inseason action arises outside a Council meeting more drastic measures may be needed, which may adversely impact California fisheries. Additionally, CDFW has indicated that this management measure will be used if need arises, but the intent is to utilize the regular Council inseason process whenever possible.

5. Is there any other background information that was important to the Council's decision? As appropriate, summarize Council discussion of this measure, and any conclusions reached, during the biennial process.

As noted previously, NMFS currently has authority to take inseason action to modify the salmon and Pacific halibut fisheries outside of a Council meeting. The use of such inseason action and tracking has been effective in California fisheries. For example, in the 2015 California recreational Pacific halibut fishery the use of inseason tracking, consultation and inseason action provided as much opportunity as possible while staying within allowable limits.¹⁰

For 2017 and 2018, CDFW is exploring providing additional opportunities for recreational fisheries in some areas by extending season lengths, providing access to deeper waters and allowing limited retention of canary rockfish. CDFW is also exploring changes to commercial black rockfish trip limits in northern California. CDFW notes that there is some uncertainty in predicting mortality to both overfished and non-overfished species but the proposed range of options are expected to keep mortality within allowable limits.

If management action is needed to slow catches in either the recreational or commercial fishery to prevent exceeding an HG or ACL it could take months for management actions to become effective from the time the need for such a change is identified. Depending upon the affected fishery and the required action, this could create a mismatch in state and federal regulations, increase angler confusion, and/or allow for harvests in excess of allowable limits. These trigger species are the primary drivers that constrain fishing opportunities in California, therefore it is important to have an expeditious process that allows for action to be taken, if needed outside a Council meeting, preventing additional mortality from accruing if a harvest limit is attained or projected to be attained.

6. 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? How does any change in catch relate to harvest specifications and the risk that overfishing will occur?

Simply designating NMFS authority to take inseason actions for groundfish fisheries in California based on attainment or projected attainment of harvest limits for select species to facilitate timely response to management needs, in and of itself, will not change catches. If a harvest limit is attained or projected to be attained then this measure is designed purposefully to reduce catches to keep within allowable limits.

7. 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 have a neutral to positive change on the distribution of catch opportunities among user groups, fishing communities or regions. The scope and severity of options available to address management issues is highly dependent on the amount of time between when an issue is identified and when corrective action can be implemented. Under the proposed measure if corrective actions are needed, NMFS has more options to address the issue (i.e., reduce bag/trip limits in lieu of closing a fishery) and can implement them more quickly - which would have less impact to the fleets and the coastal communities. Otherwise more severe corrective actions (e.g., closing a fishery) causing greater economic impacts will occur to the fleets and to the coastal communities which depend on the revenues generated from these fisheries.

¹⁰ Final catch estimates indicate that 99 percent of the California recreational Pacific halibut quota was attained.

- 8. 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 anticipated to affect catch of non-groundfish species since it is solely proposed to reduce catch and not increase opportunities.

- 9. Will this management measure change fishing activity so as to adversely affect to essential fish habitat compared to current or baseline 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 will not change fishing activity so as to adversely affect essential fish habitat since it is solely proposed to reduce catch and not increase opportunities.

- 10. Will this management measure result in 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 change encounter rates with marine mammals, seabirds or ESA-listed species from that of the current fishery. Currently impacts to marine mammals, seabirds and ESA-listed species are minimal. There have been no reported impacts to marine mammals, seabirds and ESA-listed species in the recreational groundfish fishery, while impacts in the commercial fishery are observed and accounted for.

- 11. Describe how the management measure is consistent with the 10 MSA National Standards.**

This management measure is consistent with MSA National Standards 1, and 5. This management measure is consistent with National Standard 1 in that it prevents overfishing by allowing for timely response to management issues.

This management measure is consistent with National Standard 5. Because NMFS will have the authority to respond to management measures more quickly, the need to take more drastic measures (i.e., shutting down a fishery) may decrease, which will then allow for increased efficiency in the utilization of fishery resources which is consistent with National Standard 5.

This management measure is also consistent with National Standard 6 in that accounts for variations in catch and creates contingencies in the management of fishery resources while staying within allowable limits.

B.2.5 Overfished Species Hotspot Closures in California

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

This management measure would create overfished species hotspot closures to reduce encounters with overfished species. For analytical and discussion purposes multiple areas are proposed in the general areas

of Delgada Canyon, Ten Mile, Point Cabrillo, Navarro River, Farallon Islands, Deep Reef, Monterey Canyon and Pt. Sur (Figure 16, Attachment A). The proposed closures are located between 42° N lat and 34°27' N lat. No closures were identified south of 34°27' N lat. as the Cowcod Conservation Areas address conservation needs in this area. These closures would be similar to the Yelloweye Rockfish Conservation Areas (YRCAs) which have been available in regulation since 2009, however have not been utilized to date (see Title 50 CFR §660.230, §660.330, §660.360). The overfished species closures would be available for use similar to the YRCAs and once put into effect, groundfish fishing within the closures would be prohibited. Similarly, the closures could be used as needed (i.e., preseason or inseason) and could specify the sector or sectors to which they would be applicable. Fishing for Pacific halibut would not be prohibited in the proposed closures, though retention of any groundfish encountered while fishing for Pacific halibut would be prohibited; anglers would have to discard any groundfish they encounter while fishing for other targets in these closure areas.

Maps and descriptions of the proposed closures can be found in Attachment A; while coordinates and the area of the closures can be in Attachment B.

2. 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 socioeconomic purpose? (e.g., allowing increased opportunity to catch target species? making fishing opportunity among different user groups more equitable?)

This management measure is being considered to reduce the risk of additional encounters with overfished species, which may help minimize the risk of exceeding allowable limits of overfished species particularly if access to deeper depths is permitted. While implementing overfished species hotspot closures may have some localized impacts, they will be far outweighed by the additional benefits gained by allowing access to deeper depths.

For the 2017-2018 biennial cycle, increased allowable depth is being contemplated for the recreational fishery in areas and depths in which yelloweye rockfish and cowcod are likely to be encountered. While modifications to the allowable depth for the non-trawl commercial sector are also being considered, these are in areas and depths where yelloweye rockfish and cowcod are less likely to be encountered. As a result, for this biennium, if increased depth is recommended for the recreational fishery, these overfished species hotspot closures would help to mitigate yelloweye rockfish and cowcod mortality resulting from increased access to deeper depths.

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

Fishermen's expertise, anecdotal information, and visual survey data¹¹ were used to identify areas of known high bycatch for yelloweye rockfish and cowcod north of Point Conception. Input on potential areas for closure was gathered through CDFW-sponsored workshops held over the winter. The public was asked to identify those areas which are known hotspots for yelloweye rockfish and cowcod and which could provide savings if closed (i.e., areas where they had encountered more than just one or two fish). When available, visual survey data were used to verify the areas identified by the public.

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

For 2017-2018, CDFW is considering deeper depth restrictions for the recreational fishery for areas north of Point Conception (34°27' N. lat.). While the range of alternatives being considered is projected to remain within allowable limits, CDFW is evaluating additional overfished species hotspot closures which could be

¹¹ Visual survey data is used by permission from The Nature Conservancy – http://www.pcouncil.org/wp-content/uploads/2015/09/B1b_SUP_OPC2_TNC_EFP_SEPT2015BB.pdf

implemented in order to minimize risk of increased encounters with overfished species in deeper depths and prevent disruptions to the recreational fishery.

5. **Is there any other background information that was important to the Council's decision? As appropriate, summarize Council discussion of this measure, and any conclusions reached, during the biennial process.**

In the early 2000's area closures (i.e., Rockfish Conservation Areas (RCAs), and Cowcod Conservation Area) were implemented to protect overfished species and facilitate rebuilding back to healthy levels. These area closures have been successful at reducing encounters with overfished species. In 2008, Yelloweye Rockfish Conservation Areas (YRCAs) were also analyzed and adopted as part of the 2009-2010 biennial specifications ([2009-2010 FEIS](#)) for use in California. The four YRCAs are in the general areas of Point St. George, South Reef, Reading Rock, and Point Delgada and the waypoints are currently defined in federal regulation at §660.70, subpart C. These YRCAs were adopted for inseason use, if needed, for both the recreational and commercial fisheries.

6. **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? How does any change in catch relate to harvest specifications and the risk that overfishing will occur?**

This management measure, in and of itself, is not expected to appreciably change the catch of groundfish stocks. Currently anglers actively avoid, or try to minimize, encounters with overfished species. While some encounters with overfished specie are expected, this measure would help to mitigate potential increased encounters due to changes in the RCA configuration which allow greater access to deeper depths, by prohibiting groundfish fishing in areas of know or likely to contain high abundance of overfished species.

7. **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 is not expected to shift catch opportunity among user groups or regions of the state. Area closures are being investigated for all recreational management areas north of Point Conception and anglers are not expected to shift effort from one management area to another simply based on this management measure. Commercial fisheries would not be adversely affected because the closures would only apply to the recreational fishery.

8. **Will this management measure affect catch of nongroundfish 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 nongroundfish stock?**

The most common nongroundfish stocks encountered in the groundfish fishery are California sheephead and ocean whitefish, both of which predominately occur south of Point Conception. Since no changes are being proposed in this area, this management measure is not expected to impact nongroundfish stocks. The California Recreational Fishery Survey (CRFS) will continue to sample all recreational fisheries and provide data on a one month lag. CRFS records information on all species encountered while recreationally fishing and encounters with non-groundfish species while targeting groundfish is minimal.

9. **Will this management measure change fishing activity so as to adversely affect to essential fish habitat compared to current or baseline 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 change fishing activity so as to adversely affect EFH. The areas of the proposed closures do not contain designated EFH closures, nor are the EFH areas designated within reasonable proximity, as well as the lack of any bottom contact EFH closures. Further, this management measure would only affect fixed gear fisheries which are known to have minimal impacts to EFH.

10. Will this management measure result in 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.

Increased impacts to ESA listed species are not expected. There has been no reported take of marine mammals or seabirds in the California recreational fishery.

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

National Standard 1 will be furthered by this management measure as it will help mitigate encounters with overfished species, thereby ensuring that allowable limits are not exceeded and overfishing does not occur.

This management measure utilizes the best available science, meeting the goals of National Standard 2. The proposed closures were identified using anglers' historic knowledge and where possible, verified by recent visual survey data provided by the Nature Conservancy.

This management measure also meets the goals of National Standard 5 and National Standard 9. These closures would help to mitigate encounters with overfished species, minimizing bycatch and mortality of these species. This will help to minimize the risk of exceeding allowable limits of overfished species, meeting the Goal of National Standard 9. If allowable limits of overfished species are attained, or projected to be, in season action would likely be needed, which could result in early closure of the recreational fishery. Therefore this management measure also achieves the goal of efficiently utilizing fishery resources, National Standard 5.

Attachment A.

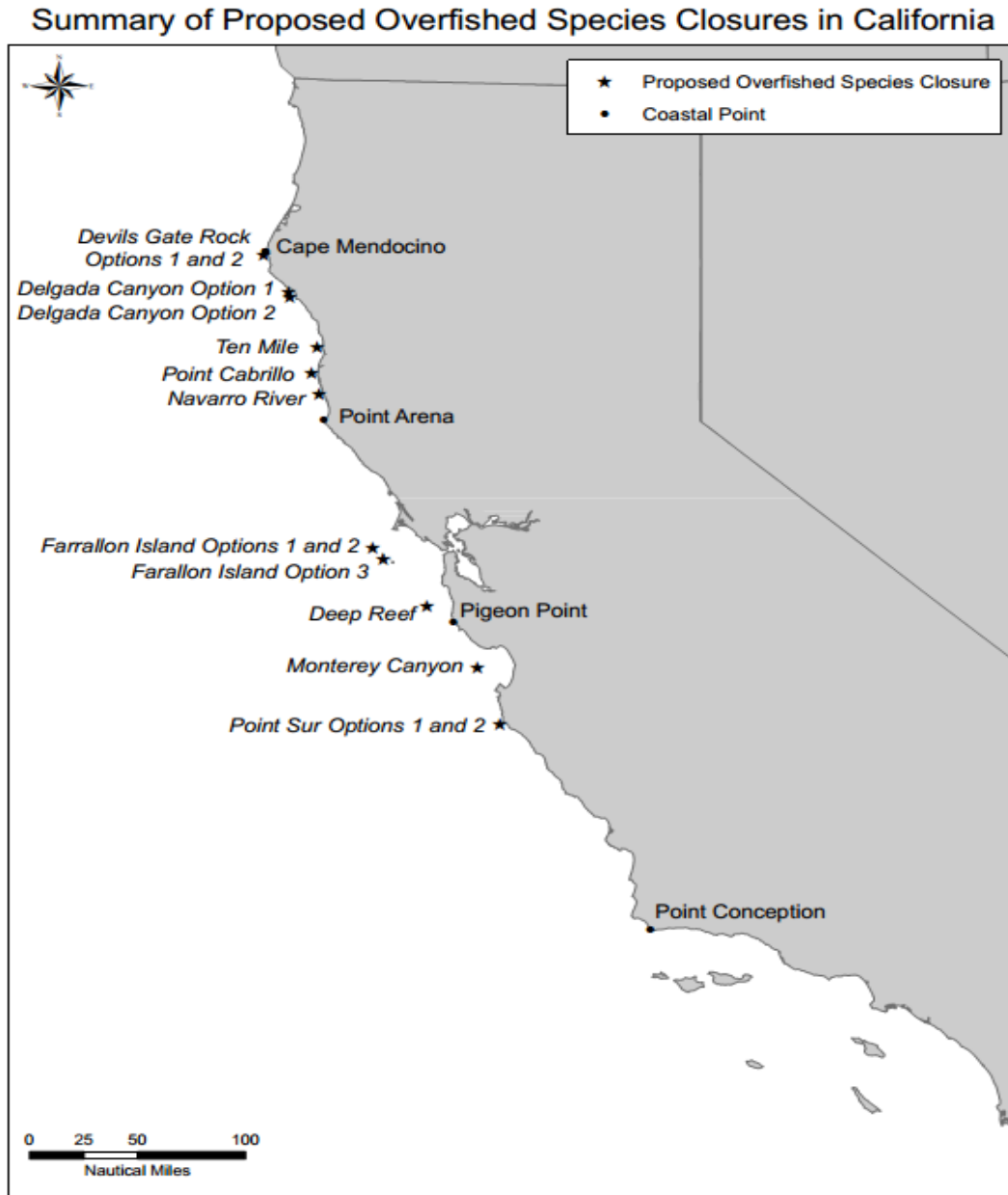


Figure 16. Location of OFS hotspot closures under consideration.

Devils Gate Rock

Figure 17 identifies two proposed options for overfished species hotspot closures in the Northern Management Area; both options are largely located in state waters, except for a small portion of Option 2. Option 1 was originally identified during public workshops held over the winter. However, public input indicated that Option 1 was an area of importance to kayak fisherman and testimony was given that few yelloweye rockfish have been encountered in that area. As a result, Option 2 was developed with stakeholder input as a potential alternative to Option 1. Option 2 was also identified as an area likely to afford greater protection to yelloweye rockfish than Option 1. Closure Option 1 covers an area of 2.6 sq km and contains a pinnacle inside the 30 fm RCA line. Option 2 covers an area of 11.5 sq km, with roughly half of the closure shoreward of the 30 fm RCA line and contains a canyon wall.

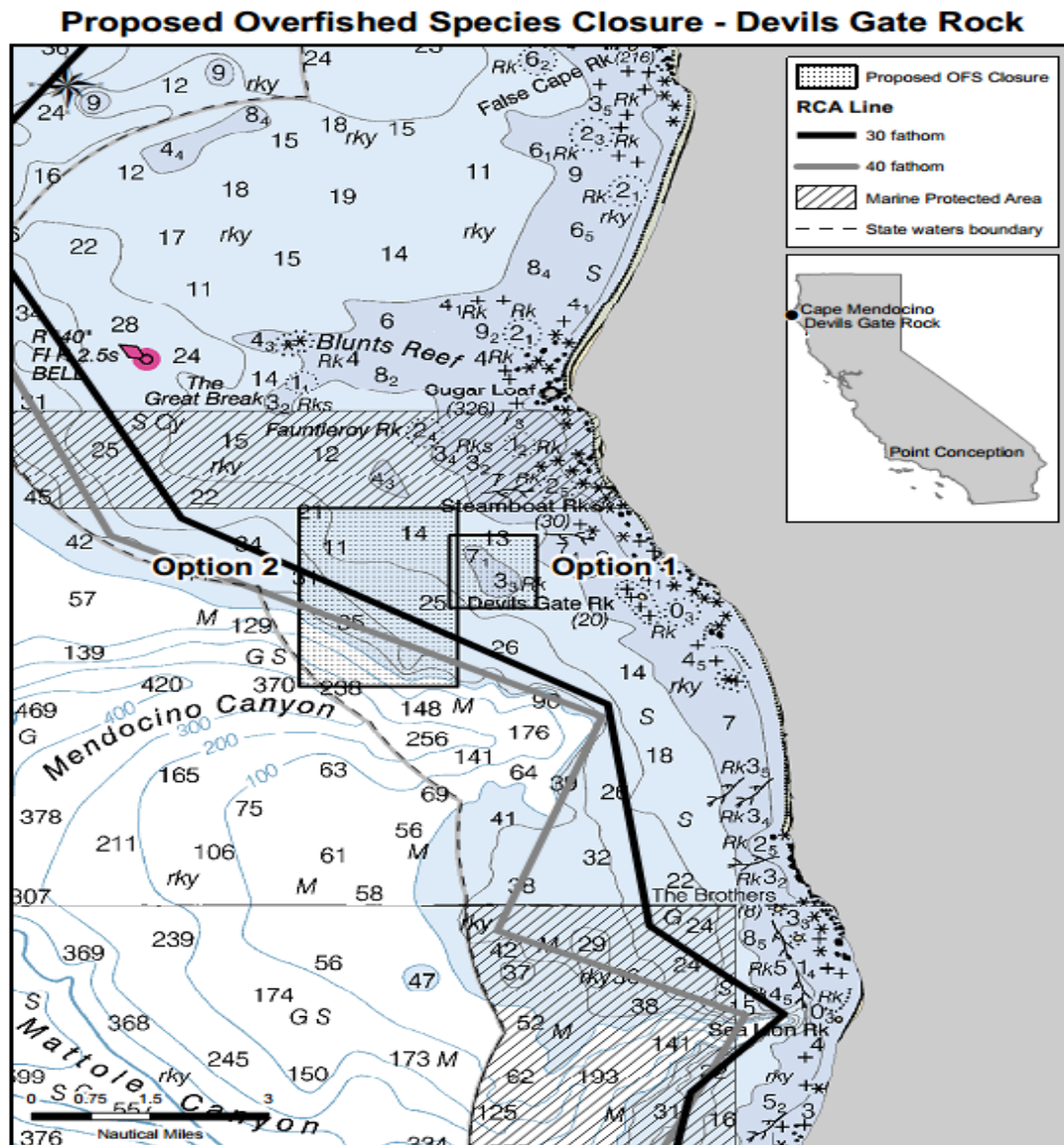


Figure 17. Devils' Gate Rock OFS Hotspot closure.

Delgada Canyon

Figure 18 identifies two options for overfished species closures; these options are not mutually exclusive. These areas are located in the Mendocino Management Area and include areas seaward of both the 30 fm and 40 fm RCA lines. Option 1, located within state waters, is the larger of the two, encompassing an area of 13.26 sq km while Option 2 covers an area of 11.39 sq km and includes both state and federal waters. Both are located along a canyon and enclose an area containing a steep drop off. Both areas were identified as potential areas for high encounters of yelloweye rockfish.

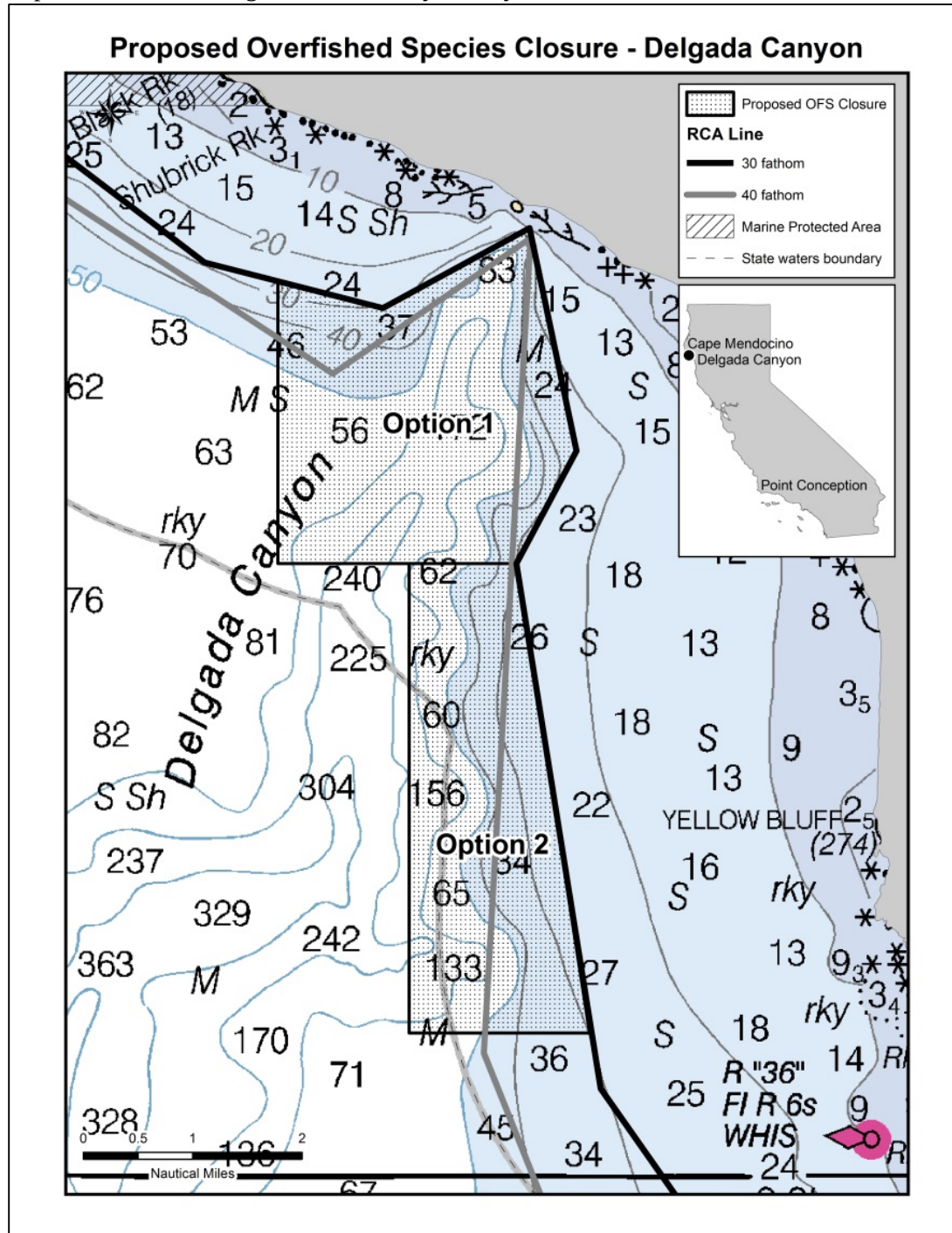


Figure 18. Delgada Canyon OFS Hotspot closure.

Ten Mile

Figure 19 illustrates the Ten Mile closure, which is also located in the Mendocino Management Area, within state waters. The proposed closure is adjacent to an existing Marine Protected Area which does not allow recreational groundfish fishing. Note, that modifications to the 30 fm RCA line are also proposed, and if recommended, the shoreward boundary of this closure would need to be modified. The proposed closure would encompass 7.81 sq km.

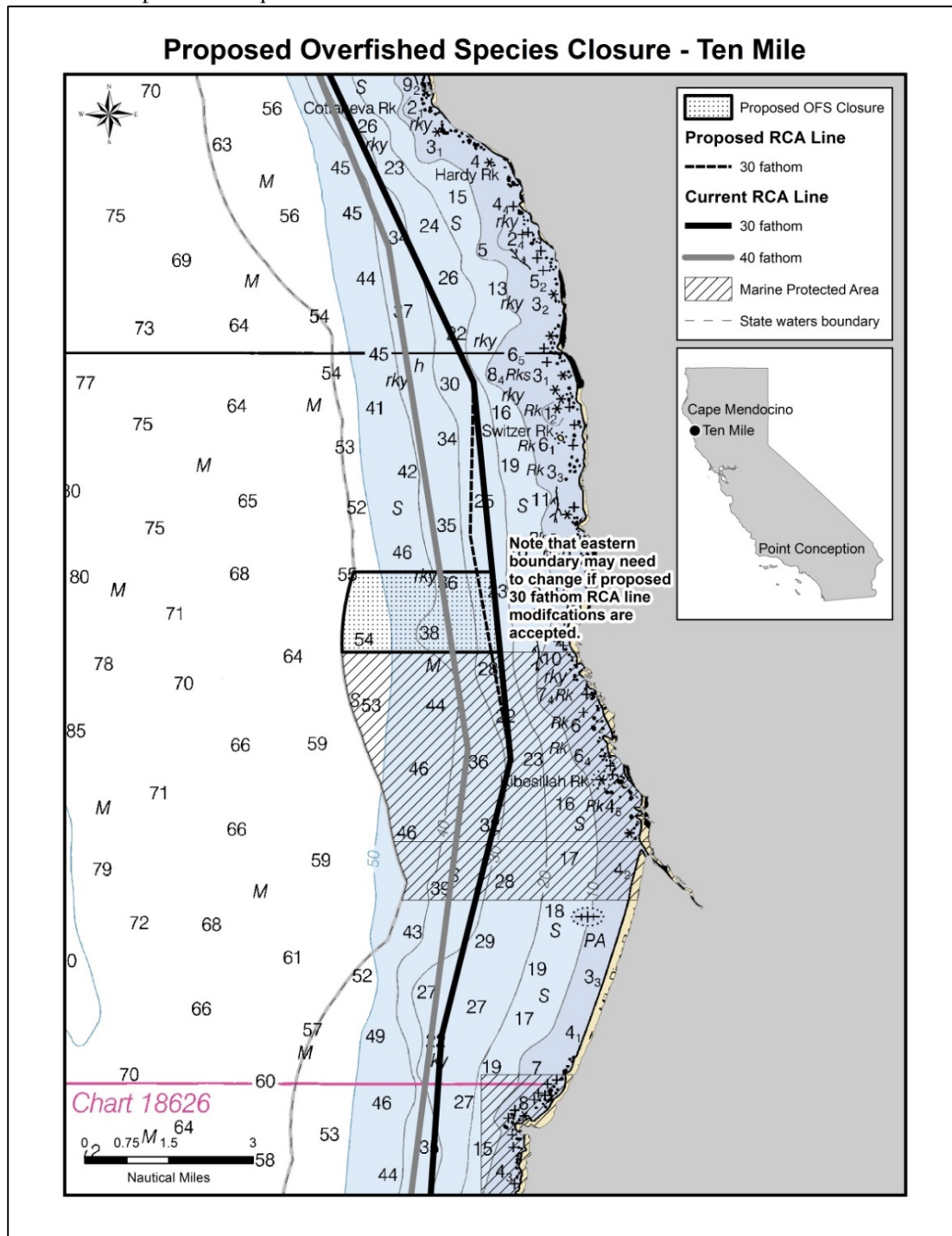


Figure 19. Ten Mile OFS Hotspot closure.

Figure 20 identifies the Point Cabrillo closure, which is located in the Mendocino Management Area; this closure is primarily in state waters, though a portion is in federal waters. This closure is seaward of the 40 fm RCA line. The closure encompasses 15.35 sq km and contains pinnacles which yelloweye rockfish are known to inhabit.



Navarro River

Figure 21 identifies the closure by the Navarro River, which is located inside state waters in the Mendocino Management Area. The closure is seaward of the 30 fm RCA line. The area would encompass 17.20 sq km. This area contains habitat which yelloweye rockfish are known to inhabit.

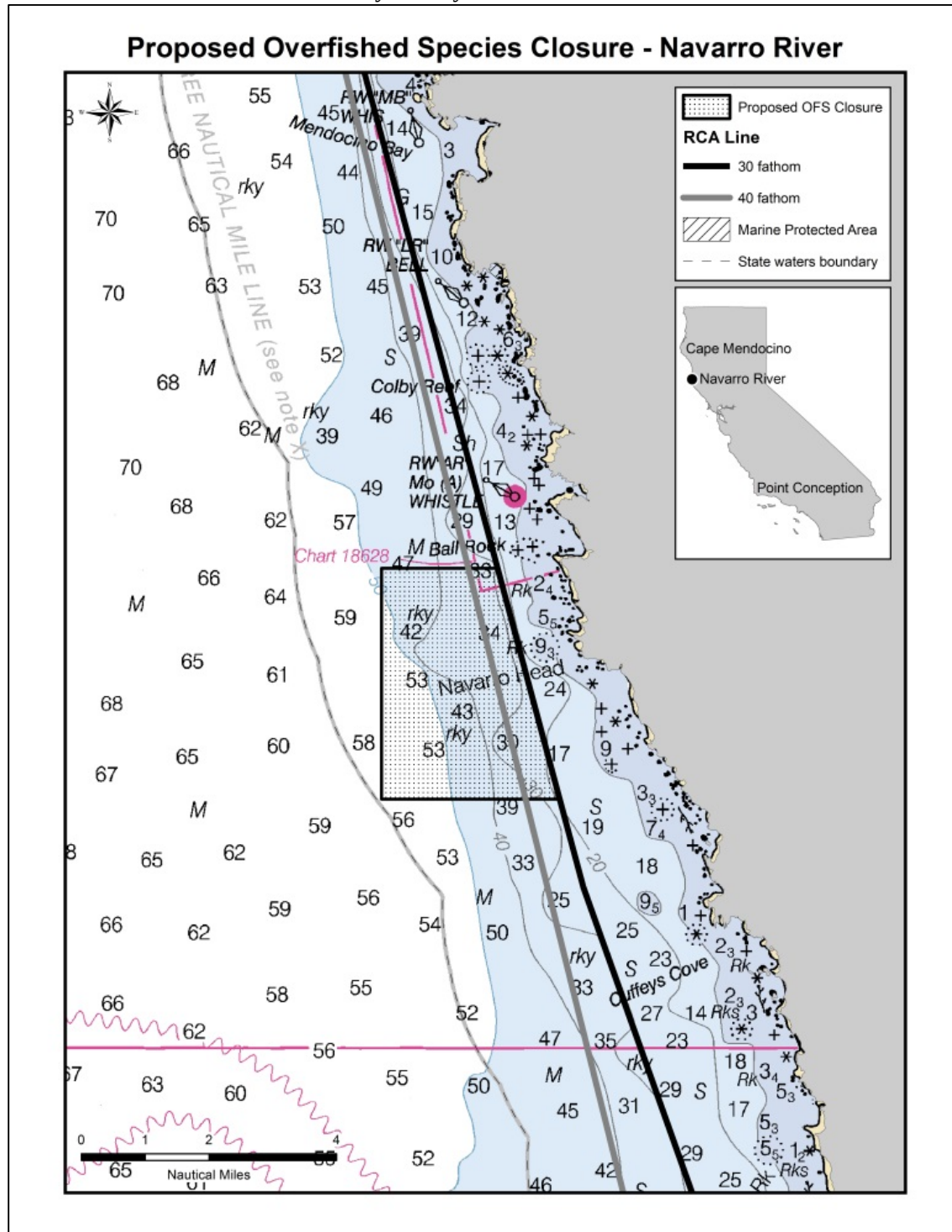


Figure 21. Navarro River OFS Hotspot closure.

Farallon Islands

Figure 22 identifies three possible closures near the Farallon Islands that are located in the San Francisco Management Area. These options are not mutually exclusive. These areas were identified by several different members of the public as areas which contain a high abundance of overfished species. Further, the area identified by the public in Option 3 as having a high abundance of overfished species was also corroborated by visual survey data provided by the Nature Conservancy. Option 1 is the largest area encompassing 46.65 sq km and is located completely in federal waters. Option 2, the smallest closure (11.41 sq km) in this region, is mostly located in federal waters with a portion in state waters. Option 3 would encompass 17.66 sq km, and is located within both state and federal waters. All the closure options include areas both shoreward and seaward of the 40 fm RCA.

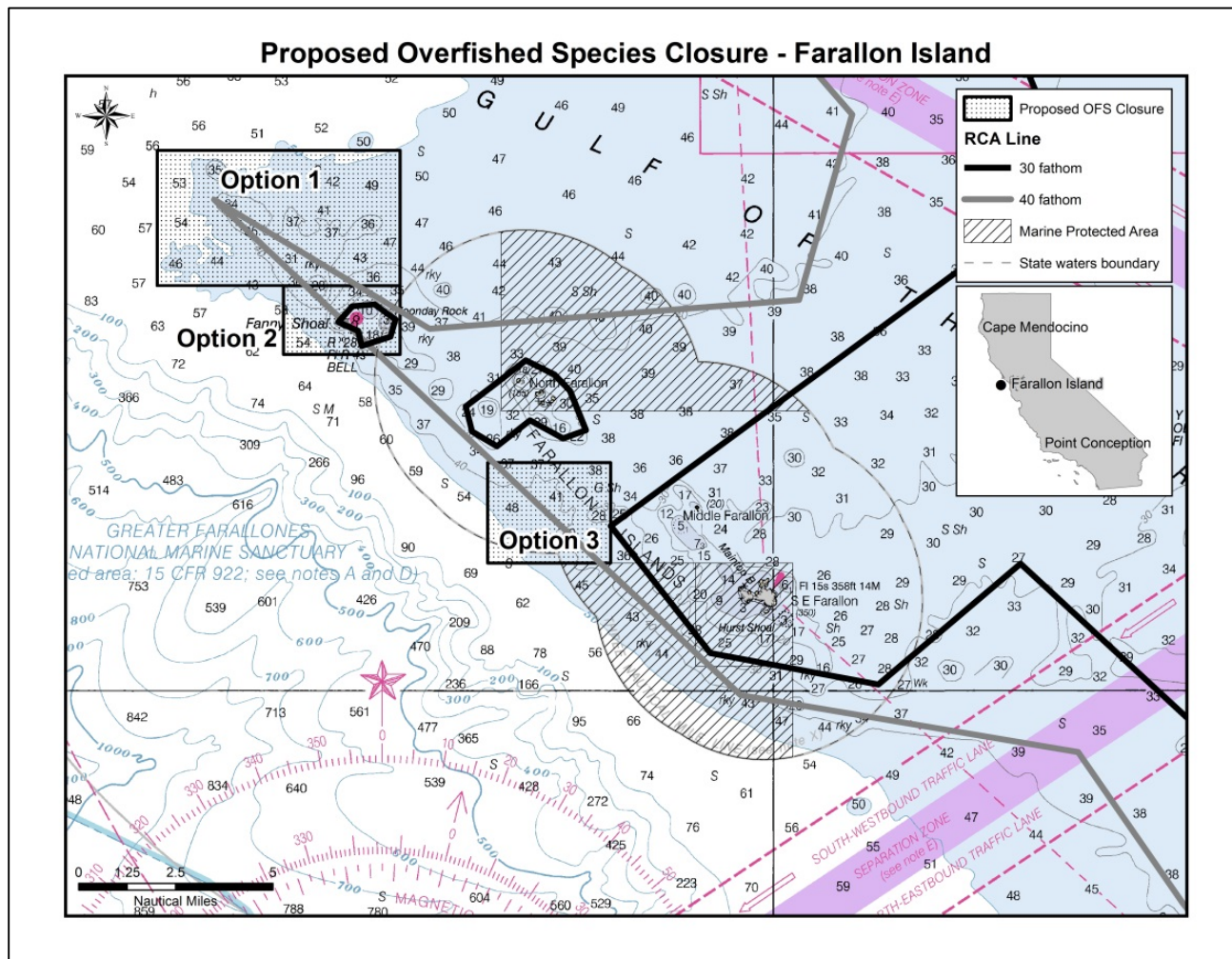


Figure 22. Farallon Island OFS Hotspot closures.

Deep Reef

Figure 23 identifies the Deep reef closure which is located in the San Francisco Management Area; the closure is completely within federal waters. The proposed closure is located seaward of the 40 fm RCA line and encompasses 40.49 sq km. This area contains drop-offs which yelloweye rockfish are known to inhabit.

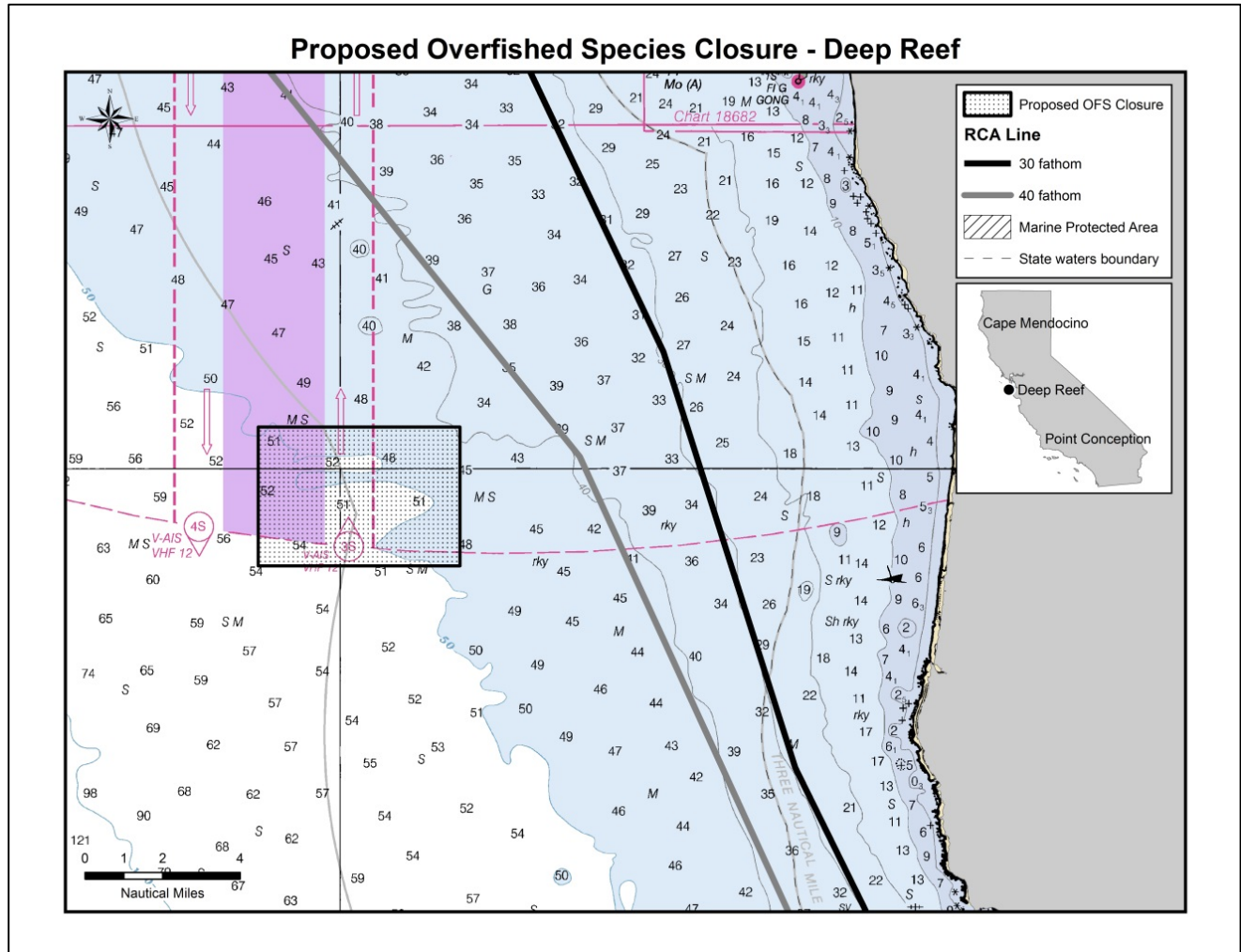


Figure 23. Deep Reef OFS Hotspot closure.

Monterey Canyon

Figure 24 identifies the Monterey canyon proposed closure in the Central Management Area. The area encompasses 28.26 sq km and lies mostly seaward of the 150 fm RCA line, completely within federal waters. This area contains habitat which yelloweye rockfish are known to inhabit.

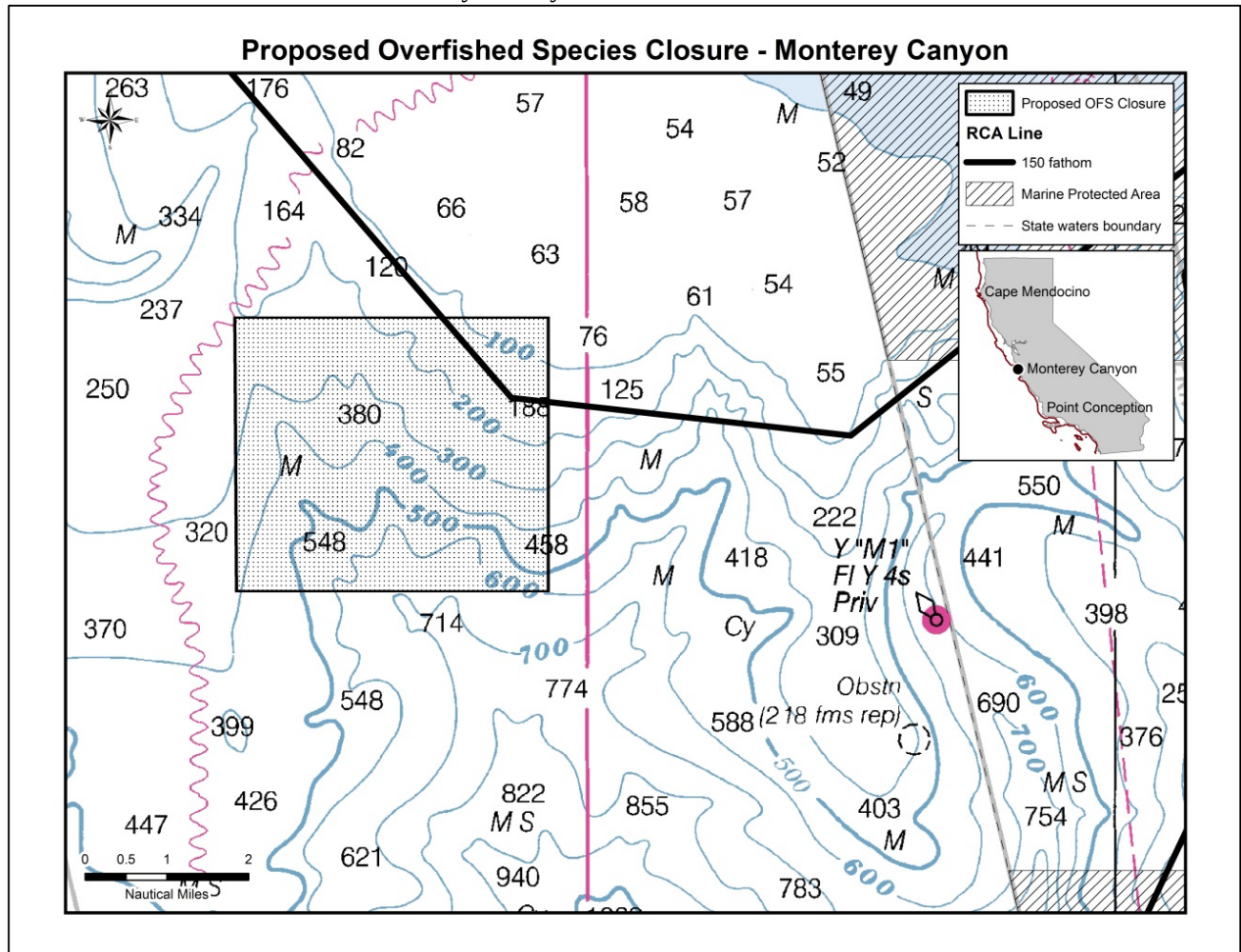


Figure 24. Monterey Canyon OFS Hotspot closure.

Point Sur

Figure 25 identifies two possible closure options in the Central Management Area near Point Sur. Option 1 was identified as an area likely to contain high abundance of overfished species due to the presence of a drop-off. Data provided by TNC identified Option 2 as an area of known high abundance of yelloweye rockfish and cowcod. Both closures border an existing MPA in which recreational groundfish fishing is prohibited. These options do not modify the existing MPA; Option 1 is the largest encompassing 44.54 sq km and is located within federal waters; Option 2 contains 5.97 sq km and is located both within state and federal waters. The closures include areas both within the 40 fm RCA line and areas seaward of the 50 fm RCA line.

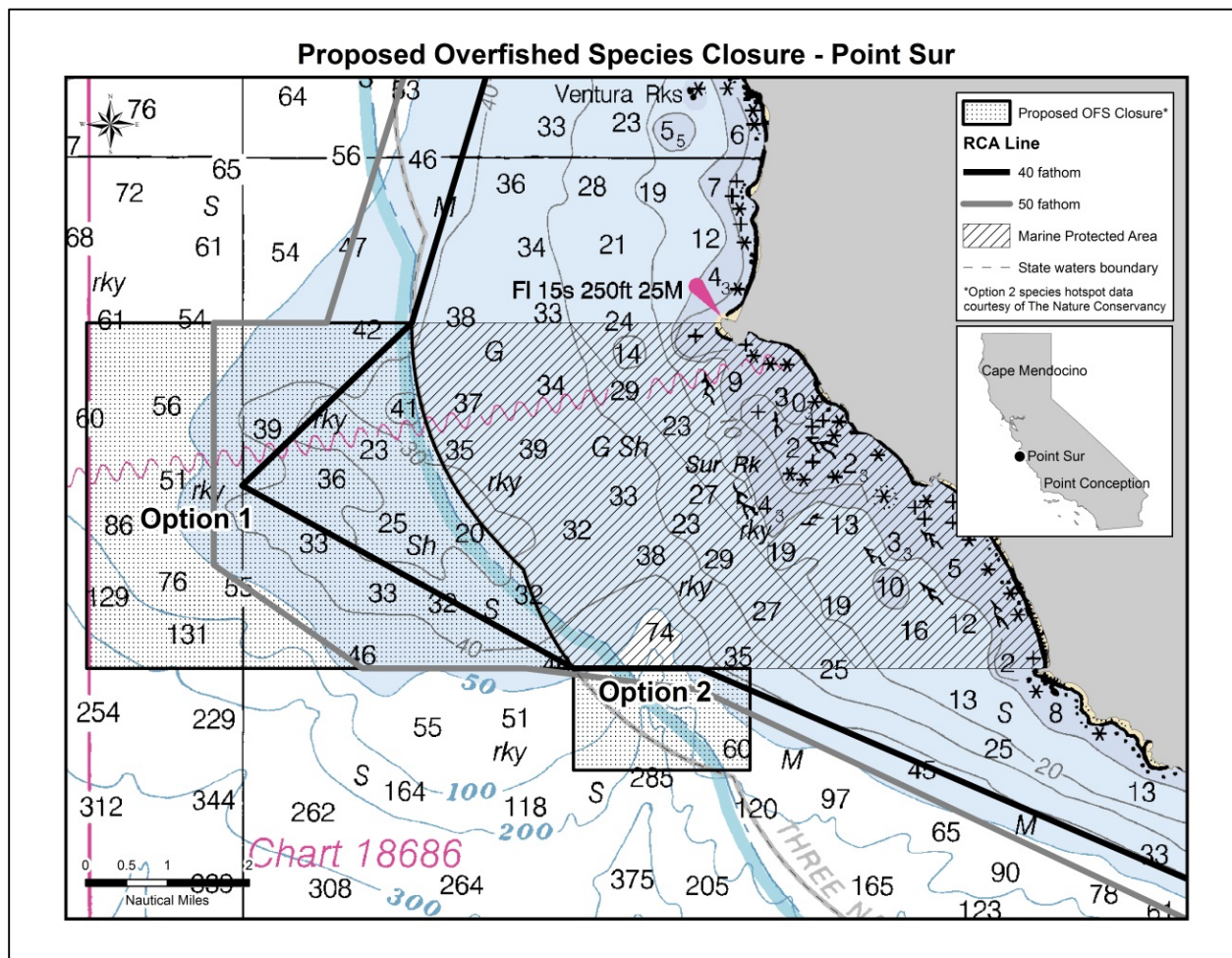


Figure 25. Point Sur OFS hotspot closures.

Table 20. OFS closures, proposed action, coordinates and area of closure.

OFS Closure	Point	Action	Lat Deg	Lat Min	Long Deg	Long Min	Area – km ²
Devils Rock Option 1	1	Add	40	24.57	124	26.1	2.59
Devils Rock Option 1	2	Add	40	24.57	124	25	
Devils Rock Option 1	3	Add	40	23.67	124	25	
Devils Rock Option 1	4	Add	40	23.67	124	26.1	
Devils Rock Option 2	1	Add	40	24.9	124	28	11.52
Devils Rock Option 2	2	Add	40	24.9	124	26	
Devils Rock Option 2	3	Add	40	22.7	124	26	
Devils Rock Option 2	4	Add	40	22.7	124	28	
Delgada Canyon Option 1	1	Add	40	6.27	124	10.3	13.26
Delgada Canyon Option 1	2	Add	40	6.08	124	9.34	
Delgada Canyon Option 1	3	Add	40	6.64	124	8	
Delgada Canyon Option 1	4	Add	40	5.08	124	7.57	

OFS Closure	Point	Action	Lat Deg	Lat Min	Long Deg	Long Min	Area – km²
Delgada Canyon Option 1	5	Add	40	4.29	124	8.12	
Delgada Canyon Option 1	6	Add	40	4.29	124	10.3	
Delgada Canyon Option 2	1	Add	40	4.29	124	9.1	11.39
Delgada Canyon Option 2	2	Add	40	4.29	124	8.12	
Delgada Canyon Option 2	3	Add	40	1	124	7.45	
Delgada Canyon Option 2	4	Add	40	1	124	9.1	
Ten Mile	1	Add	39	37	123	51.27	7.81
Ten Mile	2	Add	39	37	123	48.81	
Ten Mile	3	Add	39	35.9	123	48.67	
Ten Mile	4	Add	39	35.9	123	51.479	
Ten Mile	The boundary between point 4 and point 1 follows the state waters boundary						
Point Cabrillo	1	Add	39	23.25	123	54.1	15.35
Point Cabrillo	2	Add	39	23.25	123	52	
Point Cabrillo	3	Add	39	20.5	123	52	
Point Cabrillo	4	Add	39	20.5	123	54.1	
Navarro River	1	Add	39	12.74	123	49.4	17.2
Navarro River	2	Add	39	12.74	123	47.58	
Navarro River	3	Add	39	9.94	123	46.61	

OFS Closure	Point	Action	Lat Deg	Lat Min	Long Deg	Long Min	Area – km ²
Navarro River	4	Add	39	9.94	123	49.4	
Farallon Option 1	1	Add	37	51	123	15.85	46.65
Farallon Option 1	2	Add	37	51	123	9.6	
Farallon Option 1	3	Add	37	48.25	123	9.6	
Farallon Option 1	4	Add	37	48.25	123	15.85	
Farallon Option 2	1	Add	37	48.25	123	12.6	11.41
Farallon Option 2	2	Add	37	48.25	123	9.6	
Farallon Option 2	3	Add	37	46.85	123	9.6	
Farallon Option 2	4	Add	37	46.85	123	12.6	
Farallon Option 3	1	Add	37	44.65	123	7.35	17.66
Farallon Option 3	2	Add	37	44.65	123	4.18	
Farallon Option 3	3	Add	37	42.6	123	4.18	
Farallon Option 3	4	Add	37	42.6	123	7.35	
Deep Reef	1	Add	37	20.85	122	42.1	40.49
Deep Reef	2	Add	37	20.85	122	36.9	
Deep Reef	3	Add	37	18	122	36.9	
Deep Reef	4	Add	37	18	122	42.1	
Monterey Canyon	1	Add	36	48.42	122	10.75	28.26
Monterey Canyon	2	Add	36	48.42	122	6.92	

OFS Closure	Point	Action	Lat Deg	Lat Min	Long Deg	Long Min	Area – km²
Monterey Canyon	3	Add	36	45.73	122	6.92	
Monterey Canyon	4	Add	36	45.73	122	10.75	
Point Sur Option 1	1	Add	36	18.4	122	1.9	44.54
Point Sur Option 1	2	Add	36	18.4	121	57.932	
Point Sur Option 1	The boundary between point 2 and point 3 follows the state waters boundary						
Point Sur Option 1	3	Add	36	15	121	55.955	
Point Sur Option 1	4	Add	36	15	122	1.9	
Point Sur Option 2	1	Add	36	15	121	55.955	5.97
Point Sur Option 2	2	Add	36	15	121	53.8	
Point Sur Option 2	3	Add	36	14	121	53.8	
Point Sur Option 2	4	Add	36	14	121	55.955	

B.2.6 Petrale Sole and Starry Flounder Seasons in the California Recreational Fishery

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

This management measure would exempt petrale sole and starry flounder from the season and depth restrictions in the California recreational groundfish fishery. Currently, retention of petrale sole and starry flounder is permitted only during the open months and allowable depths in the recreational groundfish fishery. The open months and allowable depths vary by management (the recreational season structure can be found in Chapter 4).

Any petrale sole or starry flounder encountered during the closed months or outside of the allowable depths must be discarded. This has led to instances where anglers have to discard these species while targeting other species which have different seasons and/or allowable depth than groundfish (e.g., Pacific halibut) or are open year-round without depth constraint (e.g., Pacific sanddab).

The geographic scope of this management measure is waters off California from the Oregon/California border to the U.S./Mexico Border. This management measure will only affect the recreational groundfish fishery in California.

- 2. 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 socioeconomic purpose? (e.g., allowing increased opportunity to catch target species? making fishing opportunity among different user groups more equitable?)**

The objective of this management measure is to reduce regulatory discarding of petrale sole and starry flounder as well as providing additional opportunity of underutilized stocks to recreational anglers. The increased opportunity which may be afforded by this management measure is not expected to exceed allowable limits as mortality for these species has been well within the non-trawl allocation.

- 3. What was considered in order to optimize the performance of this measure?**

The species that will likely be encountered, their annual mortality, impacts to overfished species, angler behavior, and impacts to other sectors were considered in order to optimize the performance of this measure. Due to the preferred habitat of petrale sole and starry flounder, soft sandy or muddy bottom, encounters with overfished rockfish species are expected to be minimal.

- 4. What was the Council's decision and how did it arrive at the decision?**

For petrale sole, this management measure originated from public request. The Council was originally considering managing starry flounder within the Other Flatfish complex, due to the outdated nature of the most recent stock assessment. However, it was determined that this action would be more complex than originally thought because of differing Amendment 21 allocations for Other Flatfish compared to the Amendment 21 allocations for starry flounder. Since there was interest from recreational anglers to allow year round retention of starry flounder in the recreational fisheries, starry flounder is included in this management measure.

- 5. Is there any other background information that was important to the Council's decision? As appropriate, summarize Council discussion of this measure, and any conclusions reached, during the biennial process.**

California recreational regulations for petrale sole and starry flounder allow retention during the groundfish season structure with no bag limit. In Oregon, anglers are subject to a 25-fish daily bag limit for flatfish

and a 40 fm depth restriction from April 1 – Sept 30; fishing is allowed in all depths for the remainder of the year. In Washington anglers are not constrained by a closed season, but are subject to a 12 fish bottomfish bag limit in ocean waters and 20 - 30 fm depth restrictions in some areas during the summer months.

At this time, no changes to the petrale sole or starry flounder regulations are being contemplated in the Washington recreational or the non-trawl commercial fisheries. Oregon Department of Fish and Wildlife (ODFW) is requesting to allow targeting of flatfish species (including petrale sole and starry flounder) seaward of the seasonal depth restrictions in the Oregon recreational fishery.

6. 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? How does any change in catch relate to harvest specifications and the risk that overfishing will occur?

Petrable Sole

This management measure is expected to slightly increase petrale sole mortality, though it is anticipated that mortality will remain within allowable limits for the non-trawl sector.

Petrable sole is currently managed coast wide as a single stock. Under Amendment 21, petrale sole was allocated between trawl and non-trawl sectors. The non-trawl allocation has not been divided among the commercial non-trawl and recreational sectors. Petrable sole mortality in the commercial fixed gear and recreational sectors has been relatively minimal in recent years (Table 21).

Average recreational mortality from 2011 to 2014 was 0.82 mt and 0.24 mt in California and Oregon fisheries, respectively; no mortality was reported in Washington's recreational fishery. In the commercial non-trawl sector average coastwide mortality was 0.89 mt during that same period. Combined the average mortality of petrale sole in the non-trawl sector was 2.0 mt, less than 10 percent of the non-trawl allocation (35 mt; Table 21).

Table 21. Mortality of petrale sole in the non-trawl sectors 2011-2014 and percent attainment of the 35 mt allocation.

Year	California Recreational (mt)	Other Non-Trawl (mt) ^a	Total non-Trawl (mt) ^a	% of Non-Trawl Allocation
2011	0.52	0.77	1.29	4%
2012	0.73	0.99	1.72	5%
2013	1.11	2.24	3.35	10%
2014	0.86	0.73	1.59	5%
Source: WCGOP Total Mortality Report				
^a Includes non-trawl commercial, as well as Oregon and Washington recreational mortality				

Removing petrale sole from the California recreational groundfish season and depth limits restrictions would most likely lead to anglers retaining the petrale sole they would otherwise discard while targeting fish species found in depths deeper than the current depth restrictions. However, given that petrale sole are not frequently encountered in the recreational fishery, especially during the closed months, any increase is expected to be minimal. For example, RecFIN data indicate that in 2014, 426 petrale sole were encountered during months that were outside the groundfish season. If it is assumed that all fish encountered outside of the groundfish season would be retained, and by assuming the mean weight of observed petrale sole in 2014 (0.83 kg), the resulting additional/increase in mortality would be approximately 0.35 mt.

While this value serves as a proxy to inform additional mortality expected to accrue during closed months based on current fishing behavior, removing the season and depth restrictions for petrale sole may further increase mortality as angler behavior is uncertain. While it is likely that some increased effort may be realized by this management measure, it cannot be reasonably quantified. However, even if mortality in the California recreational fishery were to increase by 5 times the highest mortality in recent years (1.1 mt in 2013), and that value is combined with the highest mortality in the remaining non-trawl sectors (2.1 mt in 2013), the total (7.6 mt) could still be accommodated by the non-trawl allocation (144.8 mt and 138.6 mt in 2017 and 2018 respectively).

If inseason tracking indicates that mortality is tracking higher than expected action can be taken to reduce or eliminate catches. However, it should be noted that recreational mortality was relatively minimal, even when the fishery was not restricted by season length and depth. Prior to 2000, the California recreational fishery was not restricted by depth or season length, and during this period the highest estimated mortality was 0.6 mt (1996) with an average estimated mortality of 0.2 mt per year.

As shown in Table 21, mortality of petrale sole in the non-trawl sector has not exceeded 10 percent of the non-trawl allocation. Considering the substantial increase in the non-trawl allocation for 2017 and 2018 of 114.8 mt and 138.6 mt respectively, from the 35 mt non-trawl allocation in 2016, there is little risk in overfishing from this management measure alone. Further, because petrale sole inhabit soft sandy or muddy bottom, interactions with overfished species are expected to be negligible. As a result, there is an opportunity to allow for increased impacts, which would further utilize what is currently an underutilized non-trawl allocation, with minimal risk of exceeding the non-trawl allocation, let alone the ACL.

Starry Flounder

Starry flounder is currently managed coastwide as a single stock. Under Amendment 21, the stock was formally allocated between trawl and non-trawl sectors. The non-trawl allocation has not been formally divided among the commercial non-trawl and recreational sectors. However, starry flounder mortality in the commercial fixed gear and recreational sectors has been relatively minimal in recent years (Table 22). Since, 2011 attainment of the starry flounder non-trawl allocation has not exceeded one percent.

Table 22. Mortality of starry flounder in the non-trawl sectors 2011-2014, non-trawl allocation and percent attainment of the non-trawl allocation, 2011 to 2014.

Year	California Recreational (mt)	Other Non-Trawl (mt) ^a	Total non-Trawl (mt) ^a	Non-Trawl Allocation (percent attainment)
2011	1.24	3.10	4.34	673.0 (0.6%)
2012	0.94	3.13	4.07	677.0 (0.6%)
2013	0.93	0.11	1.04	763.5 (.01%)
2014	1.70	2.99	4.69	760.5 (0.6%)
Source: WCGOP Total Mortality Report				
^a Includes non-trawl commercial, as well as Oregon and Washington recreational mortality				

While this management measure is likely to increase mortality of stray flounder, the increase is expected to be minimal compared to the non-trawl allocation. Starry flounder are primarily encountered in the Central and San Francisco Management Areas, which combined account for approximately 97 percent of total encounters occurring in California in recent years (2014-2015). As a result, it is likely that the number of anglers will be somewhat limited to those currently fishing in those management areas. Given that mortality of starry flounder in the recreational sector is relatively minimal and mortality in the non-trawl sector has been well below the allocation, it is unlikely that this management measure would cause mortality to exceed allowable limits, especially considering the large residual between recent mortality and the non-trawl allocation for 2017 and 2018 of 635.9 mt.

Cumulative Impacts

ODFW is also contemplating allowing a year round recreational flatfish fishery as described above. Similar to the anticipated impacts off of California and as stated in the analysis for a year-round recreational flatfish fishery off of Oregon, impacts are likely to be minimal. Given that the non-trawl allocation for these species has been underutilized and the large residual between mortality in recent years and the non-trawl allocation, the combined impacts of these management measures are not expected to exceed allowable limits.

7. **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 is expected to allow some increased opportunity by permitting petrale sole and starry flounder to be retained year round. This would mainly affect recreational anglers from the California/Oregon border to Point Conception. While some petrale sole are encountered in the recreational fishery south of Point Conception, other opportunities are available in this area which do not have bycatch of petrale sole (e.g., Highly Migratory Species). The range of starry flounder extends north of Point Conception, as a result this management measure is likely to affect anglers in this region. Given the underutilization of petrale sole and starry flounder, this management measure is not anticipated to impact any other user group's or area's harvest opportunity.

8. **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 anticipated to affect catch of non-groundfish species. These species are largely encountered with other groundfish species and the area and habitat likely to be fished would limit impacts to non-groundfish stocks. All catch (including non-groundfish species) is actively monitored with the current California Recreational Fishery Survey.

9. **Will this management measure change fishing activity so as to adversely affect to essential fish habitat compared to current or baseline 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 will not change fishing activity so as to adversely affect Essential Fish Habitat (EFH) as anglers are currently fishing in locations where petrale sole and starry flounder are being encountered. Additionally, petrale sole and starry flounder primarily are found over soft sandy or muddy bottom habitats and in areas which are not designated as groundfish EFH. Further, it should be noted that the recreational fishery uses gear types known to have minimal to negligible habitat impacts.

10. **Will this management measure result in 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 anticipated to impact ESA-listed species and/or non-listed marine mammals and seabirds. The current California recreational groundfish fishery has no reported take of marine mammals or seabirds, nor are any expected by simply allowing discarded fish to be retained.

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

This management measure is consistent with National Standards 1, 5, 8 and 9. This management measure is consistent with National Standard 1 in that it allows additional opportunity to attain more the non-trawl allocation of an underutilized flatfish species. Additionally, this management measure has very little chance of causing any of the impacted species to become overfished, or for overfishing to occur. National Standard 5 is met by more efficiently utilizing fishery resources, as it will reduce the need for regulatory discards of a healthy, underutilized stock. This management measure is consistent with National Standard 8 and 9 in that it takes into account the importance of fishery resources to California fishing communities and reduces bycatch. This management measure provides the opportunity to harvest underutilized species that would otherwise be discarded.

B.3 Measures Considered but Excluded from the PPA

At their April 2016 meeting, the Council considered the draft analysis below and determined not to include these new management measures as part of their preliminary preferred alternative.

B.3.1 Manage Starry Flounder within the Other Flatfish Complex

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

The U.S. west coast starry flounder stock was assessed in 2005 (Ralston 2006). The assessment was based on the assumption of separate biological populations north and south of the California-Oregon border. Unlike most other groundfish stock assessments, no age- or length-composition data were directly used in the assessment. Both the northern and southern populations were estimated to be above the target level of 40 percent of virgin spawning biomass (44 percent in Washington-Oregon and 62 percent in California). Starry flounder were managed in the Other Flatfish complex until 2007, when the stock was removed from the complex and managed with stock-specific specifications determined from the assessment. A new starry flounder assessment was not conducted in 2015 and the 2005 assessment was out of date for informing harvest specifications in 2017 and beyond. Therefore the SSC recommended 2017 and 2018 OFLs be a “rollover” of the 2016 OFL, with an associated change from a category 2 to a category 3 assessment. For this stock, catch-only projections were not readily available given workload constraints and time delays associated with obtaining total mortality estimates at the appropriate spatial scale (consistent with the 2005 assessments). Further, the starry flounder stock has consistently been harvested at about 2% of the allowable harvest and there are no conservation concerns for this under-utilized stock.

The Council is considering managing starry flounder within the Other Flatfish complex starting in 2017. This consideration is based on the stock becoming a data-poor category 3 stock and the convention of managing data-poor stocks in complexes (Pacific cod is the only category stock currently managed using stock-specific harvest specifications). While this management change is not likely to have any differential biological impact since starry flounder are not targeted and are an under-utilized stock, there are process considerations for making this change.

Affected Sectors

Starry flounder are managed with formal sector allocations (50% trawl, 50% non-trawl) established under FMP Amendment 21. The Other Flatfish complex is also managed with an Amendment 21 allocation (90% trawl, 10% non-trawl). The differential allocation would require an amendment to this allocation structure if starry flounder were again managed in the Other Flatfish complex. Given that the Other Flatfish complex is comprised of trawl-dominant species (i.e., species with $\geq 90\%$ historical catch from the trawl sector), an allocation of the re-comprised Other Flatfish complex with starry flounder as a component remains trawl-dominant compelling consideration for eliminating the starry flounder allocation and maintaining the current complex allocation. Non-trawl fishermen, largely the recreational sectors, as well as trawl fishermen would not likely be disadvantaged due to the lack of targeting and low attainment of sector allocations. Starry flounder quota has no value to IFQ fishermen as evidenced by the low attainment ($< 2\%$) in the sector since implementation of the trawl catch share program (Table 23). Those IFQ fishermen with starry flounder quota would also have Other Flatfish quota and would not likely be disadvantaged since starry flounder would contribute to a higher Other Flatfish quota.

Table 23. Percent attainment of IFQ sector allocation of starry flounder quota, 2011-2015.

Quota Year	Sector Quota Pounds Including Carryover	Sector Catch	Percent Attainment
2015	1,668,569	14,144	0.8%
2014	1,665,592	32,472	1.9%
2013	1,796,274	7,705	0.4%
2012	1,627,429	18,404	1.1%
2011	1,471,586	25,936	1.8%
2011-15 Total	8,229,450	98,661	1.2%

In the trawl shorebased IFQ system, the QS species/species group categories match the stock groupings in the ABC/ACL table. The Council is considering an action that would merge starry flounder into the other flatfish group. This action raises the question of what adjustments might be made to each owner's QS holdings (each QS account) given the elimination of the starry flounder QS. Amendment 20 provided default rules for making adjustments to the QS distribution when species are split from a species group or when there are geographic shifts in management lines but not for a situation where species or species groups are combined. The Amendment 20 rules were based on the principle that, when shifts in the QS species/species group categories occur, after the shift individuals should receive the same total QP for the affected IFQ categories that they would have received if the shift had not occurred (a pounds neutral approach). A rule for the combination of species/species group categories can be developed based on a similar principle.

Using the 2017 proposed ACLs for starry flounder and other flatfish, if these two categories are combined, starry flounder will contribute 8 percent of the total QP to the new combined category and the preexisting other flatfish category will contribute 92 percent (Table 24). Therefore, if the QS in each account is multiplied by its respective contribution percentages and then added together, the resulting sum will be a QS amount for the new combined category that results in the same total QP being allocated as before the combination

This process is illustrated in Table 25 for an account that holds 2 percent of the starry flounder QS and 0.5 percent of the other flatfish QS. Column A shows the starting QS for a QS account and Column B the original trawl sector allocations. These are multiplied together to show the QP that would be issued to an account under status quo. The right side of the table adjusts the QS holdings based on the contribution percentages from Table 24 and illustrates that the resulting QP are the same. The QS amounts from Column A are multiplied by the contribution values in Column D (from Table 24) to derive the new QS amounts in Column E. These are then summed (value in the bottom row) and multiplied by the combined trawl allocation of starry flounder and other flatfish (Column F) which results in the QP value shown in Column G. The Column G QP amount for Account 1 after the combination matches the Column C QP amount from before the combination.

It should be noted that the QP amounts actually allocated after the allocation will vary depending on the sector allocations. For the combination process, the intersector allocations were maintained such that the total allocation before the combination is the same as that after the allocation. The implied trawl/nontrawl allocation is 85%. This is calculated from Table 24 by taking the sum of the allocations (8,111.4 mt) and dividing by the sum of the fishery harvest guidelines (9,578 mt).

Table 24. Determination of the weighting factor (contribution to total) to be used for a pounds neutral approach to adjusting QS categories.

	A	B	C = A-B	D	E = C X D	Values from E Divided by Sum from E (8,111)
2017	ACL (mt)	Set Aside	Fishery Harvest Guidelines (mt)	Trawl Allocation (Share)	Trawl Allocations (mt)	Contribution to Total
Starry	1,282	10	1,272	50%	636	8%
Other Flatfish	8,510	204	8,306	90%	7,475	92%
Total	9,792		9,578		8,111	

Trawl allocations are from Amendment 21.

Table 25. Illustration of the pounds neutral approach for a hypothetical QS account.

Status Quo			From Table 24	Starry and Other Flat Combined		
A	B	C = A x B	D	E = A x D	F	G = E x F
Account 1's QS	Trawl Sector Allocations (mt)	Account 1's QP (mt)	Contribution to Total	Account 1's QS	Total Trawl Sector Allocation (mt) (Sum of Column A)	Account 1's QP (mt)
2.00%	636	13	8%	0.16%		
0.50%	7,475	37	92%	0.46%		
Totals		50.10		0.62%	8,111	50.10

- 2. 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 socioeconomic purpose? (e.g., allowing increased opportunity to catch target species? making fishing opportunity among different user groups more equitable?)**

This consideration is based on the stock becoming a data-poor category 3 stock and the convention of managing data-poor stocks in complexes (Pacific cod is the only category stock currently managed using stock-specific harvest specifications). While this management change is not likely to have any differential biological impact since starry flounder are not targeted and are an under-utilized stock, there are process considerations for making this change.

- 3. 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? How does any change in catch relate to harvest specifications and the risk that overfishing will occur?**

This management change is not likely to have any differential biological impact since starry flounder are not targeted and are an under-utilized stock. Similarly, attainment of the Other Flatfish Complex is low.

B.3.2 Transfer of Shorebased Quota Pounds to the Mothership Sector

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

This proposal would provide the following as an interim approach subject to the 5-year review of the trawl catch share program.

- allow the transfer of quota pounds (QP) for selected species from the shorebased IFQ sector to mothership (MS) co-ops,
- establish overall transfer caps on the total amount of QP that could be transferred for each eligible species, and
- establish caps on the amount of QP that can be transferred by the holder of each MS catcher vessel permit.

At the beginning of the trawl catch share program, shorebased quota shares (QS) were issued to every limited entry trawl permit based on a variety of criteria including catch history, meeting bycatch needs, and equal allocation. Because of the equal allocation criteria, even permits with no shorebased sector history (those that fished only in the mothership sector during the allocation period) received some QS for each species. All permits with no shorebased sector history received the same total amount of QS of each species, because equal allocation was the only basis on which they received an allocation.¹²

For the mothership sector, mothership catcher vessel endorsements and whiting catch history allocations¹³ were made to permits that delivered a minimum threshold amount of whiting to motherships during an allocation period. A total of 37 permits received such allocations.

Allocations of at-sea whiting fishery bycatch species (canary rockfish, darkblotched rockfish, POP, and widow rockfish) are distributed within the mothership sector in proportion to the whiting catch history allocations. Under this proposal, the mothership allocations for these species (“transfer species”) could be augmented by the transfer of shorebased QP to the mothership sector.

¹² Permits with no shorebased history received an allocation of shorebased QS only because of the equal allocation element of the allocation formula. A portion of all non-overfished species (“target species”) QS was allocated equally among all permits, including those with no shorebased history. For overfished species (including all of the species covered in this proposal) the tie to the equal allocation element is through the equally allocated target species. To determine the likely overfished species bycatch need for each permit and the permit’s overfished species QS allocation, fleet average bycatch rates by area and depth fished were calculated and applied to the distribution of tows by area and depth as recorded in individual vessel logbooks. However, trawl logbooks are only available for shorebased deliveries. Therefore, for vessels without shorebased deliveries, the fleet average distribution of tows was used in place of the individual logbooks. Thus, for permits without shorebased deliveries, overfished species QS was allocated through a formula that used the equally allocated target species QS and a single fleet average distribution of tows, such that each such permit received the same initial allocation of overfished species QS. Without the equal allocation element, those permits would have received no target species QS and therefore no overfished species. For permits that also had some shorebased history, the overfished species QS allocated based on the equal allocation of target species QS varied because their fishing areas as recorded in logbooks varied from one another. Note: canary rockfish is an exception to the general case for overfished species because there was also a direct equal allocation of canary rockfish QS. The amounts of target species and canary QS that were allocated equally were the shares of fleet’s catch history represented by permits that were bought back in 2003.

¹³ Mothership whiting catch history allocations are similar to shorebased QS allocations in that the catch history allocations are converted to a percent that is applied to the annual sector allocation to determine the annual amount of whiting pounds deliverable by the permit to the co-op to which the permit belongs.

Overall Transfer Cap: Under the current proposal, for each species the overall cap on the total QP eligible for transfer would be the amount of QS allocated to a given mothership catcher vessel endorsed limited entry permit that had no shorebased sector history times 34, the total number of such permits that currently exist (catch history endorsements from three permits were stacked on other mothership catcher vessel permits such that the total number of permits was reduced from 37 to 34). The projected transfer caps are shown in Table 26.

Table 26. Proposed transfer species caps, expressed as a percent of the shorebased allocations.

	Canary	Darkblotched	Pacific Ocean Perch	Widow
Cap	15%	20%	20%	11%

Individual Transfer Cap: The maximum amount of QP for a particular species that could be transferred by any single MS catcher vessel permit holder would be that permit's share of the total whiting catch history times the overall transfer cap.

Note: QS has been trading and for any particular unit of QS or QP there is no way to identify the criteria on which its issuance was based. Therefore, QP sourced from any QS may be transferred to the MS-Co-op sector account, so long as the QP are first acquired by a vessel owner whose vessel is currently registered to an MS/CV-endorsed limited entry permit and holds an IFQ vessel account..

Additional Considerations: Co-op Transfer Cap. Currently, the industry has organized itself into a single co-op but it is not required to do so. Additionally, it is possible that some vessels could choose to participate in the non-co-op fishery. In order to address these contingencies a co-op transfer cap could be specified:

Co-op Transfer Cap: The maximum amount of QP for a particular species that could be transferred to any single MS co-op would be that co-op's share of the total whiting catch history times the overall transfer cap.

If this proposal is implemented by establishing a co-op-QP account on which the co-op would draw if it has an overage, then the co-op could transfer QP back to the shorebased sector later in the year if it determined it would not need the QP.

12. 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 socioeconomic purpose? (e.g., allowing increased opportunity to catch target species? making fishing opportunity among different user groups more equitable?)

The objective of this management measure is to better achieve the groundfish OYs by increasing the harvest of whiting in the mothership sector without significantly diminishing harvest by the shorebased sector.

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

Caps on the transfer of shorebased QP species into the mothership sector are intended to reduce the probability that the shorebased sector would be adversely impacted.

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

N/A

15. Is there any other background information that was important to the Council's decision? As appropriate, summarize Council discussion of this measure, and any conclusions reached, during the biennial process.

N/A

16. 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? How does any change in catch relate to harvest specifications and the risk that overfishing will occur?

If implemented this management measure may change catch of groundfish stocks in each sector compared to past catches, but will not allow more fishing than is authorized by the ACLs and allocation levels.

17. 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?

Impact to the Shorebased Sector

From 2011 through 2015, the shorebased nonwhiting fishery averaged \$29 million in exvessel revenue and the shorebased whiting fishery averaged \$21 million in exvessel value. The shorebased sector would be impacted by QP transfers to the mothership sector if such transfers reduce harvest by the shorebased sector and/or result in increased QP prices. Reductions in harvest would not only impact shorebased harvesters but also processors and communities. The transfer species QP are not only of value to shorebased harvesters for the landing of those species (Table 27) but also for accessing other species with which the transfer species co-occur. On average, from 2011 through 2015, at least one of the four transfer species were caught coincident with 86 percent of the total nonwhiting shorebased landings by weight and 77 percent by value and coincident with 93 percent of the total whiting landings by weight and 94 percent by value. Efforts to avoid constraining species may also impact shorebased vessel operating costs.

Through the first five years of the catch share program the shorebased sector has generally underharvested its allocations of the proposed transfer species. This underharvest has opened the question of whether greater benefits might be achieved if some of the shorebased QP could be transferred into the mothership sector—a sector which has recently been constrained by its bycatch allocation. Two key questions are:

- Is this underharvest likely to continue?
- Even if the underharvest continues, is it possible that removal of QP from the shorebased fishery would
 - constrain shorebased harvest or
 - increase QP prices?

The following sections address these questions for the shorebased sector. The impact of the potential transfer on the share of the allocation going to the mothership and shorebased sectors is provided below in a section entitled “Impact on Balance of the Shorebased/Mothership Allocations.”

Table 27. Shorebased trawl exvessel value of transfer species (dollars; 2011-2015; data source - PacFIN, 1/30/2016).

	2011	2012	2013	2014	2015
Canary	4,098	7,836	9,795	11,869	52,592
Darkblotched	91,678	89,973	120,385	87,567	114,483
POP	49,163	39,311	50,759	36,855	52,554
Widow	110,848	136,261	232,579	607,142	725,680

Continuation of Underharvest

With respect to continuation of underharvest, the future is difficult to project but some of the potential dynamics are illustrated by the recent past. Since inception of the program widow rockfish harvest has been increasing (Figure 26), as has the allocation of widow QP (Figure 27). The percent attainment of that allocation has also generally increased (Figure 28), though in the first year after a large increase (2013 and 2015) the increase in harvest has not kept up with the increase in allocation such that there were dips in the percent attainment in those years. (Note: the 2015 data is not yet complete and final attainment is expected to be higher than displayed here). In general there has been a redevelopment of the midwater pelagic rockfish fishery in which widow is taken as a primary target species and a trend toward increasing attainment of the available quota. Because widow can be targeted relatively cleanly in that fishery, or in combination with yellowtail rockfish, it would not be unexpected to see harvest of widow continue to increase. However, with dramatically increasing widow allocations, a portion of the QP might continue to go unutilized.

Canary rockfish illustrates a different dynamic. The allocations of canary rockfish are very low and precaution due to concern about canary bycatch is generally considered to constrain harvest. The catch of canary has been very slowly but steadily increasing (Figure 26), generally proportional to the increased allocations (Figure 27), such that from 2012 through 2014 there was little change in the attainment rate (Figure 28). At the end of 2015, one vessel had an unexpected large tow of canary such that the entire fleet catch was 104% of the 2015 IFQ sector allocation¹⁴. However, because annual vessel QP caps limit the QP that any one vessel may catch or hold in a year, the vessel was left with a large deficit that rolled into 2016, and therefore the QP attainment rate of the 2015 sector allocation was only 63%. This vessel will need to cover its overage out of future year allocations, though it will be limited each year by the vessel cap. Even if the entire canary catch of this vessel is removed from the data, the fleet as a whole still attained at least 54% of the 2015 QP allocation, over double the attainment rate of the previous year.

Thus for a bycatch species for which there is a low allocation circumstances may arise such that the proportion of QP caught suddenly increases. For 2017-2018 the total canary QP available will likely be at least quadruple that available in 2015-2016. This may result in lower attainment but the increase in quota availability may also lead fishermen to be less cautious about canary bycatch. At the same time, the vessel with the large overage at the end of 2015 will likely be out of the IFQ fishery until 2017, which may serve as a cautionary tale to others regarding the implications of a “lightning strike” bycatch incident.

The harvest of darkblotched (Figure 26) has been variable while the sector allocations (Figure 27) have been on a slight increasing trend (with the exception of 2014). Pacific Ocean perch harvest has varied from year to year with no clear trend and the allocations have also varied modestly. In general the attainment levels of darkblotched and Pacific Ocean perch have mirrored one another in their fluctuation around approximately 40 percent attainment, with the exception of 2012 (Figure 28).

While the sample size is small (widow and canary), it indicates that increasing allocations of overfished species may be correlated with increasing attainment of QP allocations for those species. If this pattern holds, increased attainment of darkblotched rockfish allocations would be expected for the 2017-2018 period. However, with the exception of whiting, sablefish, and petrale sole, species and species group attainments have not exceeded 70 percent of the allocations since the start of the catch share program in 2011 through 2014 (Matson, 2015; [Agenda Item E.8.a, Supplemental NMFS Report, April 2015](#)).

Some conditions that might cause an increase in attainment rates over time include:

- Increasing allocations and the redevelopment of targeting strategies previously minimized due to overfished species bycatch concerns.

¹⁴ Although with surplus carryover pounds, the sector did not exceed their total available pounds.

- Recovery of the biomass of overfished species prior to an increase in allocations for the fishery (widow rockfish was declared rebuilt for the 2013 fishery and canary was declared rebuilt for the 2017 fishery; darkblotched and Pacific Ocean perch continue to be under rebuilding however the QP of darkblotched available is expected to double under the 2017-18 action alternatives).
- Fishing in higher bycatch areas if closed areas, such as RCAs, are reduced.
- Gear innovations resulting from reduced gear restrictions leading to reduced bycatch levels for potentially constraining species but also increased effort and possibilities for unexpected high bycatch events (as occurred for canary in 2015).
- Increased fluidity in QP markets such that fishermen expect to have a reasonable likelihood of acquiring QP at a reasonable price to cover deficits – leading fishermen to be more willing to risk encountering bycatch for which they do not have QP, and so increasing the number of such catch incidents.

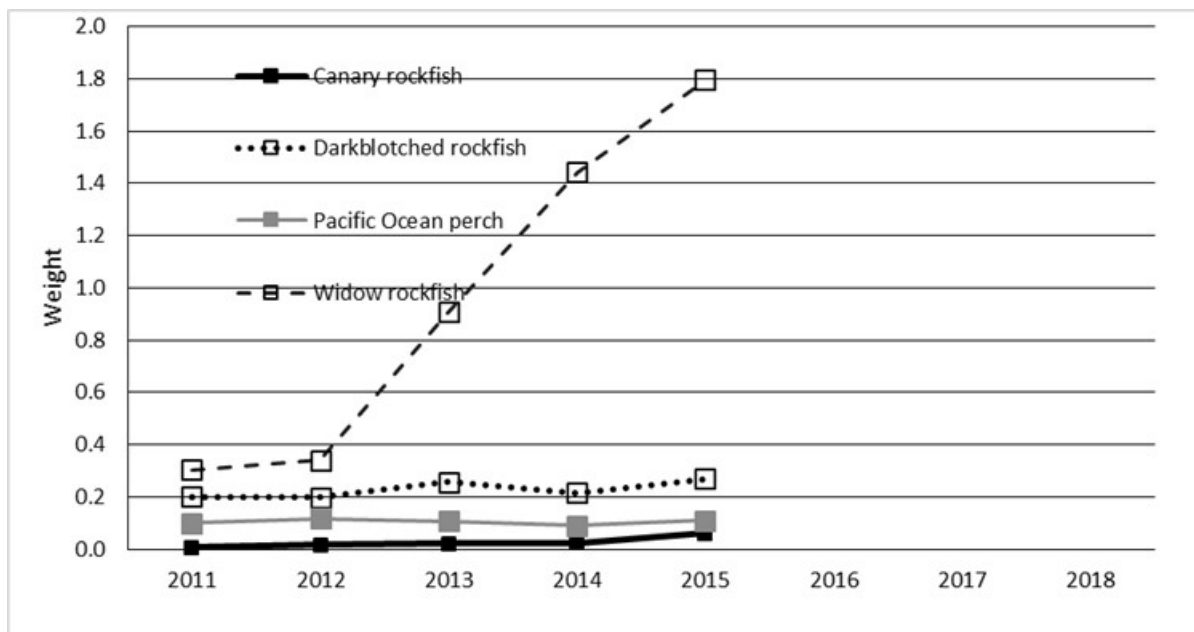


Figure 26. Harvest of bycatch species excluding amounts in excess of vessel QP caps (millions of pounds), 2011-2015 (data for 2015 is partial) (data source: WCR quota share and permit accounts webpage--<https://www.webapps.nwfsc.noaa.gov/ifq/--1/18/2016> and 2015 canary data from personal communication from Sarah Towne).

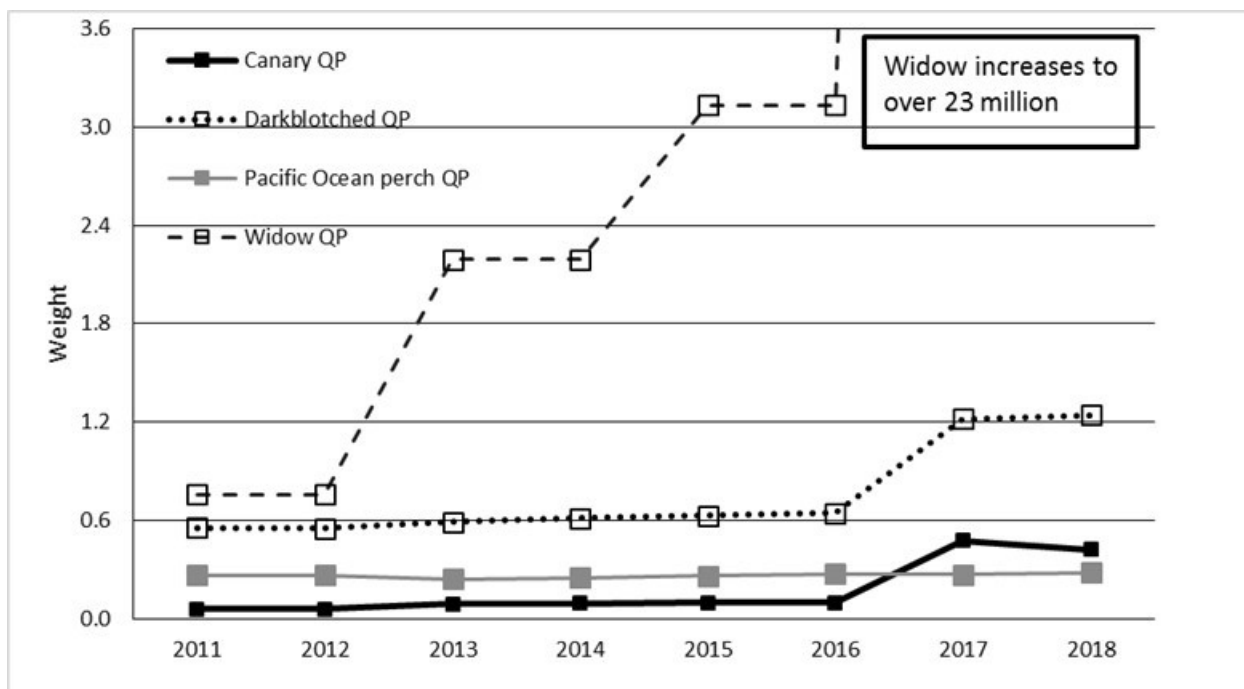


Figure 27. Millions of QP issued for the shorebased sector (2011-2016) and low end of the 2017 and 2018 shorebased allocations under the integrated action alternatives (data source: WCR quota share and permit accounts webpage--<https://www.webapps.nwfsc.noaa.gov/ifq/--1/18/2016>).

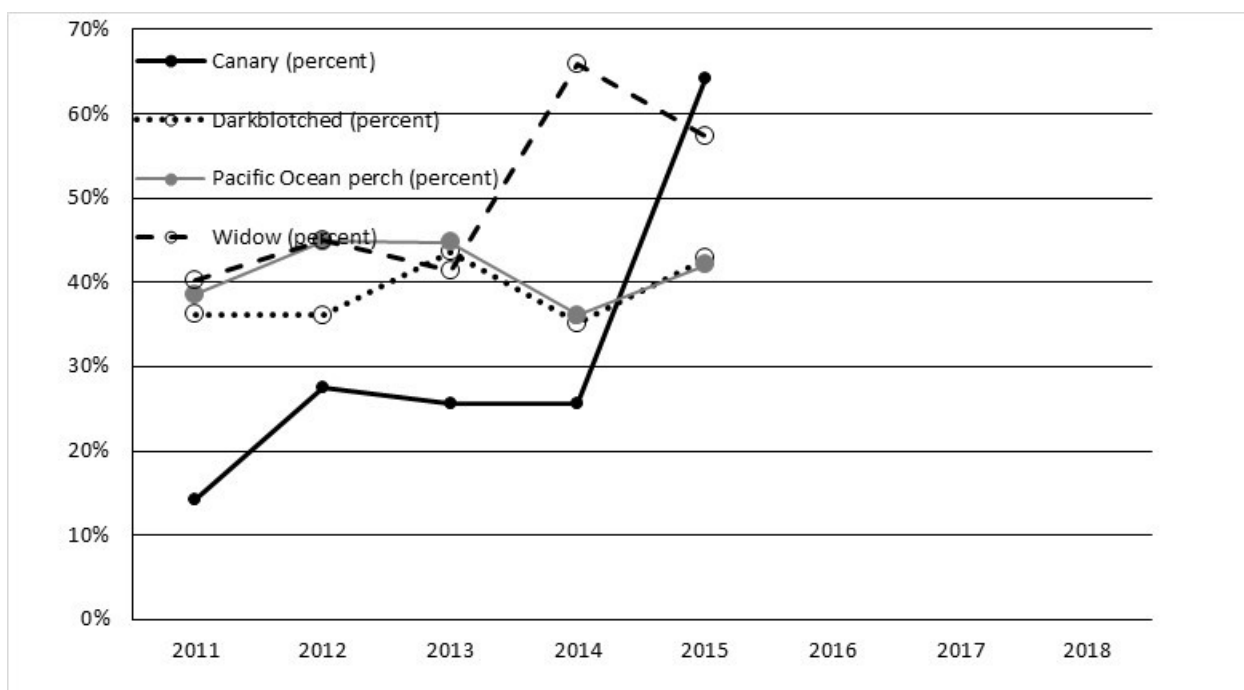


Figure 28. Percent of QP caught (utilized) by calendar year (2011-2015; data source: WCR quota share and permit accounts webpage--<https://www.webapps.nwfsc.noaa.gov/ifq/--1/18/2016>). Notes: (1) surplus carryover QP from the previous year are not included in the QP annual totals from which percent utilized is derived, (2) landings in excess of QP caps are not included because those landings did not utilize current year QP, and (3) 2015 data is incomplete.

Constraints on Harvest

Under the alternatives the transfer caps would be as follows:

- Canary Rockfish – 15%
- Darkblotched Rockfish – 20%
- Pacific Ocean Perch – 20%
- Widow Rockfish – 11%

The maximum QP transferable under each of the integrated alternatives is shown in Table 28 (Table 35 provides similar information in metric tons). These caps are generally well below the amount of unutilized QP in recent years, with the exception of canary in 2015 (Figure 29).

While there is a reasonable likelihood that there would be unused QP even if the maximum allowed amount of QP were to be transferred to the mothership sector, it is possible that the transfers would have a constraining effect on shorebased fishery harvest. In a recently published study, Holland and Norman (2015, spo.nmfs.noaa.gov/tm/TM158.pdf) note there is anecdotal evidence that QP hoarding is occurring “driven by the combination of uncertainty about individual QP needs and a lack of confidence that one could acquire QP on the market at a foreseeable price should it be needed unexpectedly” (p. 28). This lack of confidence in market availability of QP may then lead fishermen to be risk-avoidant in their fishing strategies and consequently contribute to under harvest of both bycatch and target species. If market function is poor, removing QP from the shorebased fishery could exacerbate hoarding and further decrease market availability of QP. Market functioning is addressed in more detail in the following section on price effects.

As market functioning improves and fishermen become more confident about QP availability and prices, they are more likely to risk catching fish for which they do not have the QP (and more likely to sell QP they have but don’t reasonably expect to need). Improved market functioning would decrease the potential impacts of removing a portion of surplus QP from the shorebased sector.

Improved market functioning (fluidity) may reduce precaution and hence also the surplus of QP available for transfer the mothership sector; however, the same increased fluidity may decrease the impact of such transfers. If there is some level of under attainment but markets are fluid, the removal of a portion of the unutilized QP is less likely to affect confidence in market availability of QP, and hence, less likely to affect fishing behaviors and overall harvest than when markets are not functioning well.

A QP constraint will impact fishing strategies differently, depending on the relative value of the targeted catch and the amount of QP needed to cover incidental catch (i.e. bycatch rates). Harvesters pursuing a strategy which generates more revenue per QP needed to cover incidental catch will be willing to pay more for the needed incidental catch QP and therefore are less likely to be constrained by the transfer of some QP to the mothership sector (related price effects are the focus of the following section). A very rough analysis provides an illustration. In Table 29 the revenue per pound of the transfer species is shown for all nonwhiting trips on which the transfer species were caught and for all whiting trips. In this table it appears that the revenue generated per pound of transfer species in the shorebased whiting fishery was likely greater than the revenue per pound in the shorebased nonwhiting fishery from 2011 through 2013. In 2014, the difference between the two lessened substantially and in 2015 the whiting fishery values appear to have dropped below the nonwhiting fishery values. This reversal is correlated with a substantial under harvest of the shorebased whiting allocation in 2014 and 2015 (Table 30) but is likely due to the substantially higher bycatch rates in the whiting fishery (Table 31 and Figure 30).

Retrospectively, if QP transfer to the mothership sector had been allowed and created a constraint, based on these data it would be expected that a reduction in the availability of these transfer species would have

had a greater impact on nonwhiting strategies in 2011-2014 but a greater impact on the whiting strategy in 2015. Thus depending on circumstances different strategies may be impacted by a reduction in the available QP, if such reductions impose a constraint. Additional analysis could be done regarding bycatch rates and revenues of different strategies and their geographic distributions to provide further indications of possible impacts of this management measure.

One of the shortcomings of this illustration is that in the nonwhiting fishery widow rockfish has transitioned from being primarily a bycatch species at the start of the catch share program to a targeted species in more recent years. This is reflected in the increasing catch of widow in the shorebased nonwhiting fishery (Table 32). This dynamic may be the reason that this rough analysis shows a declining revenue per pound of catch of the transfer species over the span of the data in Table 29. However, this shortcoming does not impact the conclusion of the analysis: that different strategies may be impacted differently by the transfer of QP to the mothership sector.

Within the shorebased fishery it is expected that the market will cause the redistribution of QP to achieve the most efficient allocation among the various fishing strategies employed in the shorebased fishery. Allowing some transfer of QP to the mothership sector would bring similar market mechanisms into play between the shorebased and mothership sectors when use by the mothership sector is of higher value. However, when the reverse is the case it would not allow transfer of mothership allocations to the shorebased sector. It should also be noted that while market forces may result in an efficient allocation of QP among the harvesters, that distribution would not take into account socio-economic factors such as local community dependence on the fishery.

Table 28. Shorebased allocations (millions of pounds) and transfer caps (percent and millions of pounds) for the allocations under each integrated alternative (see Table 35 for similar values in metric tons).

		2017			2018		
		Alt 1	Alt 2	No Action	Alt 1	Alt 2	No Action
Shorebased QP Allocations (millions of pounds)							
Canary rockfish		0.740	0.475	1.520	0.655	0.419	1.405
Darkblotched rockfish		1.218	1.218	0.752	1.242	1.242	0.778
Pacific Ocean Perch		0.269	0.269	0.269	0.279	0.279	0.279
Widow rockfish		25.127	25.127	2.954	23.515	23.515	2.954
	Cap (%)	QP Transfer Caps (millions of pounds)^{a/}					
Canary rockfish	15%	0.111	0.071	0.228	0.098	0.063	0.211
Darkblotched rockfish	20%	0.244	0.244	0.150	0.248	0.248	0.156
Pacific Ocean Perch	20%	0.054	0.054	0.054	0.056	0.056	0.056
Widow rockfish	11%	2.764	2.764	0.325	2.587	2.587	0.325

a/ Transfer caps converted to mt are provided in Table 35.

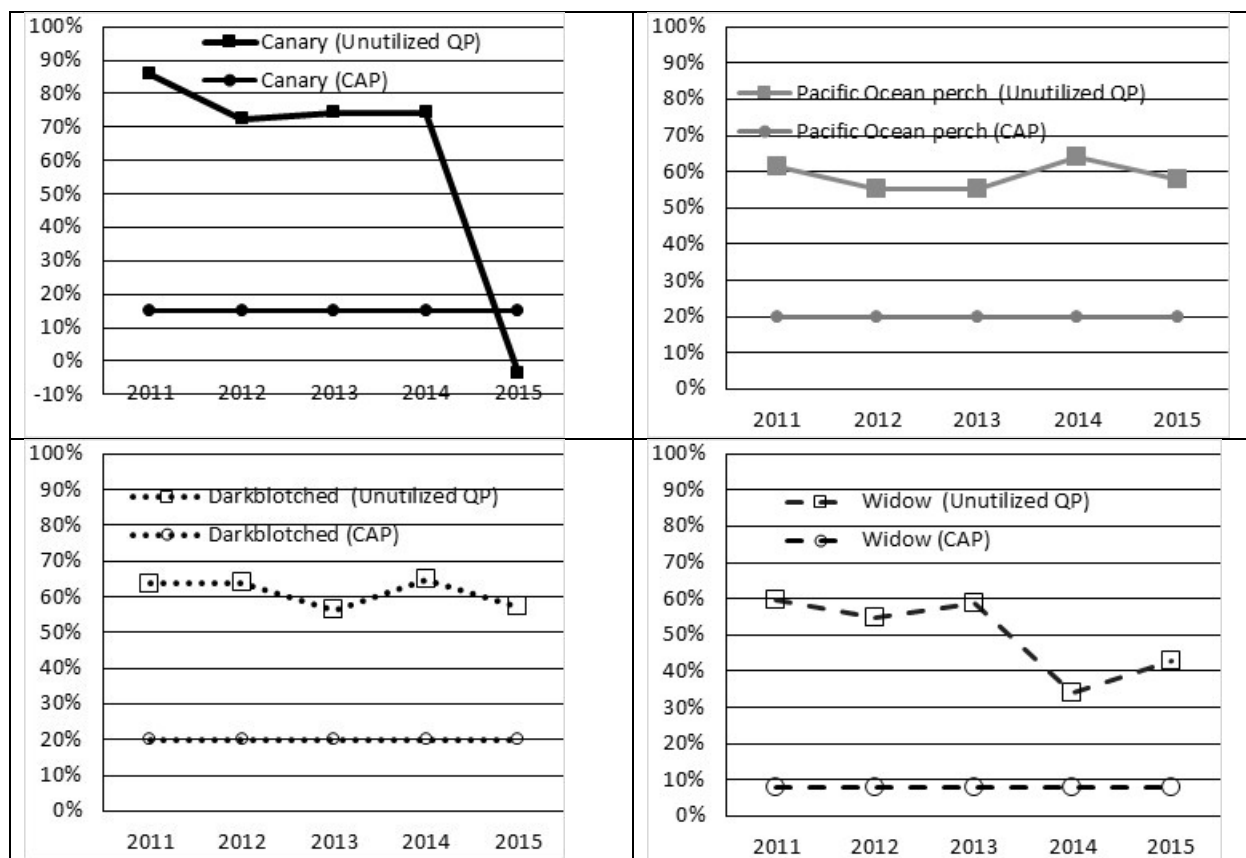


Figure 29. Transfer caps (percent) for each species compared to percent of the shorebased sector QP left uncaught (2011-2015)—2015 data is incomplete.

Table 29. Exvessel revenue per pound of transfer species for shorebased whiting trips and for nonwhiting trips in which one of the bycatch species was caught and for all whiting trips (dollars).

	2011	2012	2013	2014	2015
Total Trip Revenue Per Pound of Transfer Species					
Shorebased NonWhiting Trips With at Least 1 Pound of a Transfer Species	68	58	38	22	18
Shorebased Whiting Trips	100	80	77	36	12

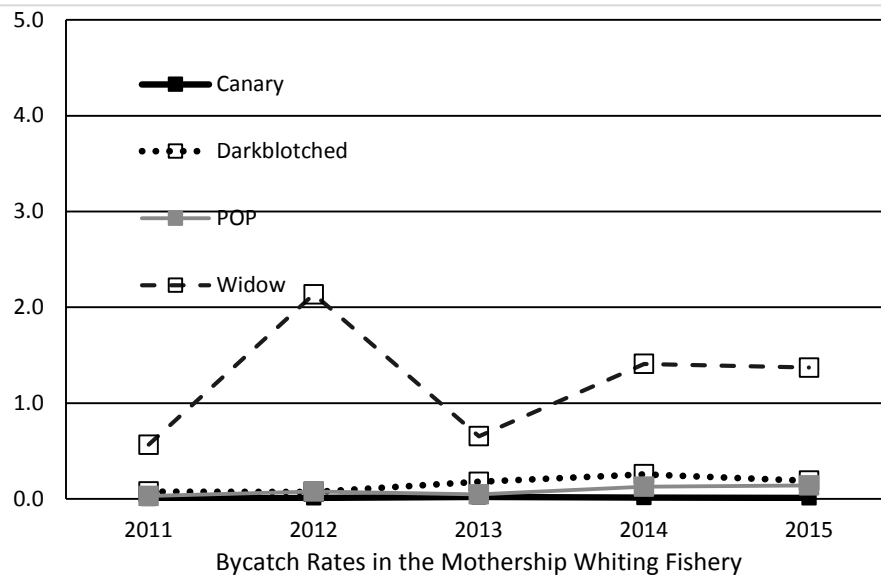
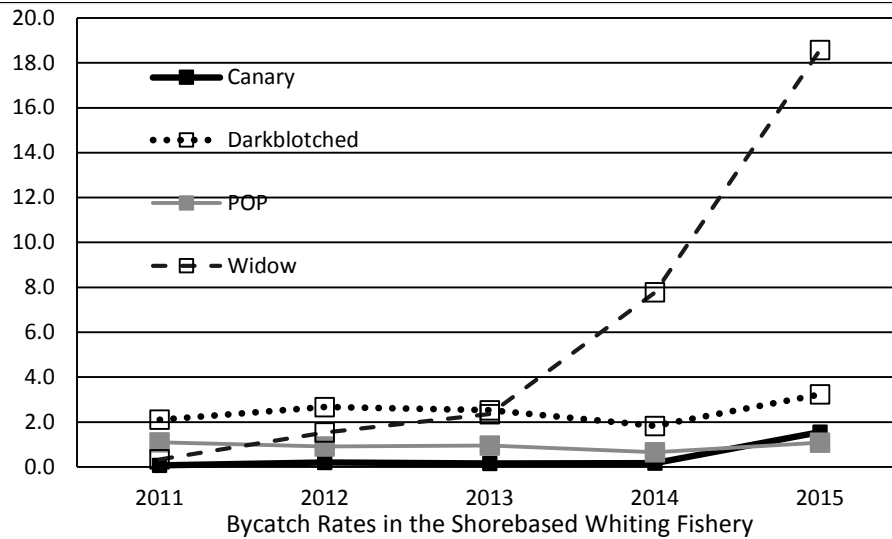


Figure 30. Bycatch rates in the shorebased whiting and mothership whiting fisheries (note that the vertical scale for the mothership fishery is one quarter the vertical scale for the shorebased fishery, see Table 31 for related data).

Table 30. Whiting allocations and catch by sector (mt) and percent attainment (2011-2015).

	2011	2012	2013	2014	2015 (1/25/16)
Shorebased					
Original Allocation	92,818	56,902	85,697	108,935	112,007
Final Allocation	92,818	68,662	98,297	127,835	124,607
Catch	90,353	65,279	96,856	97,964	57,900
Percent Caught	97%	95%	99%	77%	46%
Mothership					
Original Allocation	53,039	32,515	48,970	62,249	64,004
Final Allocation	53,039	39,235	56,170	73,049	71,204
Catch	50,051	38,434	52,450	62,098	27,660
Percent Caught	94%	98%	93%	85%	39%
Catcher-Processor					
Original Allocation	75,138	46,064	69,373	88,186	90,673
Final Allocation	75,138	55,584	79,573	103,486	100,873
Catch	71,679	55,263	77,950	103,203	68,484
Percent Caught	95%	99%	98%	100%	68%

Table 31. Whiting trip bycatch rates (pounds/mt) by sector and total whiting allocations.

	2011	2012	2013	2014	2015	Average
Shorebased Whiting Trips						
Canary	0.063	0.201	0.161	0.172	1.557	0.4308
Darkblotched	2.105	2.665	2.524	1.826	3.231	2.4702
POP	1.100	0.917	0.952	0.649	1.084	0.9404
Widow	0.338	1.538	2.353	7.782	18.571	6.1164
Whiting (mt)	90,353	65,279	96,856	97,964	57,900	81,670
Mothership						
Canary	0.004	0.009	0.020	0.013	0.011	0.0114
Darkblotched	0.075	0.072	0.178	0.256	0.190	0.1542
POP	0.029	0.078	0.047	0.128	0.139	0.0842
Widow	0.566	2.136	0.654	1.409	1.371	1.2272
Whiting (mt)	50,051	38,434	52,450	62,098	27,660	46,139
Catcher Processors						
Canary	0.014	0.011	0.005	0.006	0.002	0.0076
Darkblotched	0.316	0.057	0.059	0.073	0.179	0.1368
POP	0.200	0.124	0.120	0.007	0.224	0.135
Widow	0.751	1.663	0.444	0.354	0.561	0.7546
Whiting (mt)	71,679	55,263	77,950	103,203	68,484	75,316

Table 32. Shorebased bycatch of transfer species for whiting and nonwhiting trips and percent of shorebased sector bycatch taken on whiting trips (2011-2015).

	2011	2012	2013	2014	2015
Shorebased Whiting Trips - Bycatch (pounds)					
Canary	1,863	2,160	3,983	4,778	8,332
Darkblotched	2,692	9,474	7,159	18,625	69,339
POP	561	23,650	14,816	22,201	44,201
Widow	219,241	225,300	317,961	630,453	712,496
Shorebased NonWhiting Trips - Bycatch (pounds)					
Canary	5,720	13,153	15,608	16,877	90,147
Darkblotched	190,177	173,961	244,455	178,848	187,090
POP	99,344	59,847	92,173	63,570	62,748
Widow	30,560	100,376	227,929	762,402	1,075,263
Total (pounds)					
Canary	7,583	15,313	19,591	21,655	98,479
Darkblotched	192,869	183,435	251,614	197,473	256,429
POP	99,906	83,497	106,990	85,771	106,949
Widow	249,801	325,676	545,890	1,392,855	1,787,759
Percent of Total Bycatch Pounds Taken on Shorebased Whiting Trips					
Canary	25%	14%	20%	22%	8%
Darkblotched	1%	5%	3%	9%	27%
POP	1%	28%	14%	26%	41%
Widow	88%	69%	58%	45%	40%

Price Effects

In addition to impacting attainment of shorebased allocations, the transfer of QP to the mothership sector may also impact QP price. Ability to transfer QP to the mothership sector effectively increases demand for the QP, with an accompanying potential increase in QP prices. Even if this effective increase in demand is met through QP transfers from mothership harvesters with their own QS, prices may still be impacted since these entities would otherwise be potential QP sellers in the shorebased QP market.

The effect of new demand for QP by the mothership sector will depend on market functioning and the degree of QP utilization by the shorebased sector. Holland and Norman address market functioning as market efficiency. Indicators of inefficient markets are high variability in prices and relatively few transactions. Their data shows a general upward trend in the number of transactions for species of concern here (Figure 31). Based on data through 2014, they observe “There are some indications that market efficiency is increasing slowly, but the market may take many years to mature into an efficient market.” Cash transactions for QP in 2015 increased substantially (Figure 31, personal communication from Dan Holland, January 21, 2016). Also, it should be noted that the Holland and Norman study showed that barter and contractual agreements (e.g., risk pools) for QP trades are common such that QP transfers are not dominated by cash sales.

In the Jefferson State Brokers quota market there has also been an upward trend in trading in the four transfer species considered here, and that trend extended itself notably in 2015 (Figure 32). It is uncertain whether the increased trading in this market is a result of increased trading in QP or an indication that this

market's share of the QP trading market has increased. However, the more trading that occurs in open markets such as this the more likely it is that the trade information will help stabilize QP prices.

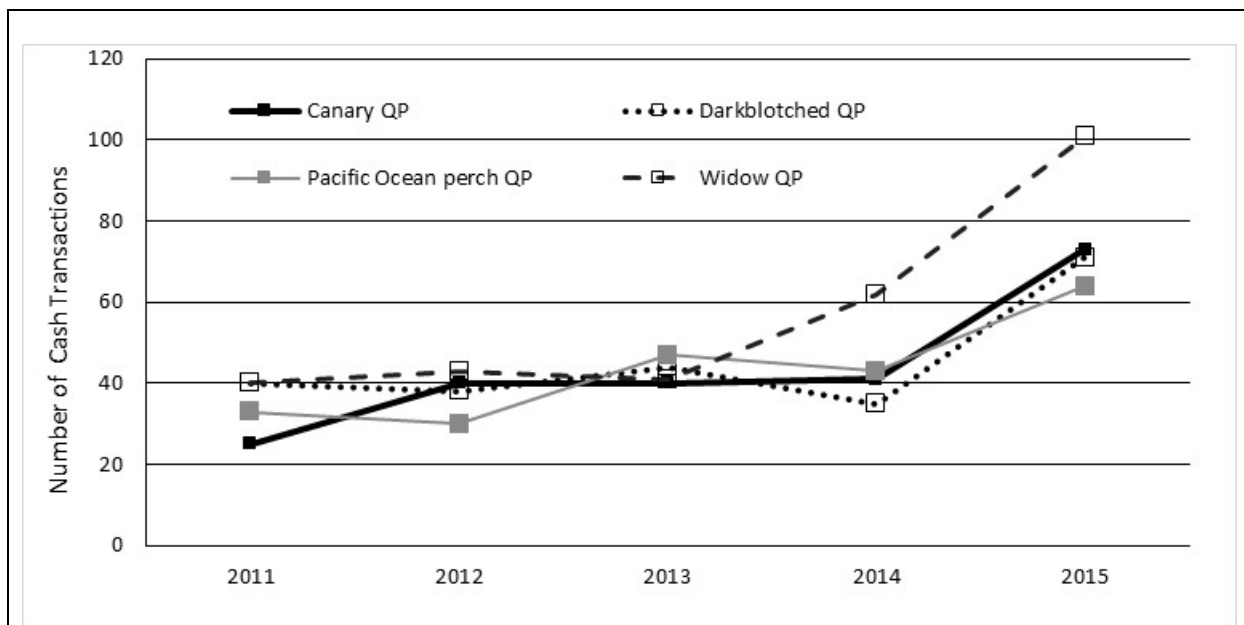


Figure 31. Number of cash for QP transactions by year for the proposed transfer species (includes both single species transactions and transactions in which the species was part of a multispecies bundle that was traded) as reported by Holland and Norman (2015) and updated based on personal communication (data sources: 2011-2014 data from Holland and Norman, 2015; 2015 data from Dan Holland, personal communication, 1/21/2016).

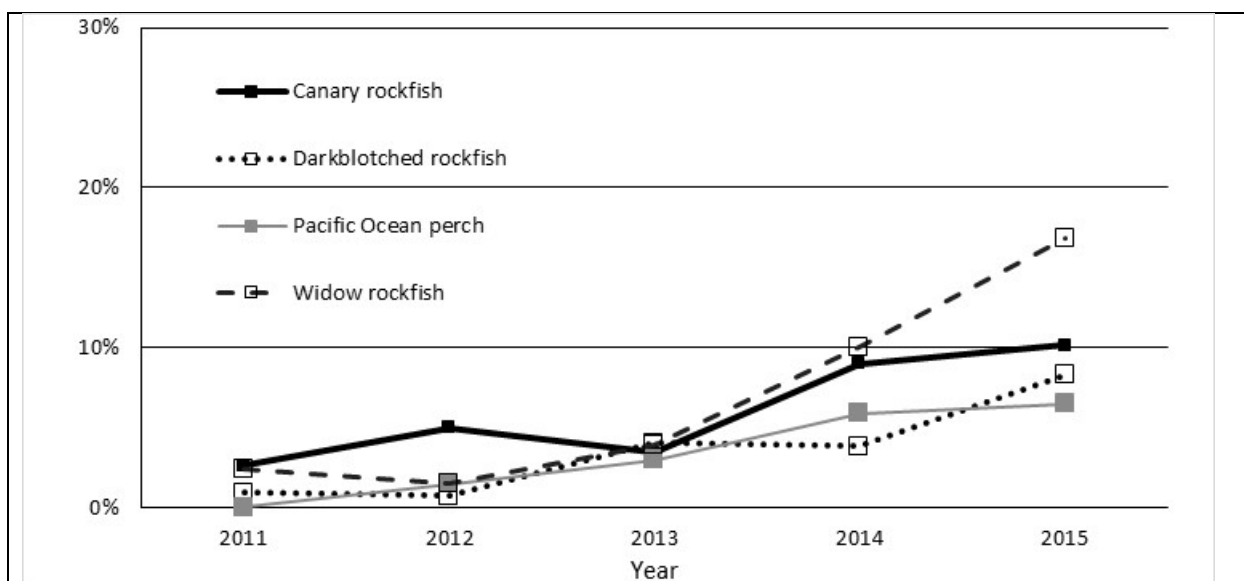


Figure 32. QP traded on Jefferson State Trading as a percent of total QP issued, by year 2011-2015 (data source: <http://jeffersonstatetradingco.com/cgi-bin/auction/auction.pl>, 1/18.2016He).

Table 33 shows possible effects or outcomes under a range of QP attainment rates and QP market functioning levels. If the market is well functioning but there is low QP attainment by the shorebased sector,

QP prices would be low and the likelihood of price impacts through transfer of QP to the mothership sector would be lower than for other combinations of market function and attainment levels (cell B compared to the other cells in Table 33). The likelihood of an impact on harvest levels would also be expected to be the lowest because there would be surplus of QP readily available on the market at a predictable price. The highest likelihood of an adverse impact would occur under conditions of low market function and high QP attainment (cell C in Table 33). If after QP transfers to the mothership sector there would not be a surplus of QP available and markets do not continue with their recent improvements, cell C reflects the expected result. The loss of QP to the mothership sector could exacerbate poor market functioning if it increases fear of a QP shortage and consequently QP hoarding. If there is high QP attainment but also high market functioning whatever surplus QPs are available would likely be readily accessible on the QP market such that a lesser likelihood of impacts in comparison to a similar situation with lower market functioning (cell D compared to cell C, in Table 33). Whatever the impacts might be in a situation with low QP attainment and low market functioning (cell A) as attainment increases any increases in adverse impacts may be at least partially offset but a well-functioning market (cell D).

Table 33. Matrix of possible effects of different combinations of QP market functioning and QP attainment rates.

	Low Market Functioning	High Market Functioning
Low QP Attainment	A. Erratic pricing Impact likelihood between B and C.	B. Low prices Lowest likelihood of adverse impacts.
High QP Attainment	C. Erratic Pricing Highest likelihood of adverse impacts.	D. Higher prices Impact likelihood between B and C.

The shorebased sector allocations and amount of QP that could be transferred under each of the integrated alternatives are shown in Table 28. In the event that shorebased sector attainment levels increase, transfer of QP to the mothership sector will entail an opportunity cost (the opportunity to generate revenue by selling the QP into the shorebased sector). Given the potential opportunity costs, that historic bycatch levels of allocated species in the mothership sector are often substantially lower than the mothership sector allocations (Table 34), and that the caps would generally allow the transfer in of amounts of quota ranging from double to several times the sector allocations (Figure 33), it is uncertain whether the full cap amounts would ever be transferred to the mothership sector.

Impacts to the Mothership Sector

Ability to transfer shorebased canary, darkblotched, POP, and widow QP (transfer species QP) to the mothership sector may benefit the mothership sector by increasing the certainty of the sector's access to its whiting allocation and decreasing the need for bycatch avoidance measures. Bycatch avoidance measures (such as moving the fleet when high bycatch rates are encountered) reduce fleet efficiency by increasing operating costs. Intersector transferability may also reduce disruption that occurs when the fishery has to slow or stop to wait for management entities to provide an inseason augmentation of bycatch allocations (when such augmentations are possible). These issues are addressed in the following sections. The impact of the potential transfer on the share of the allocation going to the mothership and shorebased sectors is provided below in a section entitled "Impact on Balance of the Shorebased/Mothership Allocations."

Access to and Value of Mothership Whiting

The estimated exvessel value for the mothership whiting fishery catch was between \$11.5 million and \$15.2 million from 2011 through 2014 (Table 34). In 2015, this value declined to \$4.4 million. For the first three years of the catch share program, the sector generally harvested well over 90 percent of its allocation (Table 30). However, in 2014, 15 percent of the mothership allocation was left unharvested (equal to \$2.7 million

based on average exvessel value per mt), and in 2015, 57 percent was left unharvested (equal to \$5.8 million).

Access to darkblotched rockfish was a concern in 2014 and 2015. In 2014, while the overall mothership whiting allocation increased by 30 percent relative to 2013 (Table 30), the darkblotched allocation increased by only 3 percent (Table 34) and the darkblotched bycatch rate increased by 44 percent (Table 31). In order to allow the fishery to proceed, the sector's initial allocation was augmented through an inseason action to increase the mothership sector allocation by 3 mt, as recommended at an October 17, 2014 emergency Council meeting. In 2015, the initial allocation was augmented by an inseason action in the fall of 2015 to provide a total of 8 mt of darkblotched for the at-sea sector (combined mothership and catcher-processor) with not more than 5 mt going to either the mothership or catcher processor sector.

The mothership sector underharvest that occurred in 2014 is likely attributable to the voluntary halt in mothership fishing activity that continued until the sector's darkblotched allocation was augmented later in the year. For the mothership sector, the delay in the management response may have been a cause for failure to catch the whiting allocation, despite the inseason increase in darkblotched allocation. After the increase, the sector was unable to relocate fishable concentrations of whiting (personal communication: Brent Paine, January 27, 2016). However, in 2014, the shorebased sector also was unable to catch its whiting allocation (Table 30) though its bycatch rates were not particularly high for any species except widow (Table 31). The catcher-processor sector took its full allocation in 2014 (Table 30). Under this proposed management measure, in the event that the mothership sector exhausted its bycatch allocation, by acquiring additional bycatch species QP it would be able to continue fishing uninterrupted rather than having to wait for Council and NMFS action and risk disruptions that reduce overall harvest. Thus, full harvest of the available whiting quota may be more likely both because of the access to the shorebased QP to cover bycatch and reduced disruption of the fishery.

In 2015, all sectors under harvested their allocations although allocation attainment for the mothership sector (39%) was lower than for the shorebased (46%) or catcher-processor (68%) sectors (Table 30). In 2015, it is not clear that bycatch allocations directly constrained harvest, but efforts to avoid bycatch may have hampered the mothership sector's efforts to find fishable concentrations of whiting. It is reported that in general the fleets had a hard time locating fishable concentrations of whiting and that the search was constrained by concerns about bycatch rates—particularly given the high bycatch rates that were being encountered in the shorebased fishery (Table 31). In 2015, bycatch rates for whiting trips in the shorebased fishery and the catcher-processor sector were both elevated relative to the immediately preceding years. Bycatch rates in the mothership fishery did not show the same degree of elevation. Because the shorebased whiting fishery has access to the entire shorebased QP market, bycatch may be somewhat less of a concern in that fishery relative to the mothership sector. This management measure would provide the mothership sector some access to that same QP pool used by the shorebased sector.

In general, the mothership sector harvests substantially under its allocation of bycatch species—the primary exception being darkblotched rockfish in 2014 (Table 34). At the same time, the experience with darkblotched shows that circumstances can change rapidly and require inseason response to allow full attainment of whiting allocation. Under the integrated action alternatives, significant increases in the allocations for canary, darkblotched, and widow rockfish would be expected in 2017 and 2018 (Table 34 and Table 35). On the one hand, these increases may reduce the degree to which bycatch species are constraining. On the other hand, the increases reflect improved status of these stocks and if abundances continue to increase bycatch rates might also be expected to increase. This becomes particularly problematic when the stock assessment information on which allocations are based lags actual stock conditions.

The caps proposed in this action would allow the mothership sector to acquire from the shorebased fleet substantial additional QP relative to the allocations provided under the 2017-2018 integrated alternatives (Table 36 and Figure 33). Proportionally, the additional opportunity would be even greater when compared to recent year bycatch allocations, particularly for canary and widow (Figure 34).

Table 34. Mothership sector harvest revenue, catch, bycatch, and allocations under the 2017-2018 Integrated Alternative 2.

	2011	2012	2013	2014	2015	2016	2017 Alt 2	2018 Alt 2
Mothership Sector Harvests (millions of dollars, exvessel revenue)								
	13.2	11.5	14.8	15.2	4.4			
Mothership Sector Allocations (mt)								
Canary Rockfish	3.4	3.4	5.2	5.4	5.7	5.8	28.4	25.0
Darkblotched rockfish	6.0	6.0	6.1	6.3 ^{a/}	6.5 ^{b/}	6.7	12.6	12.8
				(9.3)	(9.5-11.5)			
Pacific Ocean Perch	7.2	7.2	7.2	7.2	7.2	7.2	7.2	7.2
Widow Rockfish	61.2	61.2	120.0	120.0	120.0	102.0	290.5	271.8
Whiting	53,039.0	39,235.0	56,170.0	73,049.0	71,204.0			
Mothership Sector Harvests (mt)								
Canary Rockfish	0.1	0.2	0.5	0.4	0.1			
Darkblotched rockfish	1.7	1.3	4.2	7.2	2.4			
Pacific Ocean Perch	0.7	1.4	1.1	3.6	1.7			
Widow Rockfish	12.9	37.2	15.6	39.7	17.2			
Whiting	50,051.0	38,434.1	52,449.7	62,098.3	27,660.4			
Mothership Sector Attainment of Allocations								
Canary Rockfish	2%	4%	9%	7%	2%			
Darkblotched rockfish	28%	21%	69%	115% ^{c/}	37% ^{c/}			
Pacific Ocean Perch	9%	19%	16%	50%	24%			
Widow Rockfish	21%	61%	13%	33%	14%			
Whiting	94%	98%	93%	85%	43%			

a/ Augmented by an inseason action to increase the mothership sector allocation by 3 mt, as recommended at an October 17, 2014 emergency Council meeting.

b/ Augmented by an inseason action in the fall of 2015 to provide a total of 8 mt of darkblotched for the at-sea sector (mothership and catcher-processor combined) with not more than 5 mt going to either the mothership or catcher processor sector.

c/ Relative to original allocation.

Table 35. Mothership and shorebased sector allocations and transfer amounts that would be allowed under this management measure for each of the transfer species under the 2017-18 integrated alternatives.

	2017			2018		
	Alt 1	Alt 2	No Action	Alt 1	Alt 2	No Action
Mothership Allocations (millions of pounds)						
Canary rockfish	44.2	28.4	90.8	39.1	25.0	83.9
Darkblotched rockfish	12.6	12.6	7.8	12.8	12.8	8.0
Pacific Ocean Perch	7.2	7.2	7.2	7.2	7.2	7.2
Widow rockfish	290.5	290.5	120.0	271.8	271.8	120.0
Maximum Transfers (mt)						
Canary rockfish	50.3	32.3	103.4	44.5	28.5	95.6
Darkblotched rockfish	110.5	110.5	68.2	112.7	112.7	70.5
Pacific Ocean Perch	24.4	24.4	24.4	25.3	25.3	25.3
Widow rockfish	1,253.7	1,253.7	147.4	1,173.3	1,173.3	147.4
Mothership Allocation Plus Maximum Transfer						
Canary rockfish	94.5	60.7	194.2	83.6	53.5	179.5
Darkblotched rockfish	123.1	123.1	76.0	125.5	125.5	78.5
Pacific Ocean Perch	31.6	31.6	31.6	32.5	32.5	32.5
Widow rockfish	1,544.2	1,544.2	267.4	1,445.1	1,445.1	267.4
Mothership Resulting Allocation as Percent of Original						
Canary rockfish	214%	214%	214%	214%	214%	214%
Darkblotched rockfish	977%	977%	974%	980%	980%	982%
Pacific Ocean Perch	438%	438%	438%	452%	452%	452%
Widow rockfish	532%	532%	223%	532%	532%	223%
Shorebased Sector Allocation (mt)						
Canary rockfish	335.7	215.6	689.2	296.9	190.0	637.3
Darkblotched rockfish	552.6	552.6	341.0	563.4	563.4	352.7
Pacific Ocean Perch	121.8	121.8	121.8	126.6	126.6	126.6
Widow rockfish	11,397.2	11,397.2	1,339.7	10,666.2	10,666.2	1,339.7
Shorebased Sector Allocation Minus Maximum Transfer						
Canary rockfish	285.3	183.3	585.8	252.4	161.5	541.7
Darkblotched rockfish	442.0	442.0	272.8	450.7	450.7	282.2
Pacific Ocean Perch	97.5	97.5	97.5	101.3	101.3	101.3
Widow rockfish	10,143.5	10,143.5	1,192.3	9,492.9	9,492.9	1,192.3
Shorebased Sector Resulting Allocation as Percent of Original						
Canary rockfish	85%	85%	85%	85%	85%	85%
Darkblotched rockfish	80%	80%	80%	80%	80%	80%
Pacific Ocean Perch	80%	80%	80%	80%	80%	80%
Widow rockfish	89%	89%	89%	89%	89%	89%

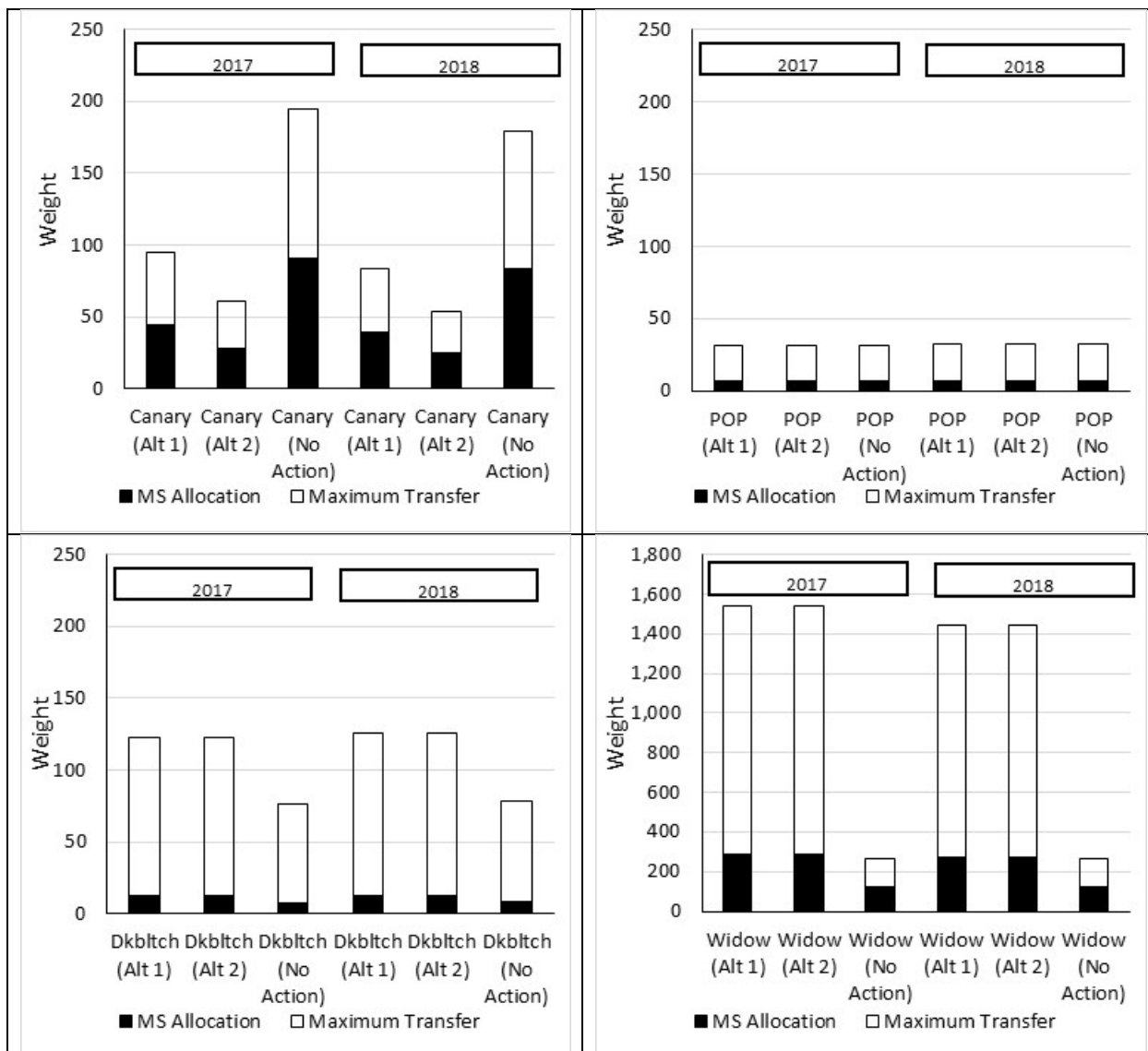


Figure 33. Metric tons allocated to the mothership sector and maximum transfer amounts for each of the transfer species under the 2017-18 integrated alternatives.

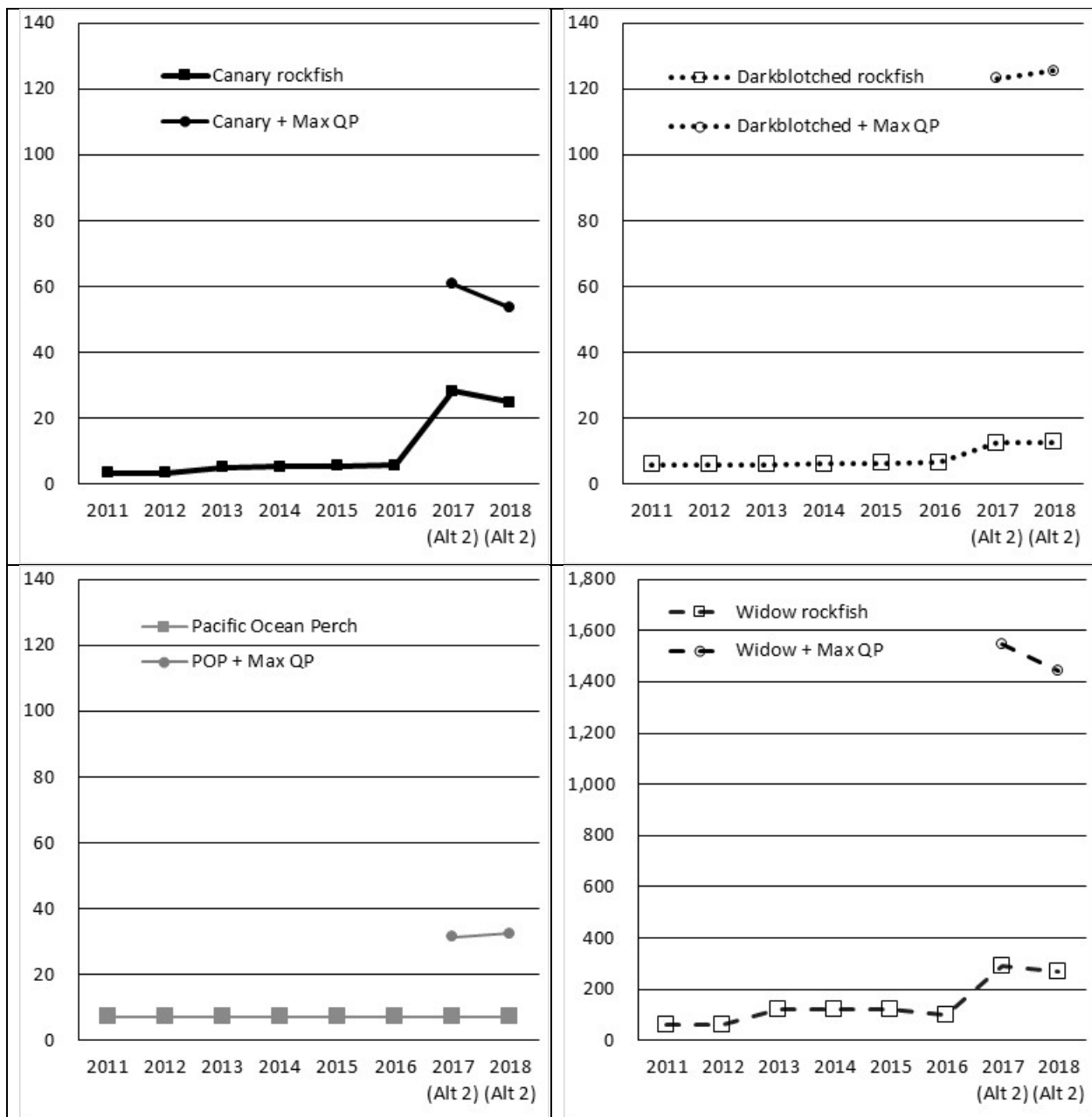


Figure 34. Metric tons of allocated species by year and total available if QP transfer allowance is maximized for allocated bycatch species (Alt 1 and Alt 2 are identical for all species except canary. For canary, Alt 1 would be 56% above Alt 2. Note that for widow rockfish the vertical axis is on a different scale than for the other species).

If the transfer caps are high relative to the mothership sector's likely need, the maximum allowed amounts might not be transferred to the mothership sector because of the low need relative to the costs involved (the cost of purchasing the QP, or for mothership catcher vessels with their own QS, the lost opportunity to sell the QP into the shorebased sector). When the shorebased sector's utilization of its QP is higher, QP prices will likely increase, increasing the costs of acquiring QP for the mothership sector and decreasing the probability that the maximum amounts will be transferred. At the same time, the mothership sector currently engages in substantial bycatch avoidance strategies which impose costs that could be alleviated

with a higher bycatch caps. Thus the mothership sector's need is not only for the minimal amount of QP required to catch its whiting allocation, but also for additional allocations to allow it to incur higher bycatch rates and reduce its bycatch avoidance measures.

A probability analysis based on historic bycatch rates (see Section 4.1.1.4 and Appendix A) shows that for an assumed 64,004 mt mothership whiting allocation, the probability that the sector will not exceed its bycatch species allocations is over 90 percent under 2017-18 integrated No Action alternative and over 95 percent under the integrated action alternatives. If the actual whiting allocation is higher, the probability that the bycatch allocations will not be exceeded would go down, and vice versa. However, these probabilities assume the continuation of status quo bycatch avoidance practices.

Bycatch Avoidance and Fishing Activity Disruption

The opportunity to transfer QP into the mothership sector might allow the mothership sector to reduce the stringency of its bycatch avoidance measures and thereby reduce fishing costs. As an example, the 2015 whiting mothership co-op bycatch rules include closed areas and relocation requirements when high bycatch rates are encountered. Additionally, test tows are required each time a new area is entered.

While these costs affect the whole fleet, impacts may be greater on individual vessels. The mothership sector fishery is conducted in a sequence of pools. Not all vessels participate in all pools. In 2011 no pools were closed based on bycatch, but in 2012 one pool was closed due to widow bycatch, in 2013 one pool was closed due to darkblotched bycatch, in 2014 two pools were closed due to darkblotched bycatch and in 2015 one pool was closed due to darkblotched bycatch. Thus, even though the mothership sector substantially underutilized its bycatch allocations in all of these years except 2014 (Table 34), there were periods during which fishing stopped due to bycatch limitations under the co-op rules. Further, if fishing in one pool is shut down due to bycatch problems, a vessel may be prevented from participating in a subsequent pool if its bycatch rates exceeded 125% of the base bycatch rates.¹⁵

In 2015, vessels were required to move to a new fishing area if:

- i. a Fleet's three (3) day rolling average bycatch rate of Overfished Species or Chinook salmon exceeds the Base Rate for any such species, and that Fleet's cumulative annual bycatch rate for such species exceeds fifty percent (50%) of the Base Rate for such species,
- ii. a Fleet's three (3) day rolling average bycatch rate for any of such species exceeds one-hundred twenty-five percent (125%) of the Base Rate for such species, or
- iii. a Fleet's bycatch rate during any single day exceeds two-hundred percent (200%) of the Base Rate for such species

(from page 2 of the "2015 WMC Bycatch Rules")

Data from 2011 through 2015 for rockfish are used to illustrate the frequency with which the fleet moves in response to these triggers (Table 36). The 200 percent trigger corresponds to movement criteria iii in the above list. Under certain circumstances a move is required when the base rate is reached on a three day rolling average basis (see paragraph i above). Additionally, it is reported that vessels will move on a pre-emptive basis prior to reaching the triggers—thus moves occur at a greater frequency than would be indicated by an analysis of the trigger points. To indicate the higher frequency at which the fleets might move, an analysis is provided using a trigger of one day fishing at 100 percent of the base rate. In some cases, more than one single species trigger is encountered on the same day. To develop an estimate of the total number of days on which a move was required, the values in Table 36 were summed across species. A downward adjustment was made based on an estimate of the number of days in which the trigger for more than one species was reached (developed using five year annual average base rates). These results are displayed in Table 37. From these data it can be seen that based on the 200 percent criteria, from 2011

¹⁵ If any vessel fails to operate in conformance with these rules, the vessel operator is subject to a \$2,500 penalty and the vessel owner a \$10,000 penalty for each occurrence.

through 2015 the lowest frequency of move triggers was 5 percent in 2011 and the highest was 28 percent in 2015. If the more sensitive trigger of 100 percent reflects the fleet's actual behavior, these data show that the lowest frequency of move triggers was 13 percent in 2011 and 39 percent in 2015.

Table 36. Mothership sector processor days in which the base bycatch rates are exceeded by the base rate (Days >100%) and twice the base rate (Days > 200%) (data source: personal communication, Dave Fraser, 1/31/2016).

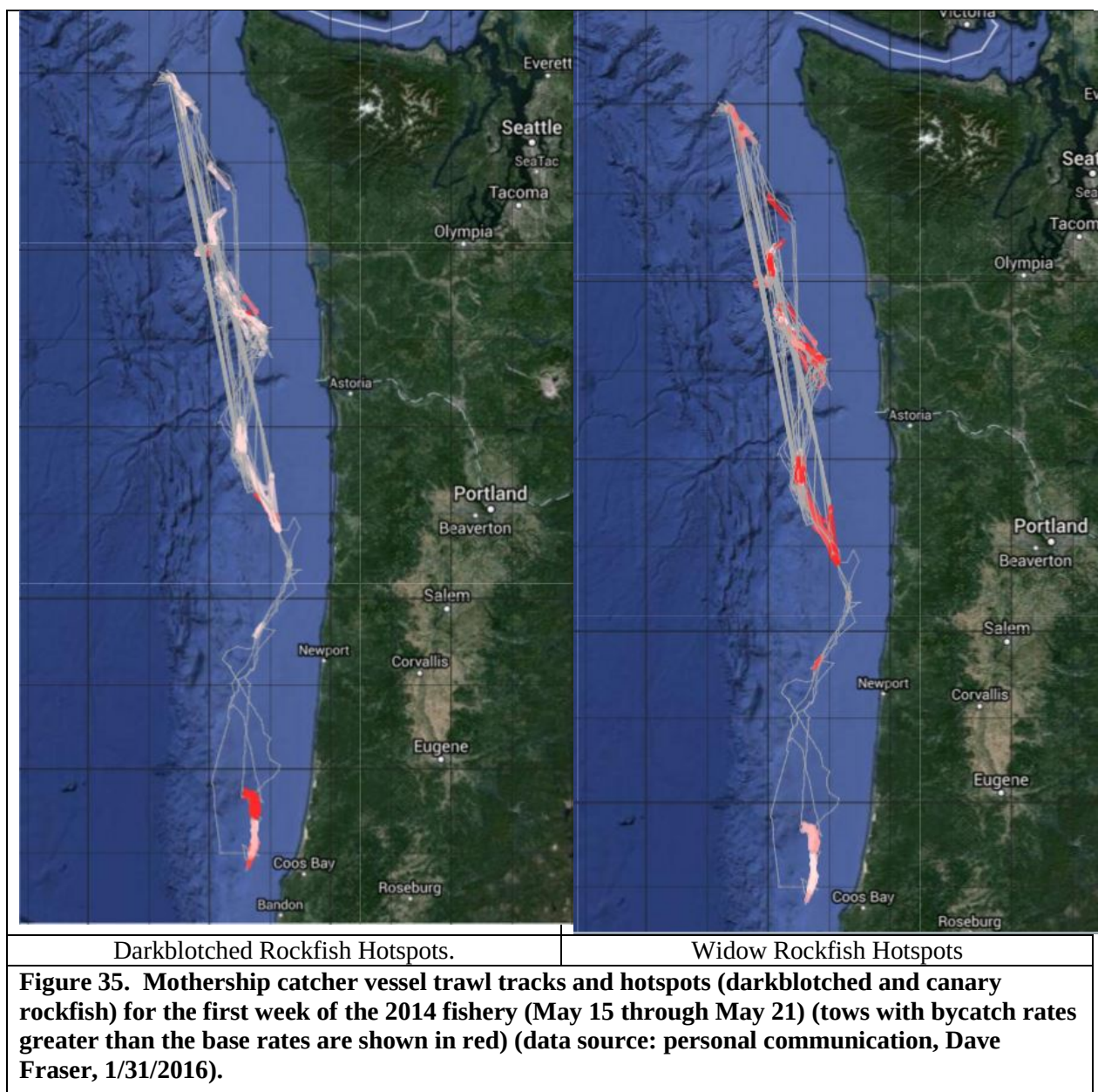
Year	Base Bycatch Rate (kg/mt)	Processor Days With >100% of Base Rate	Processor Days With >200% of Base Rate	Total Number of Processor Days by Year	Percent of Days Exceeding 100% of Base Rate	Percent of Days Exceeding 200% of Base Rate
Canary Rockfish						
2011	0.06	1	0	239	0%	0%
2012	0.10	0	0	190	0%	0%
2013	0.11	8	3	224	4%	1%
2014	0.08	4	1	221	2%	0%
2015	0.09	2	2	114	2%	2%
Darkblotched Rockfish						
2011	0.11	11	7	239	5%	3%
2012	0.18	10	4	190	5%	2%
2013	0.12	24	17	224	11%	8%
2014	0.10	22	14	221	10%	6%
2015	0.10	21	15	114	18%	13%
Pacific Ocean Perch						
2011	0.14	9	2	239	4%	1%
2012	0.22	5	2	190	3%	1%
2013	0.15	8	7	224	4%	3%
2014	0.12	10	8	221	5%	4%
2015	0.11	17	11	114	15%	10%
Widow Rockfish						
2011	1.15	11	4	239	5%	2%
2012	1.88	15	8	190	8%	4%
2013	2.45	8	5	224	4%	2%
2014	1.93	20	13	221	9%	6%
2015	1.87	11	7	114	10%	6%

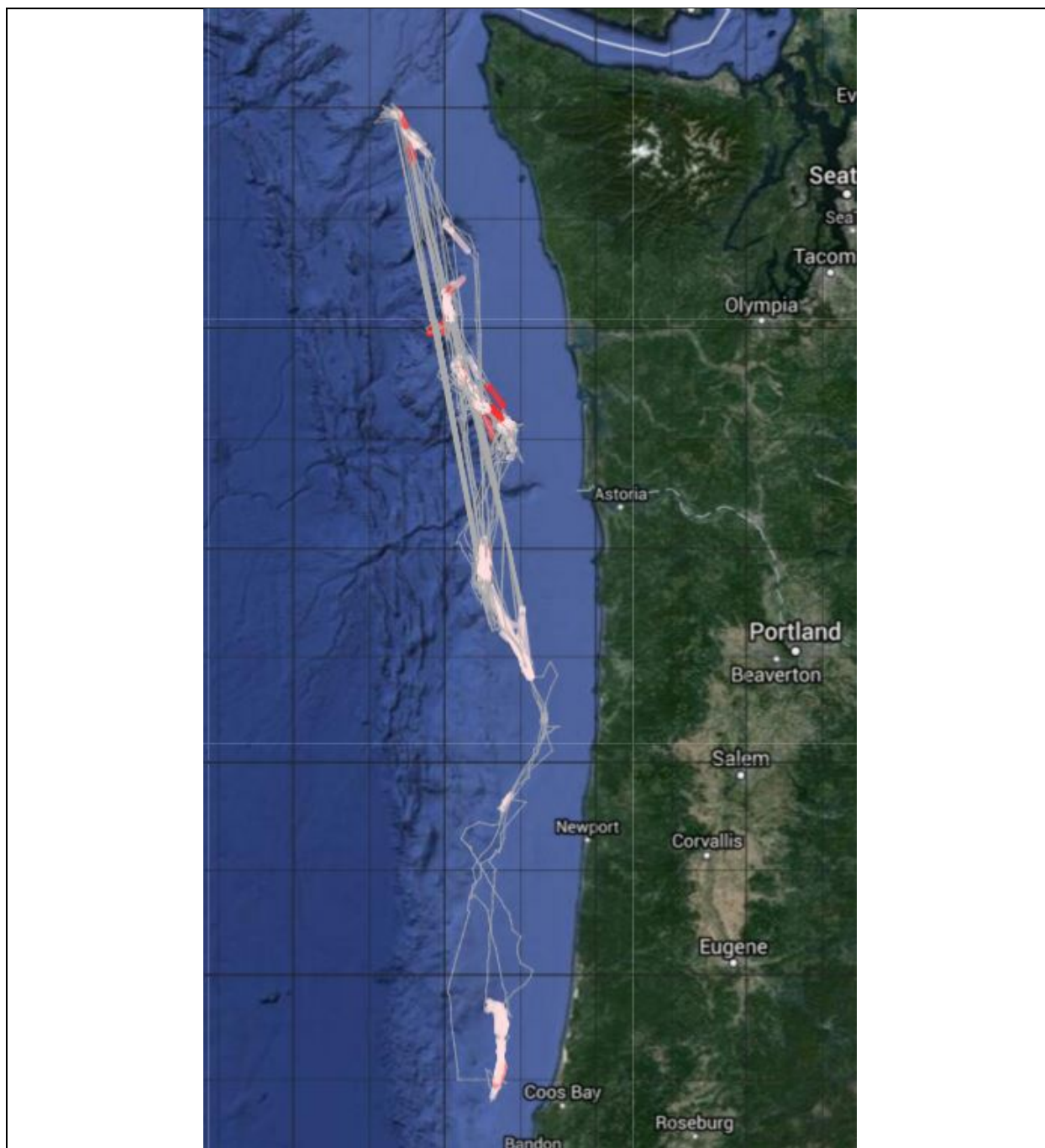
Table 37. Number and percent of days exceeding trigger (sum of individual species triggers adjusted based on an estimate of the occurrence of more than one species trigger on the same day)^{a/} (data source: personal communication, Dave Fraser, 1/31/2016).

Year	Processor Days With >100% of Base Rate	Processor With Days >200% of Base Rate	Total # of Processor Days by Year	Percent of Days Exceeding 100% of Base Rate	Percent of Days Exceeding 200% of Base Rate
2011	30.5	12.5	239	13%	5%
2012	29	14	190	15%	7%
2013	43.5	29.5	224	19%	13%
2014	49	34	221	22%	15%
2015	45	32	114	39%	28%

a/ The approach used to develop these estimates will slightly underestimate the frequency of moves for the higher values and slightly over estimate the frequency of moves for the lower values.

The distances that the fleet moves in response to these triggers varies. Figure 35 and Figure 36 illustrates the amount of vessel movement in the search for fish and avoidance of hotspots during the first week of the 2014 fishing season. These fishing patterns may or may not be typical patterns for the year. During this period, the fleet ranged over a 300 mile stretch of the coast and moved “every day from one hotspot to another” (personal communication, Dave Fraser, January 31, 2015).





Pacific Ocean Perch Hotspots.

Figure 36. Mothership catcher vessel trawl tracks and hotspots (Pacific Ocean perch) for the first week of the 2014 fishery (May 15 through May 21) (tows with bycatch rates greater than the base rates are shown in red) (data source: personal communication, Dave Fraser, 1/31/2016).

Impact on Balance of the Shorebased/Mothership Allocations

The following are the allocations of darkblotched rockfish, POP, and widow rockfish as specified in Amendment 21. The intersector allocations of canary rockfish are determined during the biennial specifications process.

Darkblotched Rockfish

Allocate 9% or 25 mt, whichever is greater, of the total LE trawl allocation of darkblotched rockfish to the whiting fisheries (at-sea and shorebased combined). The distribution of the whiting trawl allocation of darkblotched to individual whiting sectors will be done pro rata relative to the sectors' whiting allocation.

Pacific Ocean Perch

Allocate 17% or 30 mt, whichever is greater, of the total LE trawl allocation of Pacific ocean perch to the whiting fisheries (at-sea and shorebased combined). The distribution of the whiting trawl allocation of POP to individual whiting sectors will be done pro rata relative to the sectors' whiting allocation.

Widow Rockfish

Initially allocate 52% of the total LE trawl allocation of widow rockfish to the whiting sectors if the stock is under rebuilding or 10% of the total LE trawl allocation or 500 mt of the trawl allocation to the whiting sectors, whichever is greater, if the stock is rebuilt. If the stock is overfished when the initial allocation is implemented, the latter allocation scheme automatically kicks in when it is declared rebuilt. The distribution of the whiting trawl allocation of widow to individual whiting sectors will be done pro rata relative to the sectors' whiting allocation.

Table 38 shows what the results of these allocation formulas would be for the shorebased and mothership sectors under each of the integrated alternatives and how those results would change if the maximum transfers are allowed.

Table 38. Allocations to the shorebased and mothership sector under the integrated alternatives and effective shift in those allocations if the maximum amount of QP are transferred to the mothership sector.

	2017			2018		
	Alt 1	Alt 2	No Action	Alt 1	Alt 2	No Action
Combined Shorebased/Mothership Sector Quota (MT)						
Canary rockfish	379.9	244.0	780.0	336.0	215.0	721.2
Darkblotched rockfish	565.2	565.2	348.8	576.2	576.2	360.7
Pacific Ocean Perch	129.0	129.0	129.0	133.8	133.8	133.8
Widow rockfish	11,687.7	11,687.7	1,459.7	10,938.0	10,938.0	1,459.7
Mothership Percent of Combined Allocation with No Transfer						
Canary rockfish	11.6%	11.6%	11.6%	11.6%	11.6%	11.6%
Darkblotched rockfish	2.2%	2.2%	2.2%	2.2%	2.2%	2.2%
Pacific Ocean Perch	5.6%	5.6%	5.6%	5.4%	5.4%	5.4%
Widow rockfish	2.5%	2.5%	8.2%	2.5%	2.5%	8.2%
Mothership Percent of Combined Allocation with Max Transfer						
Canary rockfish	24.9%	24.9%	24.9%	24.9%	24.9%	24.9%
Darkblotched rockfish	21.8%	21.8%	21.8%	21.8%	21.8%	21.8%
Pacific Ocean Perch	24.5%	24.5%	24.5%	24.3%	24.3%	24.3%
Widow rockfish	13.2%	13.2%	18.3%	13.2%	13.2%	18.3%
Shorebased Percent of Combined Allocation with No Transfer						
Canary rockfish	88.4%	88.4%	88.4%	88.4%	88.4%	88.4%
Darkblotched rockfish	97.8%	97.8%	97.8%	97.8%	97.8%	97.8%
Pacific Ocean Perch	94.4%	94.4%	94.4%	94.6%	94.6%	94.6%
Widow rockfish	97.5%	97.5%	91.8%	97.5%	97.5%	91.8%
Shorebased Percent of Combined Allocation with Max Transfer						
Canary rockfish	75.1%	75.1%	75.1%	75.1%	75.1%	75.1%
Darkblotched rockfish	78.2%	78.2%	78.2%	78.2%	78.2%	78.2%
Pacific Ocean Perch	75.5%	75.5%	75.5%	75.7%	75.7%	75.7%
Widow rockfish	86.8%	86.8%	81.7%	86.8%	86.8%	81.7%

18. Will this management measure affect catch of nongroundfish 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 nongroundfish stock?

If implemented this management measure may impact attainment of the amounts of groundfish allocated to each sector, and consequently bycatch of nongroundfish species, but will not allow more fishing than is authorized by the ACLs and allocation levels.

19. Will this management measure change fishing activity so as to adversely affect to essential fish habitat compared to current or baseline 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.

If implemented this management measure may impact attainment of the amounts of groundfish allocated to each sector, and consequently the impact to essential fish habitat by each sector, but will not allow more fishing than is authorized by the ACLs and allocation levels.

20. Will this management measure result in 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.

If implemented this management measure may impact attainment of the amounts groundfish allocated to each sector, and consequently each sector's impact on ESA-listed species and non-listed marine mammals and seabirds by each sector, but will not allow more fishing than is authorized by the ACLs and allocation levels.

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

National Standard 1 - Achieve OY and prevent overfishing

This management measure would not be expected to result in harvests that exceed ACL levels or allocations. On the one hand, the measure may enhance the mothership sectors ability to achieve its allocation and therefore for the fishery to better achieve OY. On the other hand, it is possible that the transfer of QP from the shorebased sector could constrain harvest in that sector even if there is generally a surplus of unused QP. See question number 7 for a discussion of these issues.

National Standard 4 - Allocations fair and equitable, promote conservation, and conservation, and prevent excessive shares prevent excessive shares

There are no objective criteria for determining whether an action is more fair and equitable than another, however, the Council process is designed to fully vet the equity implications during the Council decision process. Some of the concerns that have been voiced thus far are:

- Vessels in the mothership sector received shorebased QS as part of an initial allocation related to the history of permits retired in the buyback program but they are not able to use those QP in their own fishery (even though they are paying a landing fee for the buyback program). This measure would address that issue.
- This provision allows the mothership sector to acquire shorebased quota but does not allow the shorebased sector to acquire quota from the mothership sector.

During Council deliberations these and other equity concerns will be noted and summarized as part of the decision documents along with an articulation of the rationale by which the Council reached its final recommendation.

National Standard 5 - Consider efficiency in utilization; not have economic allocation as sole purpose allocation as sole purpose

Allowing the transfer of QP to the mothership sector would allow market forces to influence intersector allocations that are currently determined by fishery managers. Such market forces would generally be expected to act to improve efficiency in the industry. However, because shorebased QP could move to the mothership sector but mothership sector quota could not move to the shorebased sector, a more efficient result would occur only if the mothership sector is more efficient than the shorebased sector. The market will not be able to respond if the shorebased sector is more efficient than the mothership sector.

National Standard 8 - Consider fishing communities to provide for their sustained and to minimize adverse economic impacts

This action would likely benefit those communities in which mothership catcher vessels and processors are based. Communities in which shorebased vessels are located may be unaffected or adversely impacted if shorebased landings are reduced or QP prices increase (see discussion under question 7). In some cases, it

may be the same communities (and even the same vessels) that are involved in the mothership and shorebased fisheries.