

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) and preliminary analysis for new management measures (Section B.2).

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 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 bottom fish (flatfish). These RCA 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 length 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. This management measure proposes to modify the current 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 bottom fish (flatfish). Charts delineating the areas for proposed modifications are provided in Attachment A and proposed modified waypoint coordinate tables are provided in Attachment B.

The areas for proposed modifications are for the 30 fathom RCA and include: 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 RCA at Salt Point in the San Francisco Management Area and one for the 150 fathom RCA 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?)

A major objective of this management measure is to allow better access to target species while maintaining the intent of the fathom lines, while at the same time keeping the harvest levels of these target species within acceptable harvest limits. These boundaries are intended to allow access to target species while minimizing bycatch of overfished species (OFS) such as bocaccio, cowcod, darkblotched, and yelloweye rockfishes. Modifications to these RCA boundaries provide better opportunity to the fishing communities, helps participants to achieve their fishing harvest levels, 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 RCA 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.

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

Boundary 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 protecting species of concern. The need to protect these species has been the main reason for the creation of the RCAs and their modifications improves the system.

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), this process has been visited by the Council before and these proposed RCA modifications follow previous actions by the Council. When deemed appropriate, the Council has supported recommended modifications to RCA 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 RCA boundary 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, since some of the changes are relatively minor in area, it is anticipated that no real changes would occur, in that harvest levels would not increase appreciably, if at all. For those areas where a modest increase in fishable area would occur, again there is no anticipated likelihood of the potential for overfishing to occur.

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 on a very specific localized area basis, no changes among user groups and fishing communities are anticipated. These modifications will improve fishing operations to a small degree, thus helping the participants and those fishing communities they serve. 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, 2) these increased areas are those that should have been allowed originally, and 3) 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 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.

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 would probably not result in increased fishing effort by local participants that would result in impact to ESA-listed species.

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

The intent of the RCA concept is to prevent overfishing, while at the same time protecting OFS by preventing fishing in areas where these species of concern are more likely to be found. This management measure would not jeopardize this concept, and at the same time would allow the fishing communities slightly better access to help them achieve their harvest limits. 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

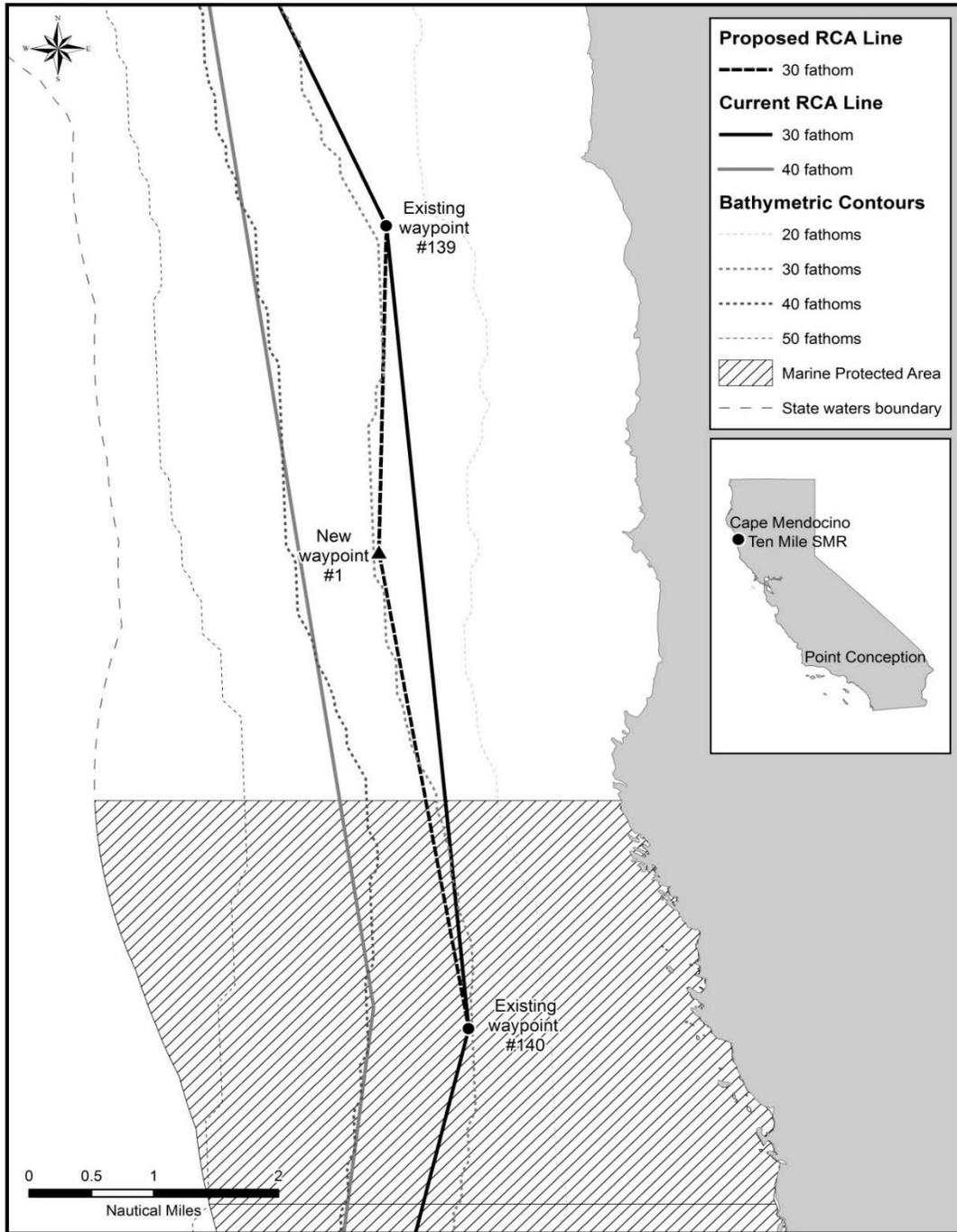


Figure 1. Proposed 30 fathom RCA line change adjacent to the Ten Mile State Marine.

Proposed 30 Fathom RCA Line Changes - Navarro River

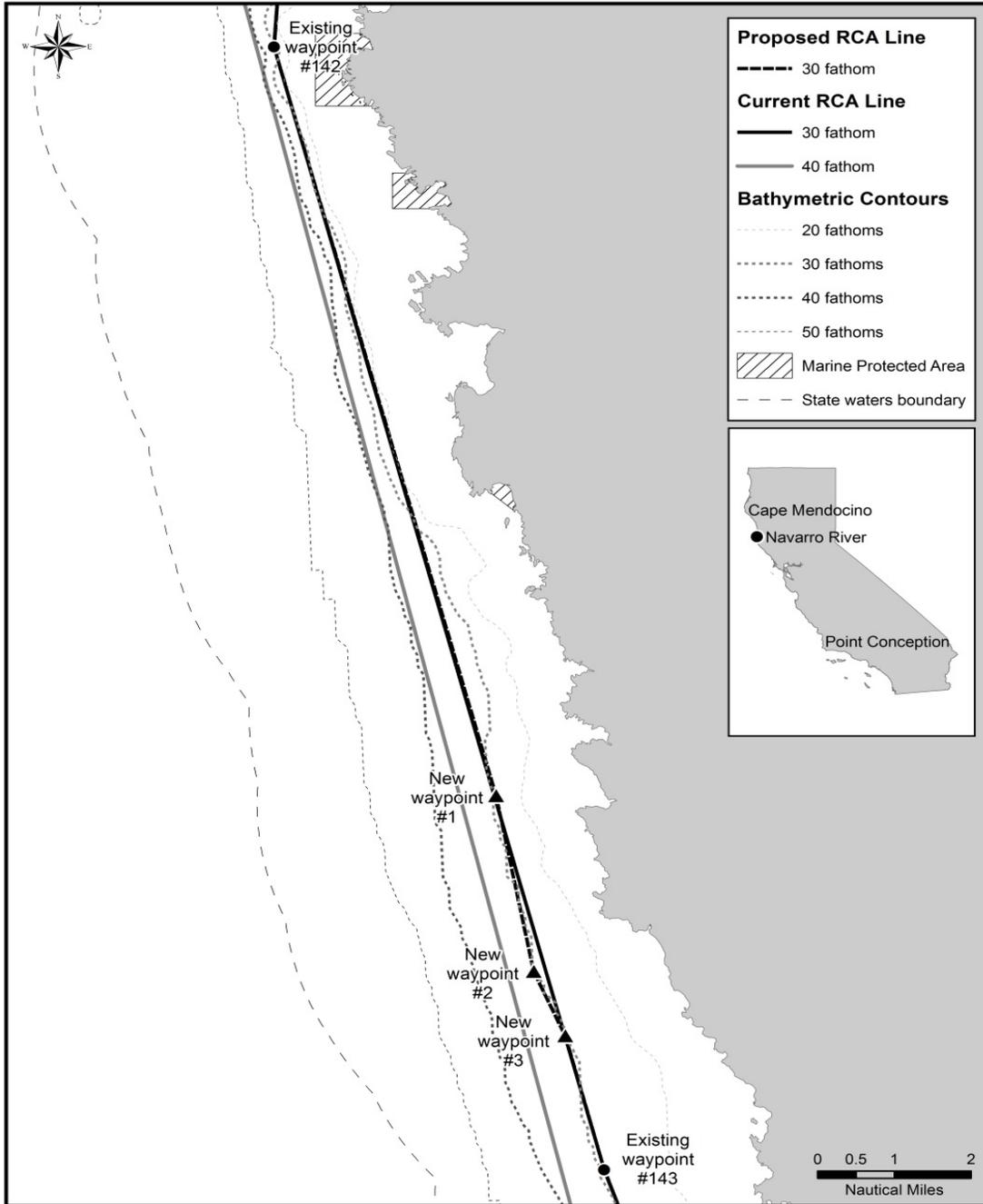


Figure 2. Proposed 30 fathom RCA line change at the Navarro River.

Proposed 30 Fathom RCA Line Changes - SE Farallon

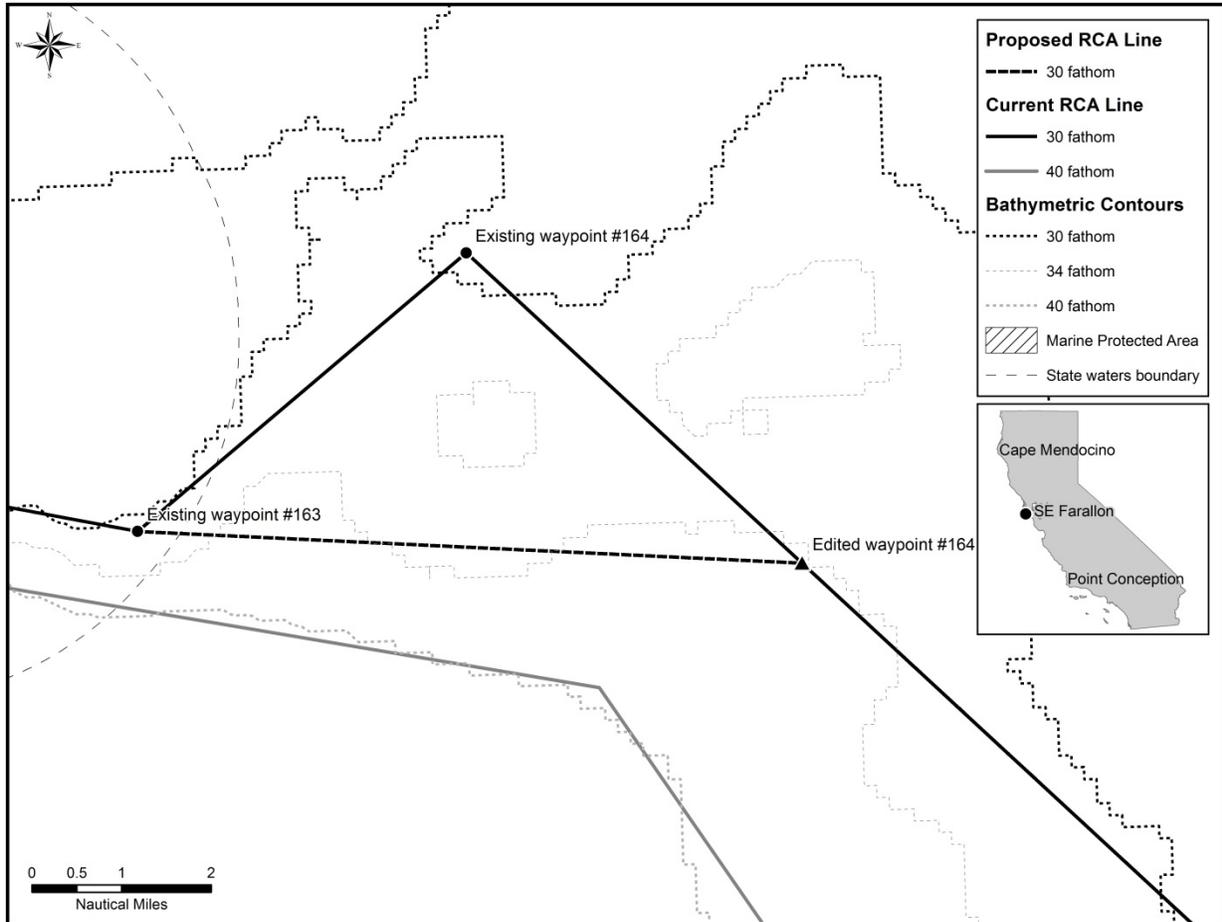


Figure 3. Proposed 30 fathom RCA line change at the SE Farallon.

Proposed 40 Fathom RCA Line Changes - Salt Point

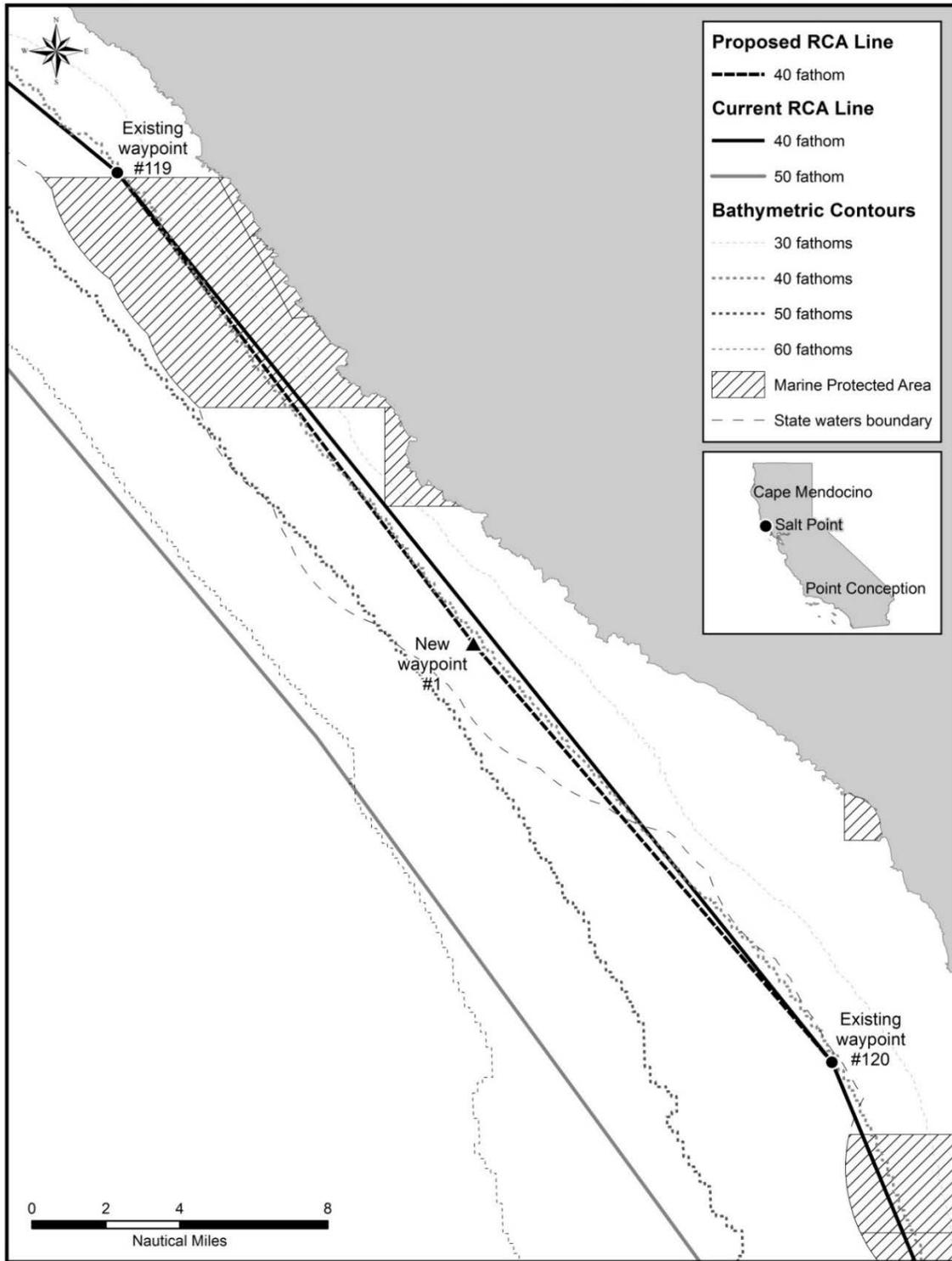


Figure 4. Proposed 40 fathom RCA line change at Salt Point.

Proposed 150 Fathom RCA Line Changes - Monterey Canyon

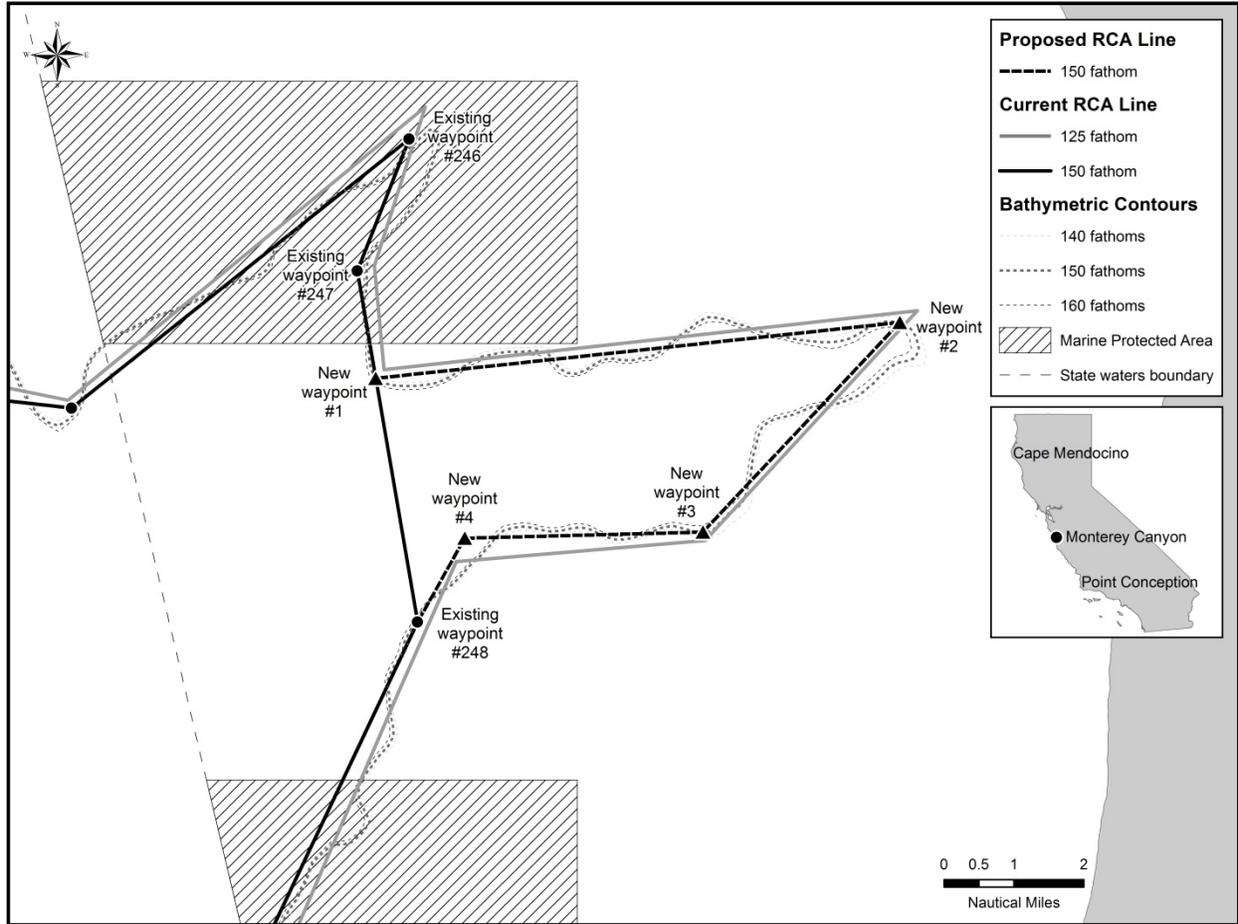


Figure 5. Proposed 150 fathom RCA line change at the Monterey Bay Canyon.

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 new management measure is to allow retention of canary rockfish for the coastwide FG fisheries (i.e., LE and OA for both the nearshore and non-nearshore fisheries). The proposed action primarily affects mortality of canary rockfish, but may influence mortality of bycatch species if effort increases due to targeting; however, increased targeting is projected to be minor (i.e., 14 percent for nearshore and less than two percent of non-nearshore; Appendix A), thus increases to bycatch are also expected to be minor.

- 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 to allowing retention of canary rockfish in FG fisheries is to increase the utilization of canary rockfish, which has been declared recovered (from overfished status) based on the best available science (i.e., the SSC endorsed and the Council adopted the 2015 canary rockfish stock assessment).

While the primary gains are economic (to fishermen and communities), conservation benefits would also be expected via improved stock assessment inputs; thus bettering our understanding of what sustainable harvest levels should be for canary rockfish. By allowing retention of canary rockfish, a greater proportion of the catch will be landed dockside, which would result in improved catch monitoring and biological sampling than currently occurs since the observer program is only able to observe a portion of trips and catch. As such, there will be improvements to the reliability or accuracy of the following assessment inputs: removals (total dead), catch rate trends (indices of abundance), length and age compositions, and recruitment.

- 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 FG fisheries, the GMT explored a range of alternative trip limits with the goal **to at minimum allow fishermen to retain a majority of their canary rockfish bycatch** (and avoid waste). As described within Chapter 4, analysis for the integrated alternatives, bimonthly trip limits of 100 lbs for OA and 300 lbs for LE are projected to result in retention of 90 percent of the canary rockfish catch; thus allowing near attainment of the goal to minimize discarding of bycatch without introducing major incentive for targeting to occur.

With lesser OA trip limits, a greater portion of the canary rockfish bycatch is projected to be discarded instead of retained (e.g., 30 percent discarded at 50 lbs, 54 percent at 25 lbs, 77 percent at 10 lbs), and thus further from the goal to minimize the discarding of bycatch. And at greater OA trip limits (than 100 lbs), gains in converting discarded catch to landed catch become more marginalized (e.g., doubling the trip limit to 200 lbs reduces projected discarding from nine percent to one percent), and introduce greater incentive for targeting to occur (which decreases the reliability of projections).

While the GMT explored trip limits with the base goal of allowing fishermen to retain a majority of their canary rockfish bycatch, the Council could consider greater trip limits to promote targeting given a

sufficiently high non-trawl allocation, which depends on which ACL alternative and allocation alternative are paired together.

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 new management measures forwarded by the Council for further analysis at the November Council meeting, presumably 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 presumably desired further analysis of the proposal to allow retention of canary rockfish as a new management measure due to their adoption of 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?

Yes, catches of groundfish are expected to change if the proposal to allow retention of canary rockfish in the FG fisheries is adopted into regulation. While primarily affecting the disposition of canary rockfish catches (percent of catch discarded or harvested), there could be increased targeting of canary rockfish, thereby also increasing the total catch. And if targeting of canary rockfish becomes more prevalent, this could increase bycatch of groundfish species encountered in the nearshore and non-nearshore FG fisheries. And if retention is allowed, the risk of overfishing canary rockfish (or at least exceeding the sector allocation) are reduced because the bulk of catch would shift from being monitored from the observer program to the dockside program. This shift would improve the timeliness and reliability of catch estimates as dockside involves a more real-time census of landings (i.e., 100 percent reporting requirement for fish tickets for market category landings paired with species compositions for individual species estimates), whereas observer estimates extrapolate discard from a subsample of observed trip to non-observed trips).

Of notable concern would be potential for increased bycatch of yelloweye rockfish; however, these concerns are somewhat alleviated due to the underutilization of the non-trawl yelloweye allocation (Figure 6) and the ACL (due to additional residual by the research sector by at least one metric ton per year). Further, allowing retention of canary rockfish is not projected to result in considerable increases in targeting of canary rockfish (i.e., approximately 14 percent for the nearshore and less than two percent for the non-nearshore; Appendix A), and as such, not expected to result in much increase in yelloweye rockfish bycatch.

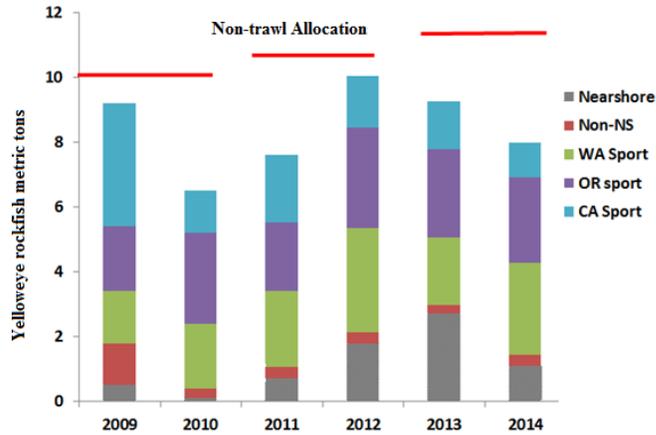


Figure 6. Utilization of the non-trawl yelloweye rockfish allocation.

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 in the fixed gear fisheries will allow for more equitable harvest opportunities, as the trawl sectors and Oregon recreational fishery are currently allowed to retain canary rockfish.

Since canary rockfish are broadly distributed (Figure 7) in both latitude (i.e., Canada to Mexico, although in lesser densities south of Point Conception) and depth (from shore to deeper than seaward 100 fm FG RCA), retention of canary rockfish will benefit FG fishermen and communities coastwide. For Washington, this would include those partaking in the sablefish fisheries (no nearshore fishery in WA), and both the nearshore and sablefish fisheries in Oregon and California.

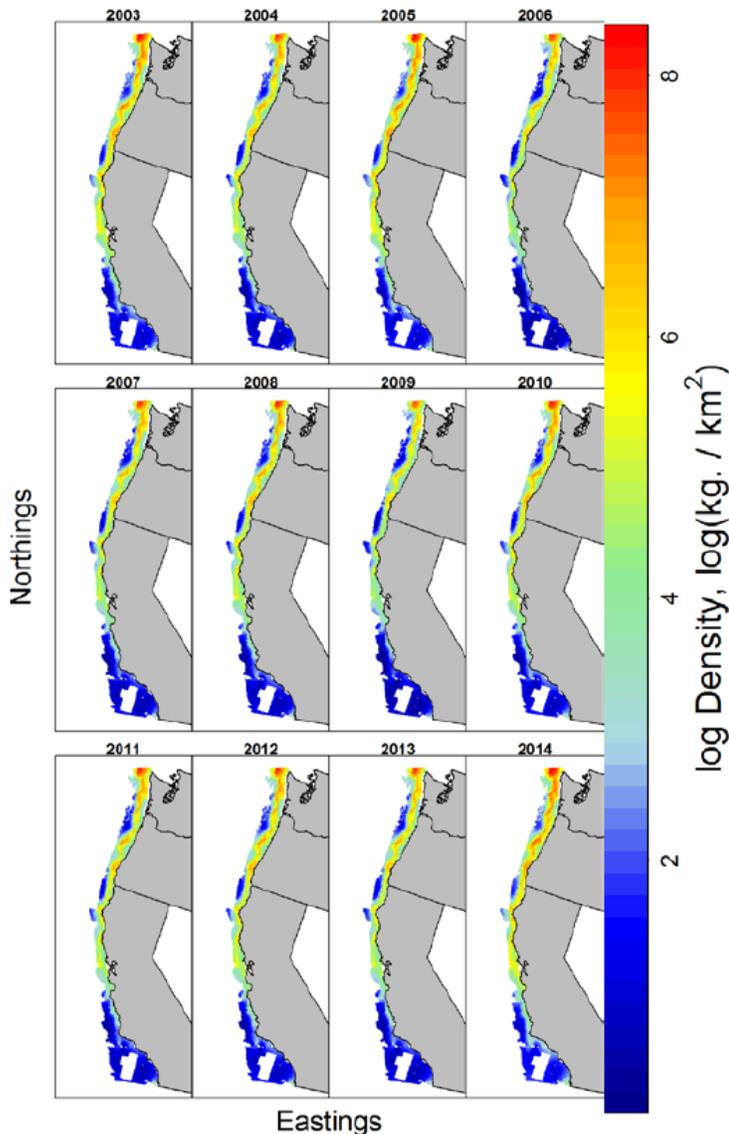


Figure 7. Spatial distribution of canary rockfish estimated from a geostatistical delta-GLMM used in the 2015 canary rockfish stock assessment (Thorson and Wetzel 2015).

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?

In order for catches of non-groundfish species to increase, retention of canary rockfish in the FG fisheries would have to result in behavioral changes (e.g., increased effort or targeting). Since behavior changes are projected to be relatively minor (described above and in Appendix A) bycatches of non-groundfish species are also projected to be minor.

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.

The proposal to allow retention of canary rockfish in the FG fisheries is not expected to adversely affect fish habitat more than currently occurs because there is not projected to be much additional fishing pressure associated with the proposed action (described above). And 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.

Retention of canary rockfish in the FG fisheries would presumably exclude the Puget Sound and Georgia Basin portion of the stock because this distinct population segment (DPS) is listed as threatened under the Endangered Species Act (ESA).

Bycatch threats to ESA-listed species are described in the 2011 NMFS report entitled: Risk assessment of U.S. West coast groundfish fisheries to threatened and endangered marine species ([Agenda Item F.3.b, Attachment 2, March 2012](#)). For bycatch risks to increase compared to what currently occurs, allowing retention of canary rockfish in the FG would have to cause differential fishing behaviors, such as increased effort or fishing methods. Since allowing retention of canary rockfish in the FG is not expected to result in considerable targeting behavior (i.e., 14 percent predicted for OA) or addition effort (goal is to allow fishermen to retain canary rockfish bycatch that they are currently forced to discard), additional risks of bycatch to ESA or non-ESA listed species are expected to minor.

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

Allowing retention of canary rockfish in the FG fisheries is consistent with the following National Standards: (1) result in more optimal yield without overfishing; (2) based on the best scientific information (i.e., the SSC and Council endorsed 2015 canary rockfish assessment that declares the stock rebuilt from overfished status); (8) take into account/benefit fishing communities; and (9) minimize bycatch (i.e., catch that previously had to be discarded with wastage due to discard mortality would be harvested).

B.1.3 Canary Rockfish Retention 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?**

Currently, retention of canary rockfish is prohibited in California's recreational fishery and this management measure will allow for some retention. The potential impact of allowing retention of canary rockfish under a range of sub-bag limits (one to five fish) within the aggregate 10 rockfish, cabezon and greenling (RCG) complex bag limit was evaluated.

The geographic scope of this management measure is waters off California from the Oregon/California border to the U.S./Mexico 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?)**

While canary rockfish is a formerly overfished stock, it was declared rebuilt in 2015 and as the stock continues to increase in abundance, anglers are finding it more difficult to avoid them. Currently, retention of canary rockfish is prohibited and anglers must discard all canary rockfish they encounter. Given its newly rebuilt status and resulting increase in the HG, allowing limited retention of canary rockfish may be appropriate. This management measure would allow some increased opportunity while remaining within allowable limits. By reducing discards and allowing retention some social and economic benefits to coastal communities may be realized.

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

In accordance with CDFW's policy to provide a stable fishery and minimize inseason disruptions, while keeping within specified limits, various sub-bag limit options were considered under this management measure. This will allow for retention of fish that would otherwise be discarded, while investigating potential trade-offs between retention and season length. Also, the current stock assessment indicates a substantial change in stock status from that of previous assessments. While this assessment was deemed the best available science, there is still some degree of uncertainty; therefore a precautionary approach in the selection of a sub-bag limit may be warranted to facilitate long term fishery stability.

- 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 encounters are likely to become more frequent. Given this, a request was made to allow for limited retention.

- 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.**

During the 2015-2016 biennial cycle, CDFW analyzed a one fish sub-bag limit for canary rockfish with in the aggregate RCG complex bag limit ([2015-2016 FEIS](#)). At that time, the analysis indicated that season

length would need to be shortened to accommodate a sub-bag limit while staying within the HG of 24.3 mt in 2015 and 25 mt in 2016. Public input preferred season length at the expense of allowing a sub-bag limit of one canary rockfish.

However, the HGs are expected to increase significantly, in between 118.9 mt and 380.1 mt (in 2017) and 104.8 mt and 351.4 mt (in 2018), depending on the final ACL alternative selected by the Council. While retention of canary rockfish is currently prohibited, given its healthy status and increasing allowable limits it is possible that retention of canary rockfish may be considered without sacrificing season length.

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 the catch of canary rockfish in the California recreational fishery. Because canary rockfish are currently encountered in the recreational fishery, catch of other groundfish species is not expected to change appreciably. However, any retained canary rockfish are likely to displace other groundfish species from the RCG complex bag limit.

The lowest HG under consideration is 104.8 mt (Alternative 2 in 2018), while the highest HG is 380.1 mt (No Action in 2017). Projected mortality under the various season structure options and non-retention can be found in Section 4.1.1.9. If retention of canary rockfish continues to be prohibited, mortality is projected to range from 23.6 mt (season structure Option 1) to 35.6 mt (season structure Option 4) under the season structure options with the lowest and highest projected canary rockfish mortality, respectively.

Allowing limited retention of canary rockfish is projected to increase mortality between 28.0 percent and 83.4 percent under a one fish sub-bag limit and a five fish sub-bag limit, respectively. The percent increase in mortality under various sub-bag limit options can be found in Table 6.

Table 6. Percent increase in mortality under various canary rockfish sub-bag limit options ranging from one to five fish.

Sub-Bag Limit	Percent Increase
1	28.0%
2	51.1%
3	65.6%
4	75.6%
5	83.4%

Under all sub-bag limit options, projected mortality of canary rockfish is expected to be within allowable limits. Under the largest sub-bag limit of five fish, an 83.4 percent statewide increase in projected impacts is expected. Projected mortality of canary rockfish ranges from 43.2 mt to 65.9 mt, depending on the season structure option. Season structure options can be found in Section 4.1.1.9. Given that the lowest HG for the California recreational fishery under consideration is 104.8 mt (Alternative 1 in 2018), projected mortality under all sub-bag limit options is well within allowable limits.

Mortality projections are provided by the RecFISH model which assumes that base data from 2013-2014 and proportions of catch by time and depth informed by historical data are representative of what is likely

to occur in 2017-2018. Given the increasing trend in the population and increased encounters, mortality may be under projected. While it is unlikely that impacts would exceed the HG, canary rockfish is actively monitored inseason in the recreational fishery and action could be taken, if needed, to slow or eliminate further mortality from accruing.

Also, encounters with overfish stocks are not expected to increase under this management measure. Yelloweye rockfish are a more solitary species and are not known to school with canary rockfish, while bocaccio and cowcod are distributed predominately south of Point Conception where canary rockfish are relatively less common. Further, this management measure is not expected to change angler behavior in such a way that would substantially increase encounters with 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 change catch opportunity among user groups. The recreational fishery will be managed to its own HG, as a result, in the unlikely event that catches need to be reduced to remain within the HG, only the recreational sector will be affected. Further, this management measure would allow anglers to retain fish they would otherwise have to discard. As a result, it is unlikely that this management measure will change catch opportunity within the recreational fishery.

- 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. Simply allowing retention of a species that is currently encountered, but must be discarded, is not expected to change fishing behavior in other non-groundfish fisheries.

- 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.**

Recreational groundfish fishing generally occurs in areas that are not designated EFH. Currently, anglers encounter canary rockfish but are required to discard them. By allowing limited retention fishing behavior will not change in such a manner so as to adversely affect essential fish habitat.

- 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 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 MSA National Standards 1, 5, 8 and 9. It provides additional opportunities to access a healthy stock, while minimizing the risk of for overfishing to occur or for the stock to become overfished. National Standard 5 is met by more efficiently utilizing fishery resources, as it will reduce the need for regulatory discards of a rebuilt 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.

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 considering several new management measures for implementation in 2017-2018 (Table 7).

Table 7. New Management Measures under Consideration for Implementation in 2017-2018.

Management Measure	Description	FMP Change	Section
Big Skate FMP Classification	Change classification from EC to “in the fishery”	Yes	B.2.1
Manage Starry Flounder in the Other Flatfish Complex	Manage starry flounder in the Other Flatfish Complex	Yes, Amendment 21 allocations and Appendix E	B.2.2
Transfer of Shorebased QP to the Mothership Sector	Allow a limited transfer of QP for selected species from the shorebased IFQ to mothership (MS) co-ops	Appendix E	B.2.3
Oregon Flatfish Fishery	Allow the targeting of flatfish species, other than Pacific halibut, seaward of the seasonal depth restriction	No	B.2.4
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	B.2.5
Overfished Species Hotspot Closures for California Recreational	Establish areas closed to recreational fishing to reduce overfished species bycatch	No	B.2.6
Petrale Sole Seasons	Exempt petrale sole from the season and depth restrictions in the California recreational groundfish fishery	No	B.2.7

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?**

The resignation of big skate from an ecosystem component (EC) species to “in the fishery” will affect only 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 primarily affected as it lands the vast majority of big skate and will continue to be managed by trip limits. The geographic scope is coastwide.

- 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 8). 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 to 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.

Table 8. Historical Mortality of Big Skate by Sector from 2010 to 2015 in mt.

Year	IOA			Non-Trawl			Trawl			Tribal		
	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

- 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-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.

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 species specific harvest specifications. Furthermore, a 95 percent trawl/ 5 percent non-trawl allocation was put into place, which would allow for historical levels of targeting by the trawl fishery (and bycatch allowance for non-trawl) while harvesting the optimum yield. A sorting requirement was 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 in November 2015 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 guidelines 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.

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 guidelines 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 coastwide 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 coastwide 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.2.2 Manage Starry Flounder within the Other Flatfish Complex (Draft - In Progress)

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 9). 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 9. 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 10). 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 11 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 10 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 10) 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 allocation 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 10 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 10. 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 11. Illustration of the pounds neutral approach for a hypothetical QS account.

Status Quo			From Table 10	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. **What was considered in order to optimize the performance of this measure?**
4. **What was the Council's decision and how did it arrive at the decision?**
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.**

- 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 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.

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

B.2.3 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.¹

For the mothership sector, mothership catcher vessel endorsements and whiting catch history allocations² 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.

¹ 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.

² 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 12.

Table 12. 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, so long as the QP are first acquired by a MS catcher vessel permit holders and placed in a quota 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.

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 better achieve the groundfish OYs by increasing the harvest of whiting in the mothership sector without significantly diminishing harvest by the shorebased sector.

3. **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.

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

N/A

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.**

N/A

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?**

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

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?**

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 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 for the landing of those species (Table 13) 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 included in 86 percent of the total nonwhiting shorebased landings by weight and 77 percent by value and 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 13. 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 8), as has the allocation widow QP (Figure 9). The percent attainment of that allocation has also generally increased (Figure 10), 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 8), generally proportional to the increased allocations (Figure 9), such that from 2012 through 2014 there was little change in the attainment rate (Figure 10). At the end of 2015, one vessel had an unexpected large tow of canary such that the entire fleet catch was 104% of the allocation. However, because annual vessel QP caps limit the QP that any one vessel may acquire in a year, the QP attainment rate went up to 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 in 2015 may be out of the fishery for several years, which may serve as a cautionary tale to others regarding the implications of a “lightning strike” bycatch incident.

The harvest of darkblotched (Figure 8) has been variable while the sector allocations (Figure 9) 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 10).

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.
- 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.

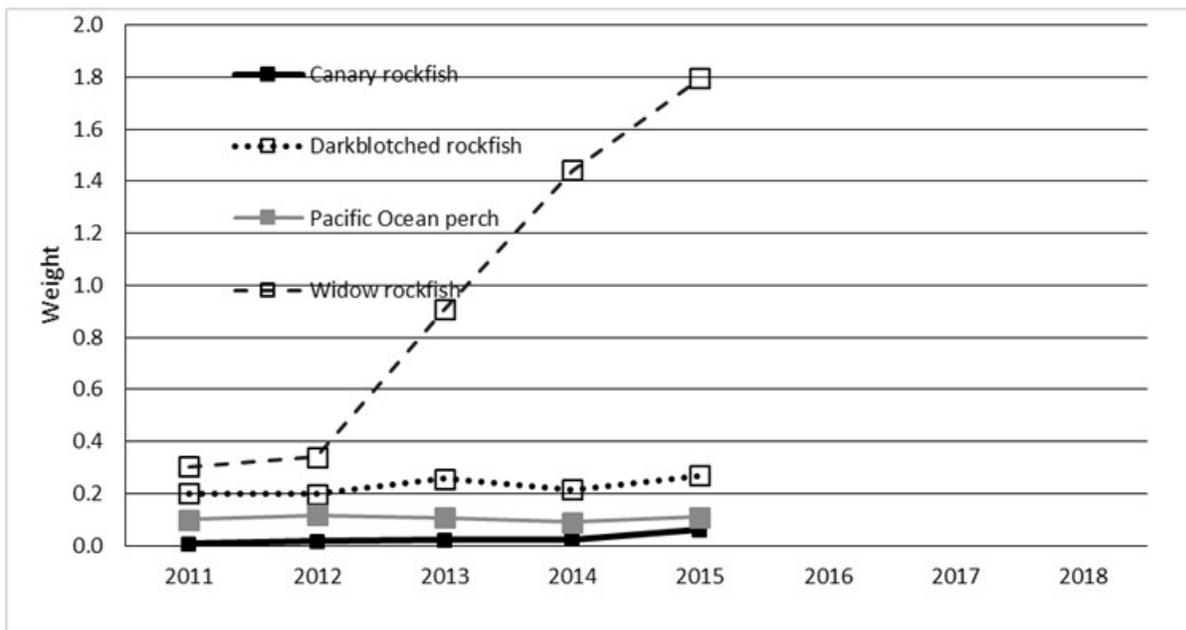


Figure 8. Harvest of bycatch species excluding amounts in excess of vessel QP caps (millions of pounds), 2011-2015 (data for 2015 is partial) (data source: WCR quota share and permit accounts webpage--<https://www.webapps.nwfsc.noaa.gov/ifq/--1/18/2016> and 2015 canary data from personal communication from Sarah Towne).

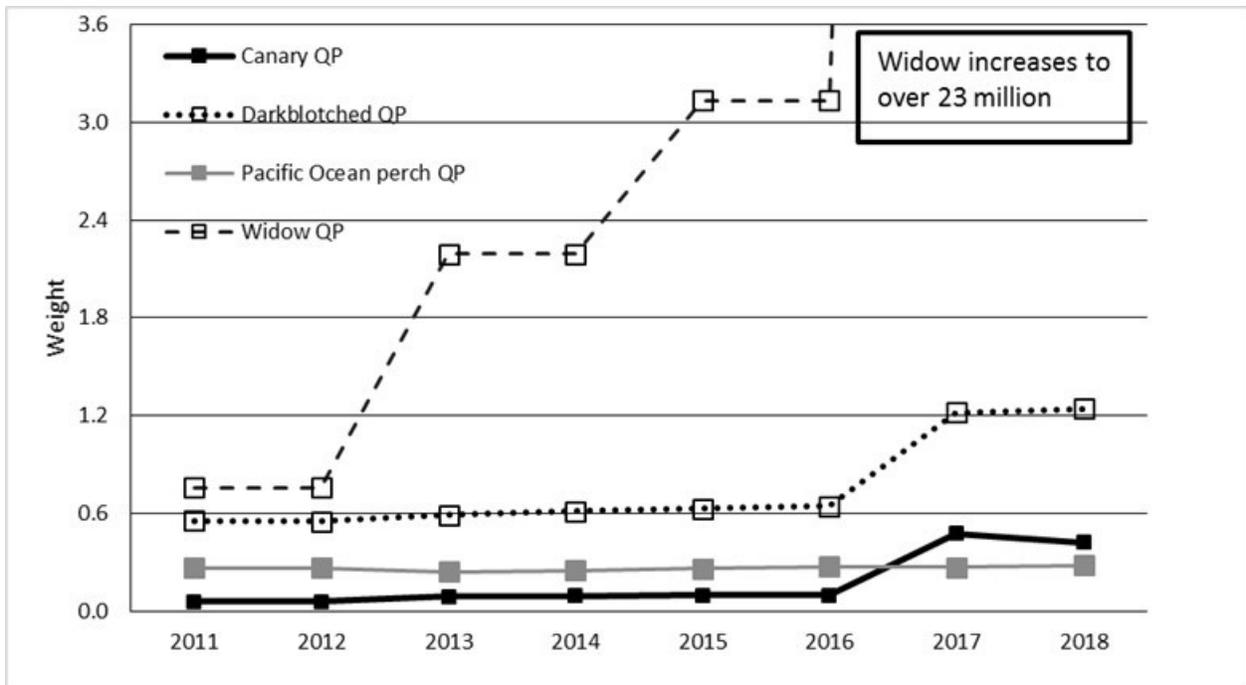


Figure 9. Millions of QP issued for the shorebased sector (2011-2016) and low end of the 2017 and 2018 shorebased allocations under the integrated action alternatives (data source: WCR quota share and permit accounts webpage--<https://www.webapps.nwfsc.noaa.gov/ifq/--1/18/2016>).

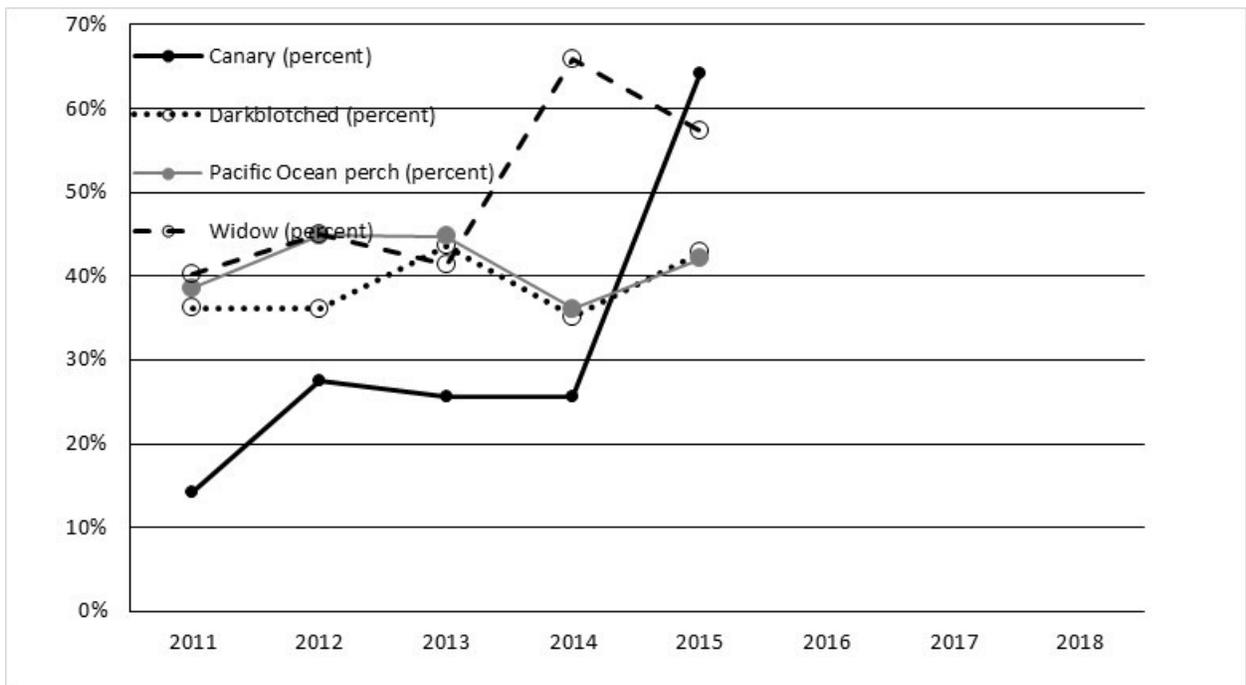


Figure 10. Percent of QP caught (utilized) by calendar year (2011-2015; data source: WCR quota share and permit accounts webpage--<https://www.webapps.nwfsc.noaa.gov/ifq/--1/18/2016>). Notes: (1) surplus carryover QP from the previous year are not included in the QP annual totals from which percent utilized 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 14 (Table 21 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 11).

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 fisherman 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 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 15 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 16) but is likely due to the substantially higher bycatch rates in the whiting fishery (Table 17 and Figure 12).

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 18). 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 15. 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 14. Shorebased allocations (millions of pounds) and transfer caps (percent and millions of pounds) for the allocations under each integrated alternative (see Table 21 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 21.

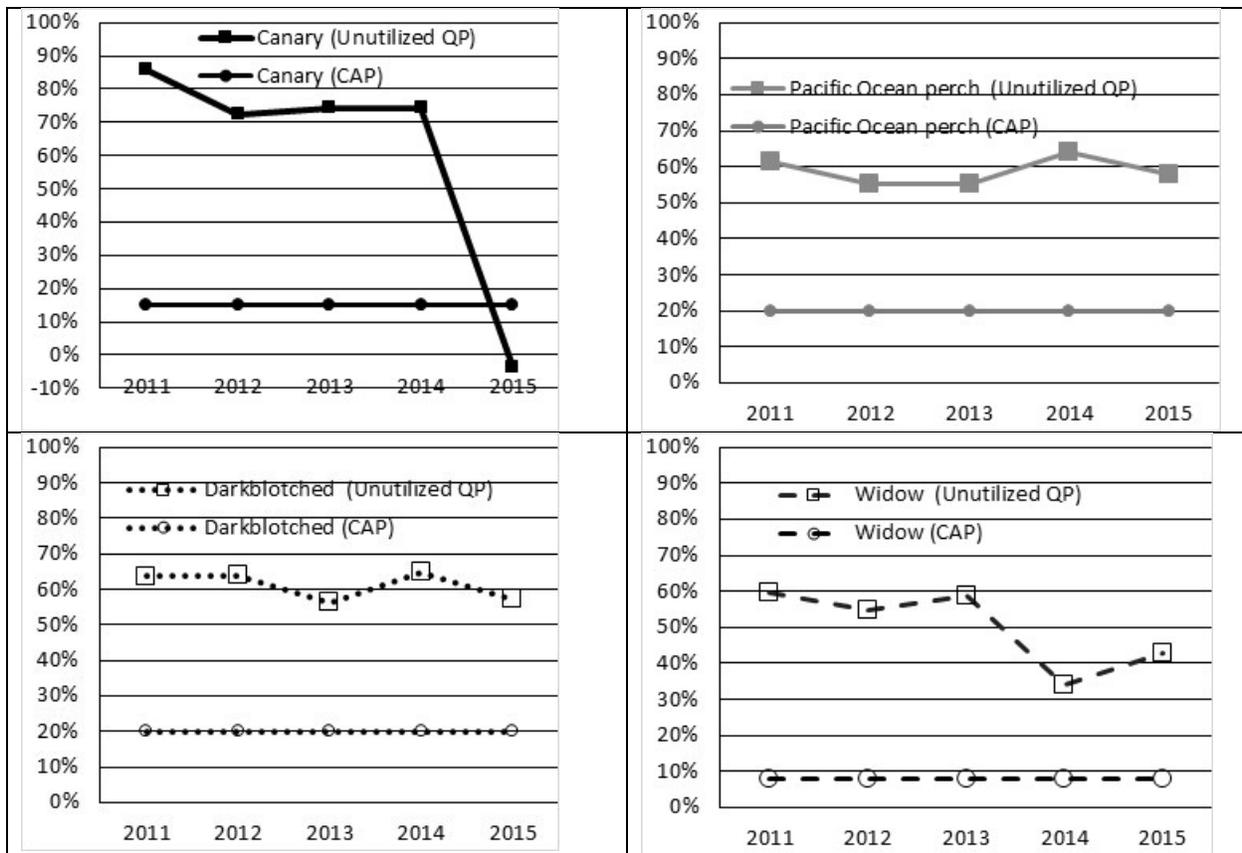


Figure 11. Transfer caps (percent) for each species compared to percent of the shorebased sector QP left uncaught (2011-2015)—2015 data is incomplete.

Table 15. 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

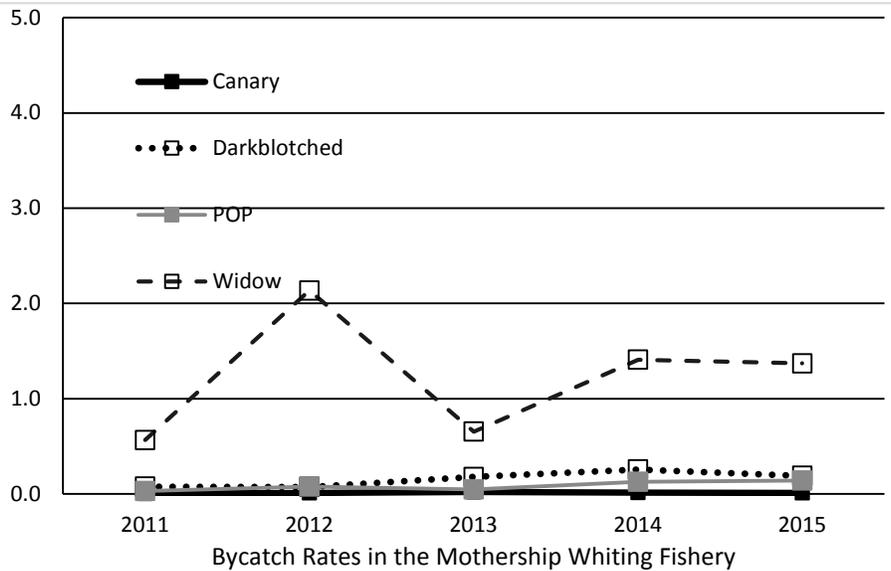
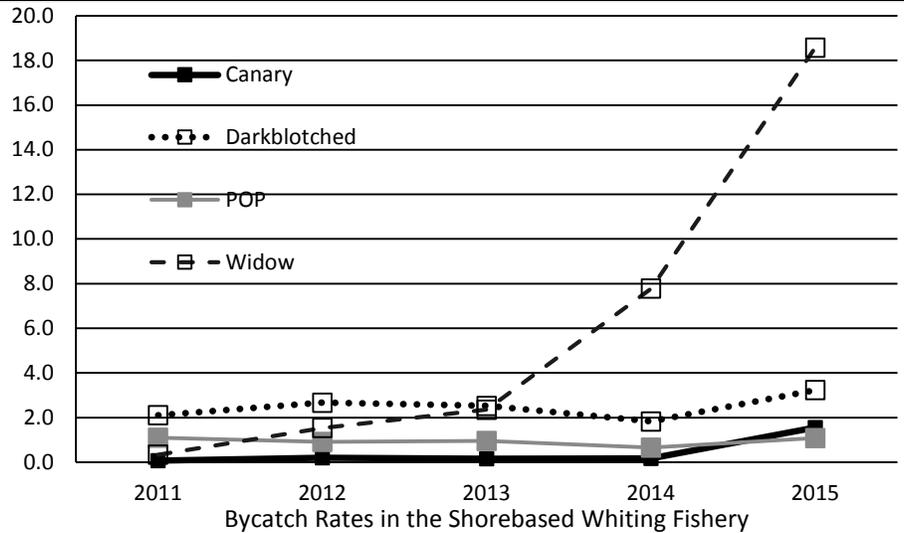


Figure 12. Bycatch rates in the shorebased whiting and mothership whiting fisheries (note that the vertical scale for the mothership whiting fishery is one quarter the vertical scale for the shorebased fishery, see Table 17 for related data).

Table 16. 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 17. 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 18. 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 increase 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 13). 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 13, 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 14). 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.

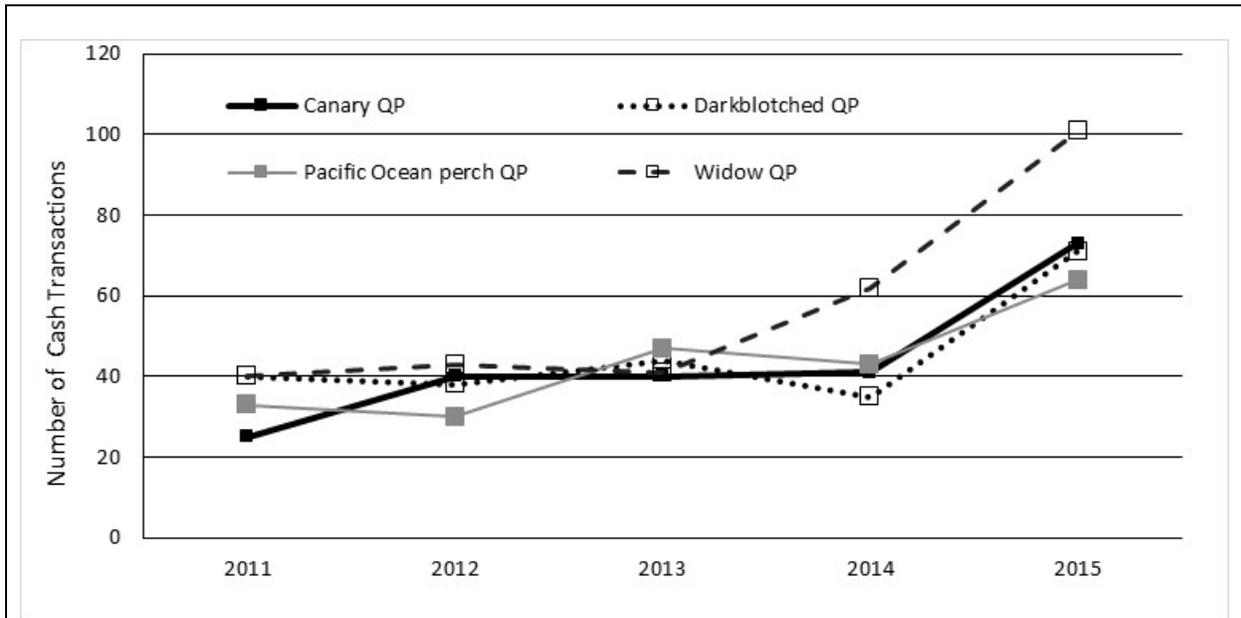


Figure 13. Number of cash for QP transactions by year for the proposed transfer species (includes both single species transactions and transactions in which the species was part of a multispecies bundle that was traded) as reported by Holland and Norman (2015) and updated based on personal communication (data sources: 2011-2014 data from Holland and Norman, 2015; 2015 data from Dan Holland, personal communication, 1/21/2016).

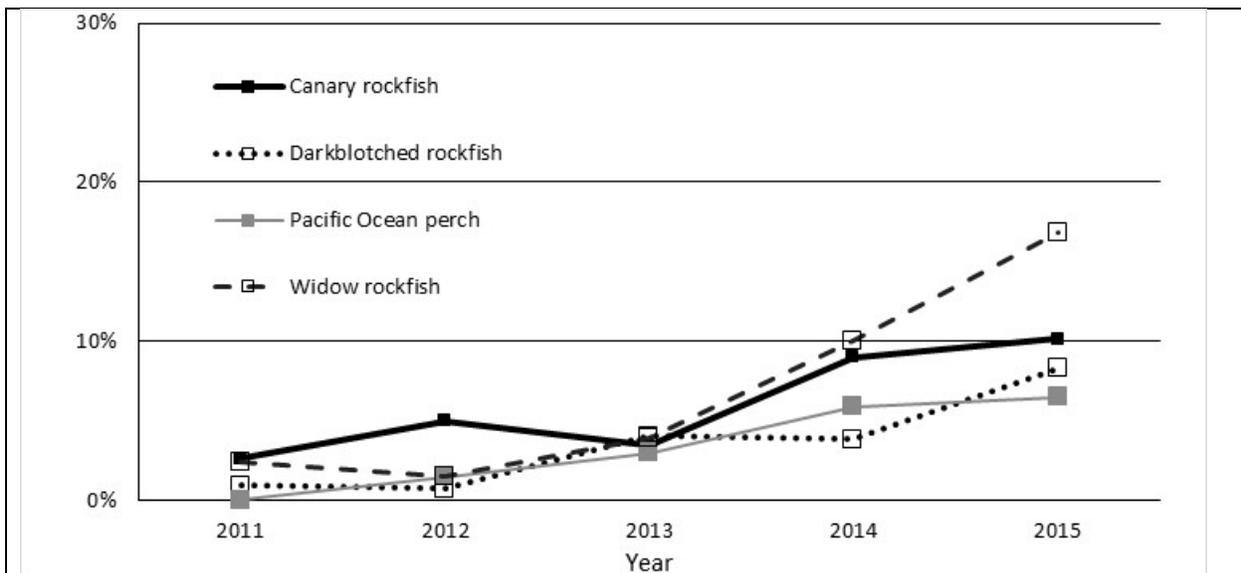


Figure 14. QP traded on Jefferson State Trading as a percent of total QP issued, by year 2011-2015 (data source: <http://jeffersonstatetradingco.com/cgi-bin/auction/auction.pl>, 1/18.2016He).

Table 19 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 19). 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 19). 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 19). 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 19. 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 14. 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 20), and that the caps would generally allow the transfer in of amounts of quota ranging from double to several times the sector allocations (Figure 15), 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 20). 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 16). 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 16), the darkblotched allocation increased by only 3 percent (Table 20) and the darkblotched bycatch rate increased by 44 percent (Table 17). 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 16) though its bycatch rates were not particularly high for any species except widow (Table 17). The catcher-processor sector took its full allocation in 2014 (Table 16). 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 16) 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 17). 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 20). 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 20 and Table 21). 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 22 and Figure 15). Proportionally, the additional opportunity would be even greater when compared to recent year bycatch allocations, particularly for canary and widow (Figure 16).

Table 20. 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 21. 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%

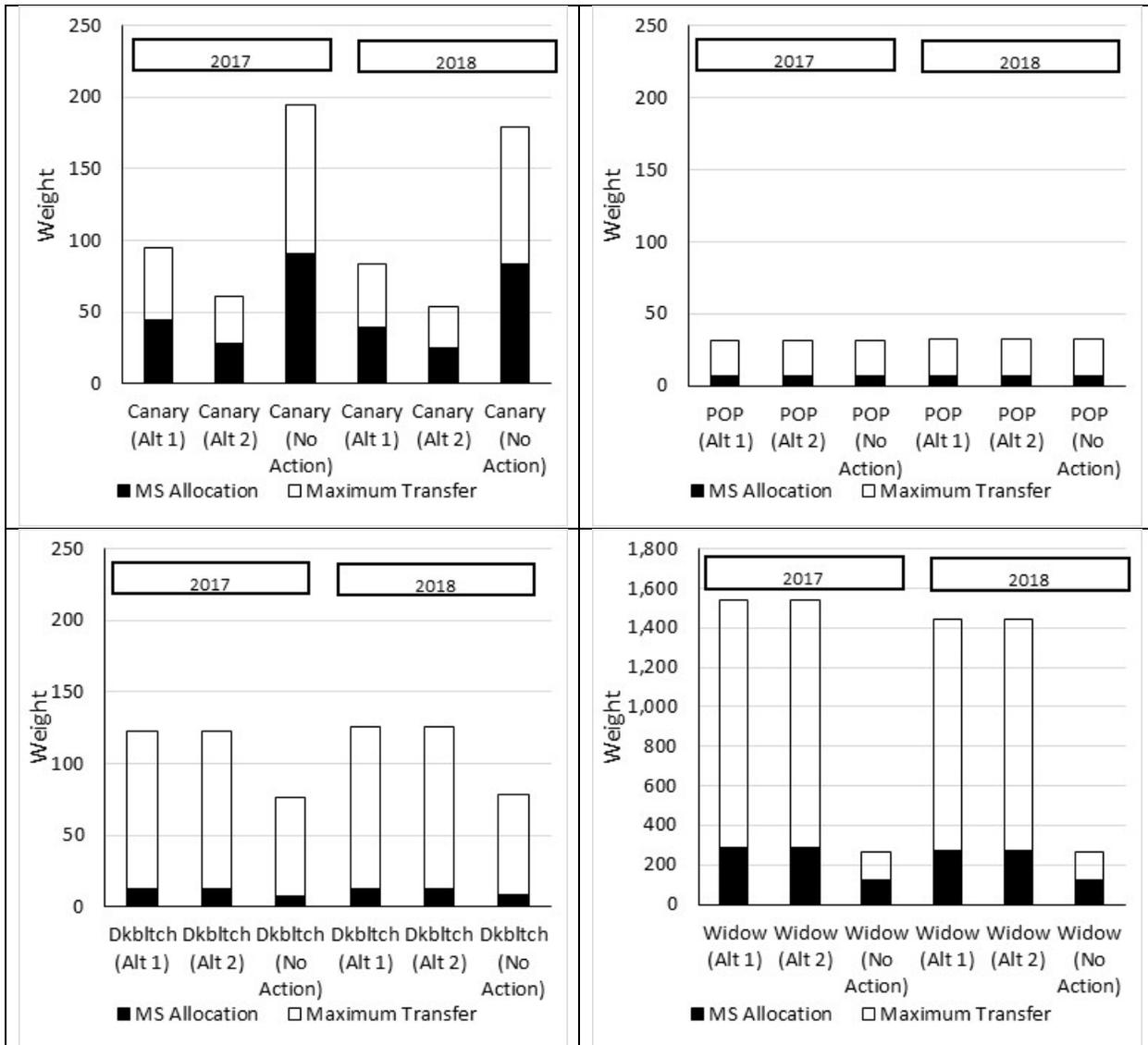


Figure 15. Metric tons allocated to the mothership sector and maximum transfer amounts for each of the transfer species under the 2017-18 integrated alternatives.

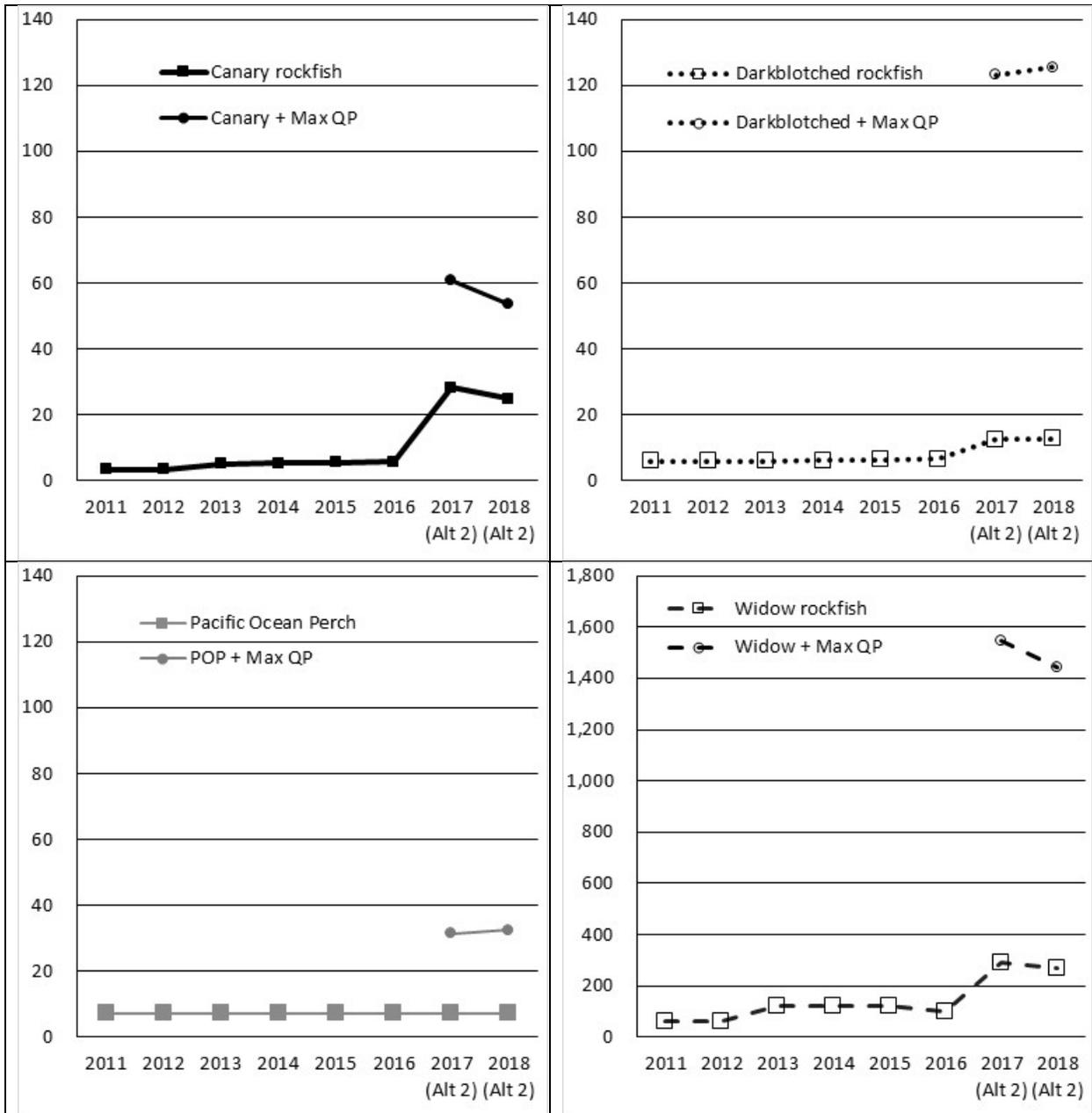


Figure 16. Metric tons of allocated species by year and total available if QP transfer allowance is maximized for allocated bycatch species (Alt 1 and Alt 2 are identical for all species except canary. For canary, Alt 1 would be 56% above Alt 2. Note that for widow rockfish the vertical axis is on a 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 20), 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.³

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 22). 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 preemptive 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 22 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 23. From these data it can be seen that based on the 200 percent criteria, from 2011

³ 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 22. 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).

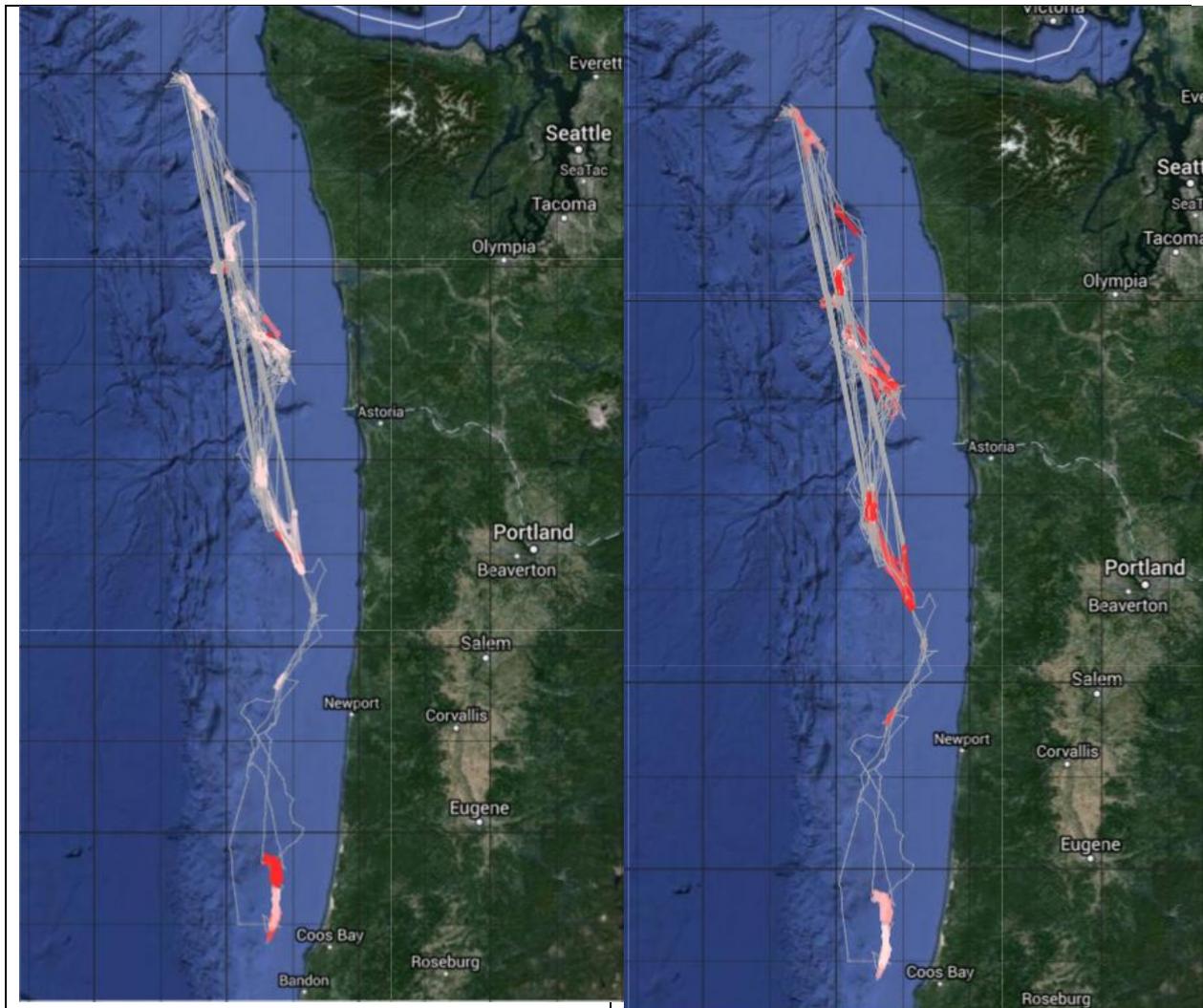
Year	Base Bycatch Rate (kg/mt)	Processor Days With >100% of Base Rate	Processor Days With >200% of Base Rate	Total Number of Processor Days by Year	Percent of Days Exceeding 100% of Base Rate	Percent of Days Exceeding 200% of Base Rate
Canary Rockfish						
2011	0.06	1	0	239	0%	0%
2012	0.10	0	0	190	0%	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 23. 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.

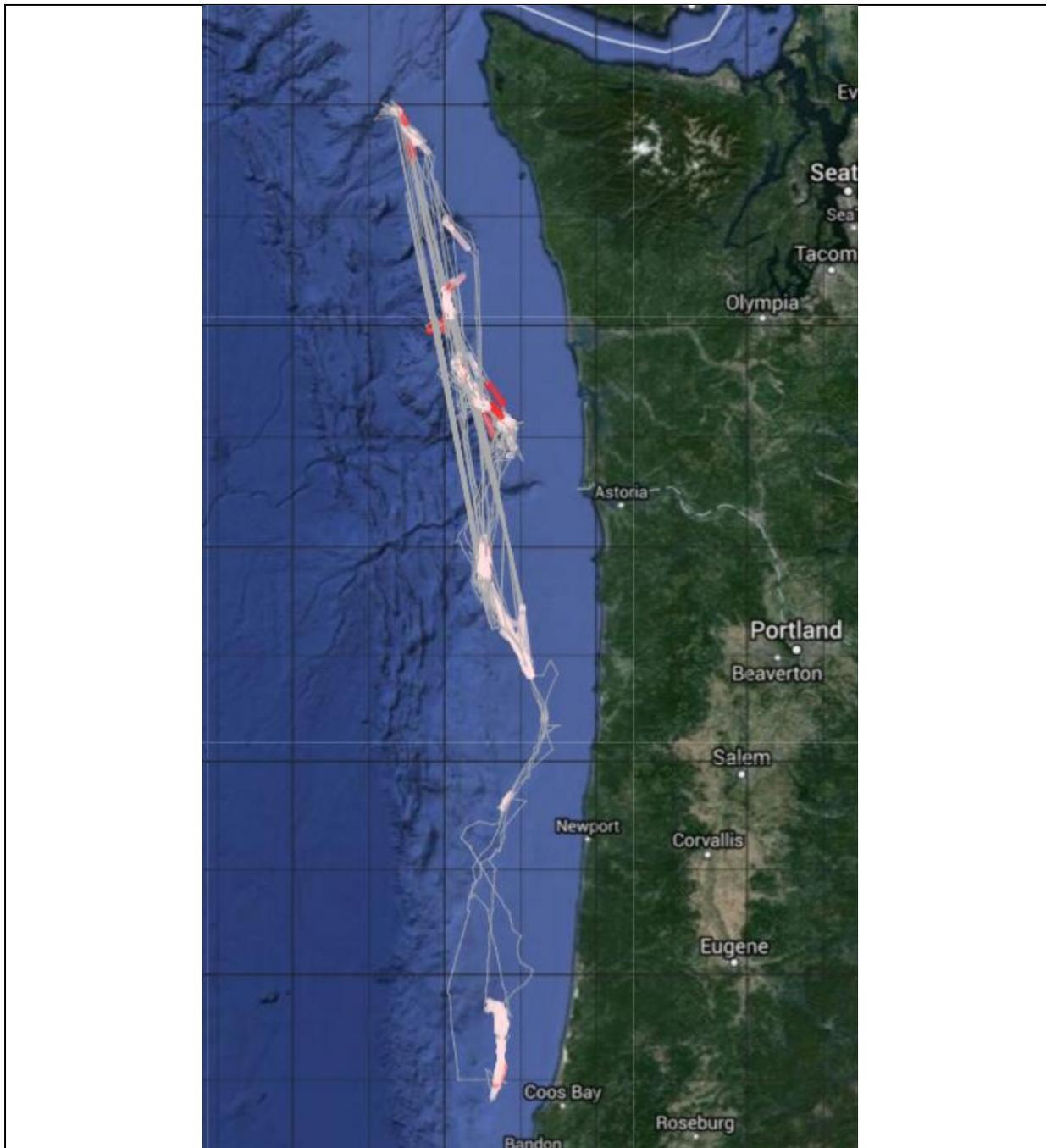
The distances that the fleet moves in response to these triggers varies. Figure 17 and Figure 18 illustrates the amount of vessel movement in the search for fish and avoidance of hotspots during the first week of the 2014 fishing season. These fishing patterns may or may not be typical patterns for the 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).



Darkblotched Rockfish Hotspots.

Widow Rockfish Hotspots

Figure 17. Mothership catcher vessel trawl tracks and hotspots (darkblotched and canary rockfish) 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).



Pacific Ocean Perch Hotspots.

Figure 18. 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 24 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 24. 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%

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?**

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.

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.**

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.

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.

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.

11. 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 are 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.

B.2.4 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 seasonal depth restriction in the Oregon recreational groundfish fishery. This measure has been included in previous EIS, however, 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 (yelloweye rockfish) and ESA listed species (such as Chinook salmon) are anticipated to be nominal. 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 25). The total 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 25. 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	Petrале 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 sandab, 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 19), could be added in order to further reduce the potential for impacts.

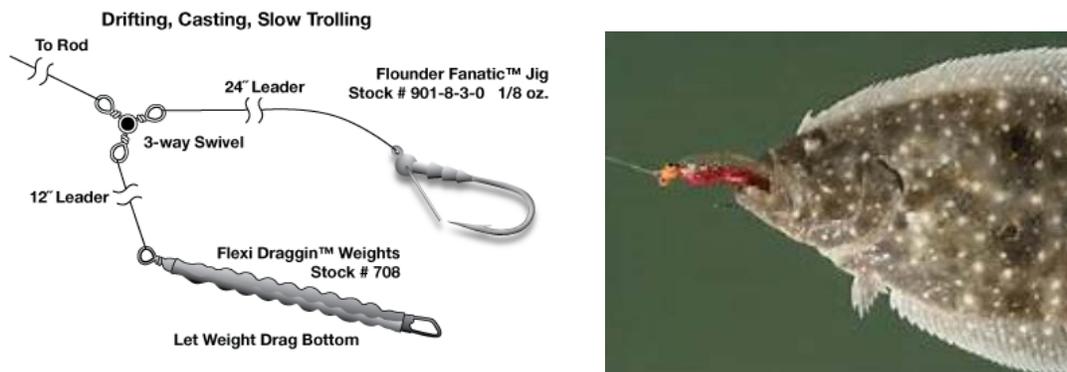


Figure 19. Terminal tackle that is often used to target flatfish species. Designed to drag small hooks on sandy bottom, away from rocks.

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. 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.

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 25, 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.

Petrale 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 nominal.

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 20 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.

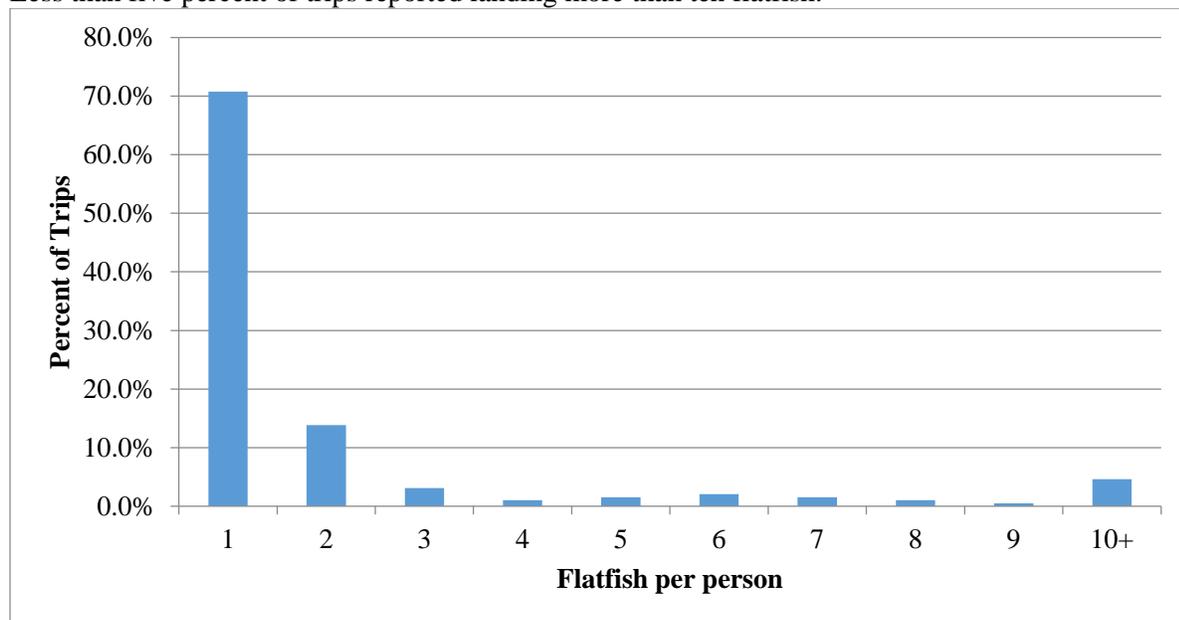


Figure 20. Percent of angler trips with number of flatfish landed per person.

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 group's 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 non-groundfish species. The area/habitat that will be fished as well as the likely gear used to target these species (Figure 19) will limit the impacts to other non-groundfish species. Activities under this management measure would be monitored via the current Oregon Ocean Recreational Boat Sampling (ORBS) program. 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 the most species of flatfish inhabit is soft sandy or muddy bottom.

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 nominal 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 19) 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 provides the opportunity for additional opportunity to harvest underutilized species. Additionally this may provide alternative opportunities should further restrictions, or closure, of the main recreational groundfish fishery become necessary. It may also provide a relief valve of sorts, provides additional fishing opportunities, in poor salmon years.

B.2.5 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 additional authority to take automatic action to change routine management measures in the recreational and commercial groundfish fisheries in California based upon attainment or projected attainment of a federal harvest limit (i.e., ACL, HG) for certain “trigger species” - black rockfish, canary rockfish and yelloweye rockfish. This would allow NMFS to implement inseason actions for California’s groundfish fisheries more quickly to prevent mortality levels from exceeding allowable limits. Therefore, it is included as a new management measure in this cycle.

CDFW would continue to track “trigger species” on a weekly and/or monthly basis to ensure that mortality remains within allowable limits. Similar to established processes in salmon⁴ and Pacific halibut⁵, CDFW would consult periodically with NMFS and Council staff to determine if any routine management measures need to be changed based on the catch tracking. If changes are needed, NMFS, CDFW, and Council staff would consult and determine appropriate management action (i.e., reductions to species specific bag limits, changes to season/depth restriction, fishery closure), affected sector, and timing of implementation. Although the exact notification process has yet to be determined, it could be somewhat similar to the current process. Changes to groundfish regulations could be noticed in the Federal Register, in public notices posted on the West Coast Region’s website, on CDFW’s website and Recreational Groundfish Hotline, and via CDFW news release.

This action would provide more flexibility in managing groundfish fisheries in California. 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.

The primary stocks that will be affected by this management measure are black rockfish, canary rockfish, and yelloweye rockfish in California. Impacts to overfished species (yelloweye rockfish) are expected to be the same or lower than the current fishery. Because this action will allow NMFS to take action outside a Council meeting, management responses will be more timely and likely result in a lower overfished species impacts. No impacts to ESA listed species are expected as a result of this action.

This management measure will affect the groundfish fisheries in California. The geographic scope of this management measure is from 42° 00' N lat. (the Oregon/California border) to the U.S./Mexico 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 NMFS to take inseason actions outside a regularly scheduled Council meeting, if needed, to address management concerns and keep catches within allowable limits. In the recreational fishery, canary and yelloweye rockfish are managed under a federally designated HGs. Automatic action would be triggered based on attainment or projected attainment of the recreational HGs based on weekly and/or monthly inseason monitoring methods currently employed by CDFW. Any actions implemented through this process would apply to the recreational fishery. Black rockfish is currently managed under a statewide ACL and there are no sector specific HGs. Automatic action would

⁴ 50 CFR 660.409

⁵ 50 CFR 300.63

be triggered based on attainment or projected attainment of the statewide black rockfish ACL and could apply to the recreational and/or commercial fisheries.

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(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 (i.e. closing a fishery). Allowing NMFS to take automatic 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.

In the groundfish fishery, NMFS currently has authority to take automatic action to modify the Pacific whiting fishery. The scope of automatic actions to the Pacific whiting fishery that may be initiated by the NMFS Regional Administrator without prior public notice are clearly laid out in Federal regulation (50 CRF 660.60 (d)(1)) and relate to closure of one or more at-sea sectors of the fishery when that sector's allocation of Pacific whiting or other non-whiting groundfish species is reached or projected to be reached, reapportionment of unused allocations of Pacific whiting or other non-whiting groundfish species, and implementation of closed areas (i.e., Ocean Salmon Conservation Zone and Pacific Whiting Bycatch Reduction Areas). The NMFS Regional Administrator also possesses the authority to take automatic actions in the salmon and Pacific halibut fisheries as described in 50 CFR Part 660 Subpart H and 50 CFR Part 300 Subpart E, respectively.

CDFW tracks its groundfish species on a weekly and/or monthly basis to ensure that mortality remains within allowable limits. CDFW closely monitor encounters of yelloweye rockfish – performing weekly and monthly tracking using preliminary California Recreational Fisheries Survey (CRFS) field reports⁶. These preliminary CRFS reports are converted into 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 is collected and when CRFS catch estimates become available. Weekly ACVs are used in catch tracking and are replaced with CRFS estimates for a given month when they become available.

CDFW also performs monthly tracking of non-overfished and more commonly encountered overfished species (i.e. bocaccio and canary rockfish). These species tend to be encountered at a much higher frequency than yelloweye rockfish- thousands of fish per week as opposed to tens of fish. The volume of data associated with these species makes it much more challenging to summarize and track on a more frequent basis than the current process allows. Monthly tracking has proven effective at keeping catches of these species within allowable limits.

If any allowable limits are projected to be attained inseason, action can be taken to slow and/or reduce catches. CDFW can take action for recreational groundfish fisheries in state waters (0-3 miles) utilizing a 10-day public notice period. For commercial fisheries and recreational fisheries in federal waters, federal action can only be taken by NMFS through the Council process. 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.

NMFS publishes changes to groundfish regulations in the Federal Register and in public notices posted on the West Coast Region's website. CDFW provides information on commercial and recreational groundfish

⁶ http://www.pcouncil.org/wp-content/uploads/GF15_16_SpexFEISJanuary2015.pdf

regulations on its Groundfish Central Website⁷; information for recreational fishery is also provided on the Recreational Groundfish Hotline.

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.

If NMFS were granted automatic authority, CDFW could consult with NMFS and Council staff outside a Council meeting to recommend management actions to slow catches of black rockfish in the commercial fishery. Actions would be implemented in a timelier manner, preventing excess harvest of black rockfish and avoiding unnecessary changes to the recreational fishery.

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. 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 NMFS were granted automatic authority, 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 and prevent excess mortality of yelloweye rockfish by implementing changes in a timely manner.

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

The inability to take timely actions to address management needs under the current Council process has prompted the need for this management 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

⁷ <https://www.wildlife.ca.gov/Conservation/Marine/Groundfish>

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.

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 a 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. Granting NMFS authority to take automatic action will keep mortality of these trigger species within 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.

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 automatic action to modify the Pacific whiting, salmon and Pacific halibut fisheries. The use of inseason tracking and automatic action has been effective in other California fisheries. For example, in the 2015 California recreational Pacific halibut fishery the use of inseason tracking, consultation and automatic action provided as much opportunity as possible while staying within allowable limits⁸.

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 automatic 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

⁸ Final catch estimates indicate that 99 percent of the California recreational Pacific halibut quota was attained.

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 (i.e. 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.

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. The non-ground fisheries tend to operate in different regions and depths.

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. These fisheries do not occur in areas of designated 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.

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.2.6 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 (OFS) 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 21, 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 available for use inseason, as needed, and recreational groundfish fishing would be prohibited when a closure is in effect.

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 if access to deeper depths is permitted. It is likely that this management measure may be utilized in conjunction with allowing access to deeper depths. While implementing OFS hotspot closures may have some localized impacts, they will be far outweighed by the additional benefits gained by allowing 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 data⁹ 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 hotspot closures which could be implemented in order to minimize risk of increased encounters with overfished species in deeper depths and prevent disruptions to the recreational fishery.

⁹ 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

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 increased encounters 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 now 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. 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.

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.**

NS 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 NS 2. The proposed closures were identified using anglers' historic knowledge and where possible, verified by recent visual survey data provided by TNC.

This management measure also meets the goals of NS 5 and NS 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 NS 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, NS 5.

Attachment A.

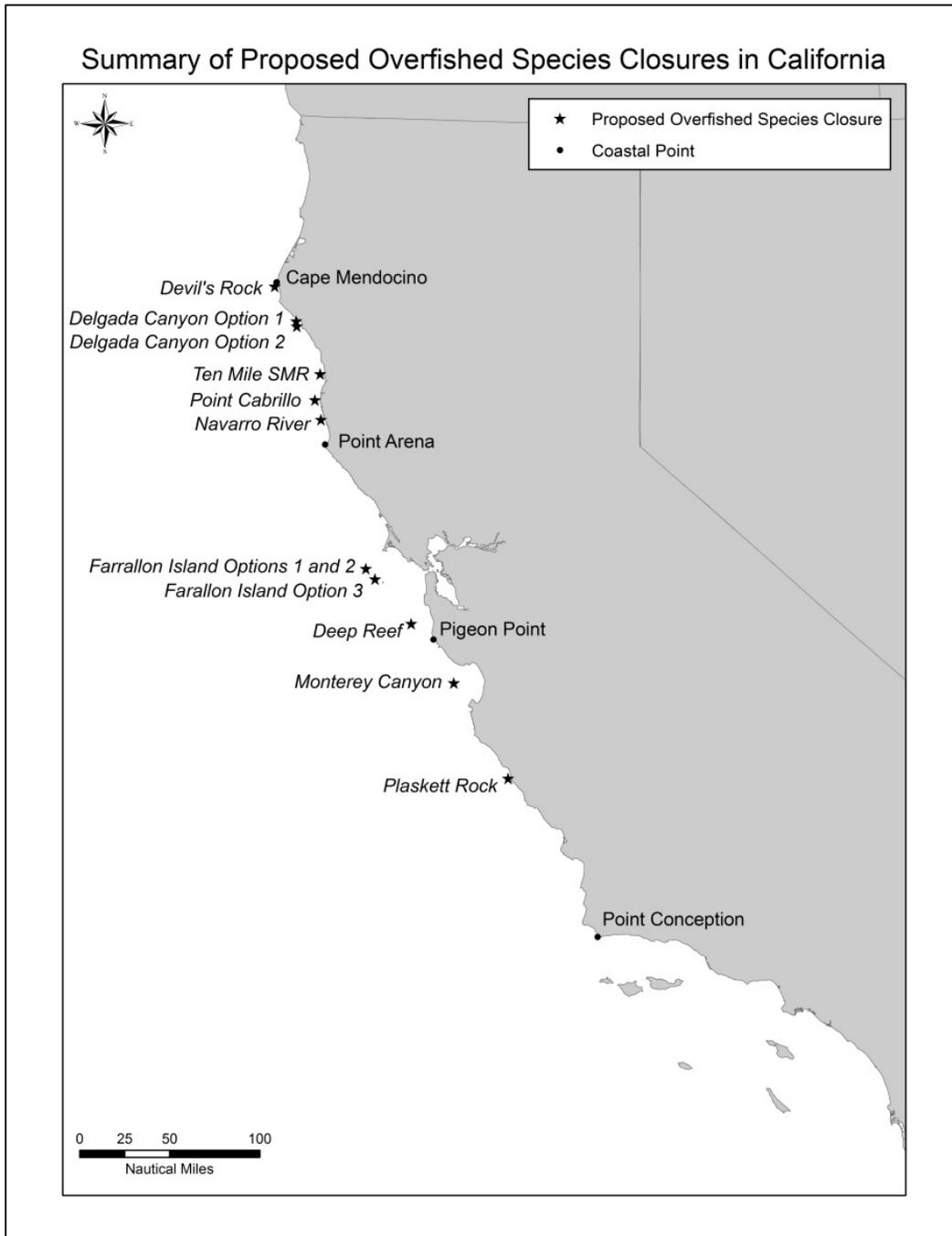


Figure 21. Location of OFS hotspot closures under consideration.

Devils Rock

Figure 22 identifies the proposed closure in the Northern Management Area, which is located inside state waters. The closure covers an area of 2.5 sq km and contains a pinnacle inside the 30 fm RCA line. This area is known to have high encounters of yelloweye rockfish.

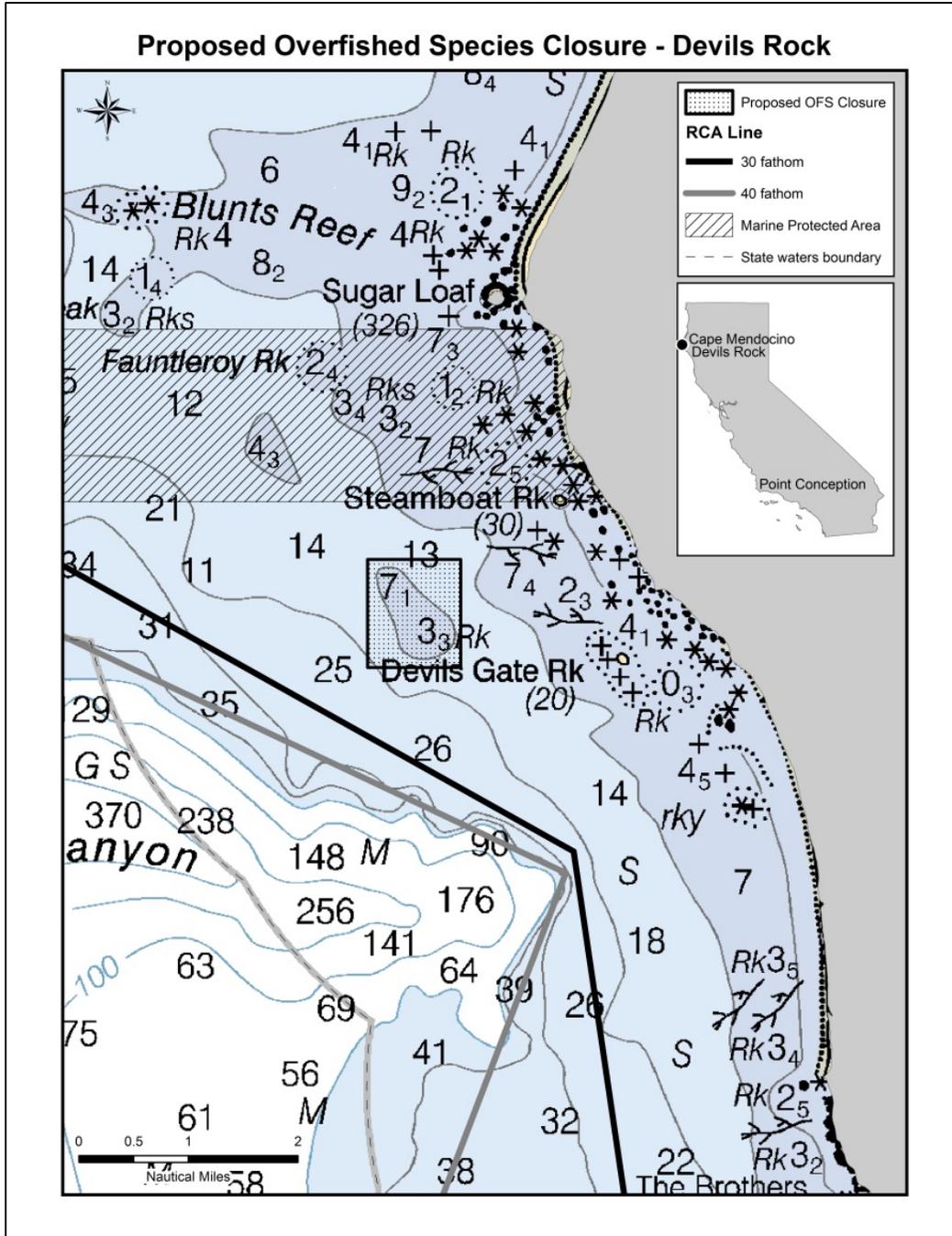


Figure 22. Devils' Rock OFS Hotspot closure.

Delgada Canyon

Figure 23 identifies two options for OFS 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.

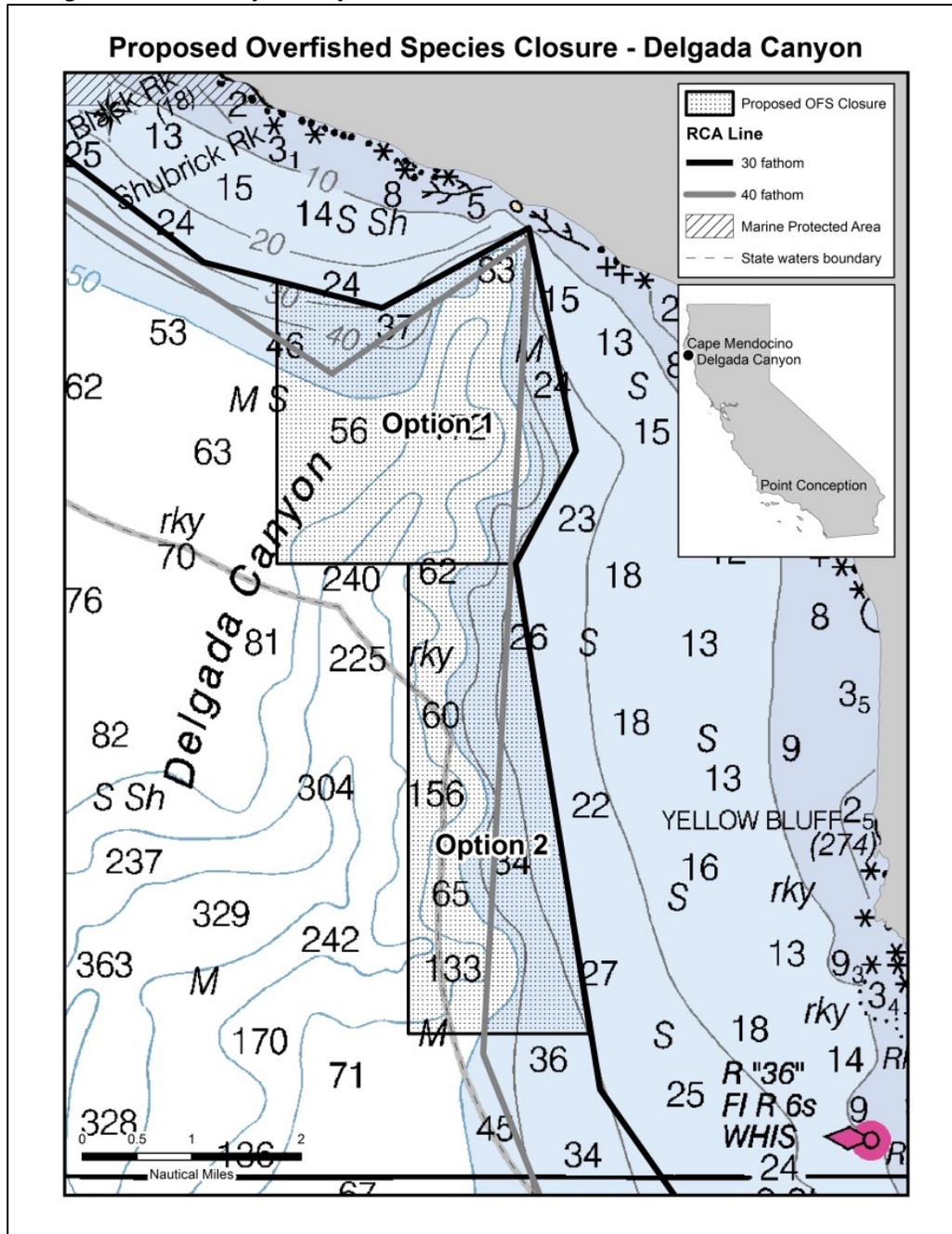


Figure 23. Delgada Canyon OFS Hotspot closure.

Ten Mile

Figure 24 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 MPA 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.

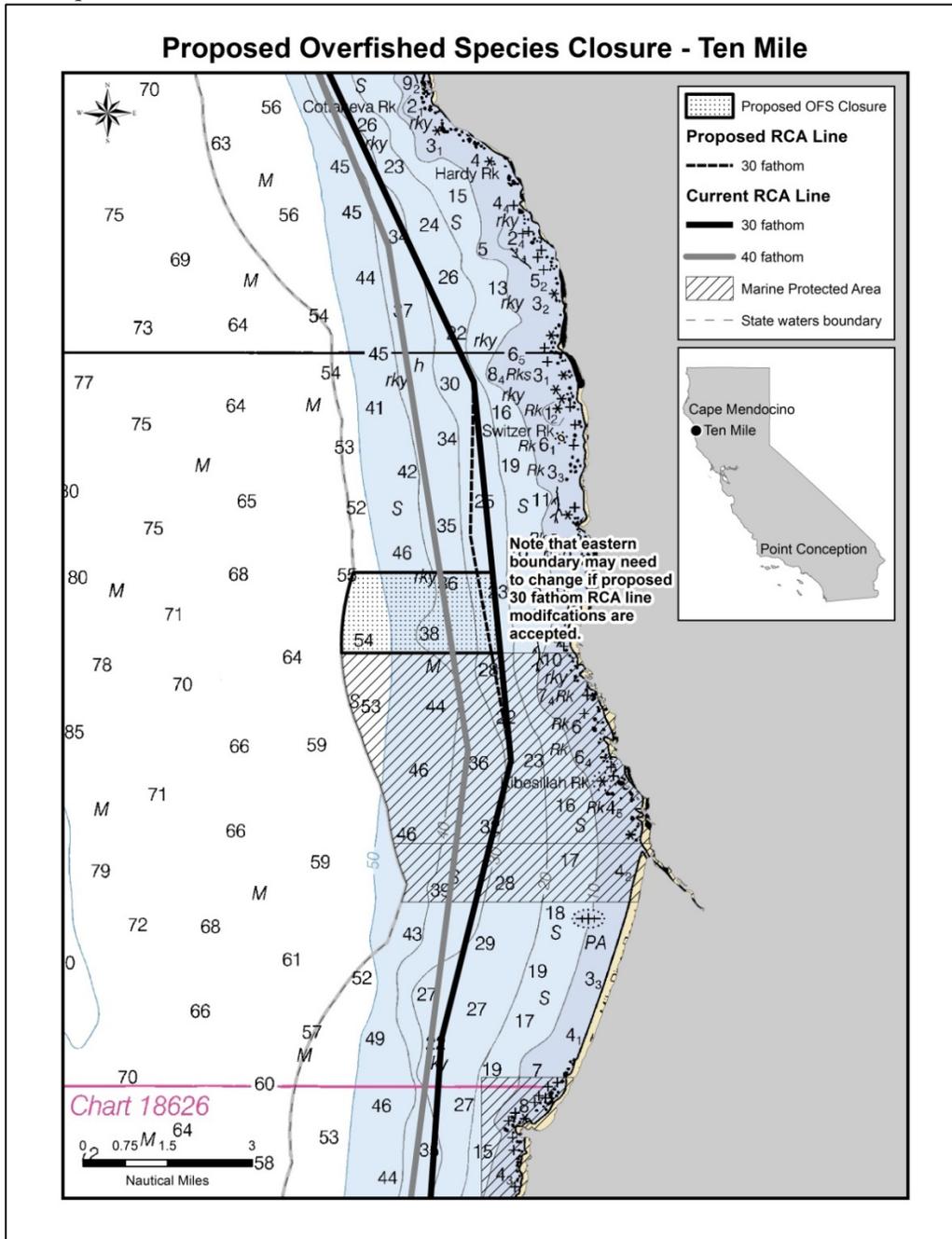


Figure 24. Ten Mile OFS Hotspot closure.

Point Cabrillo

Figure 25 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.

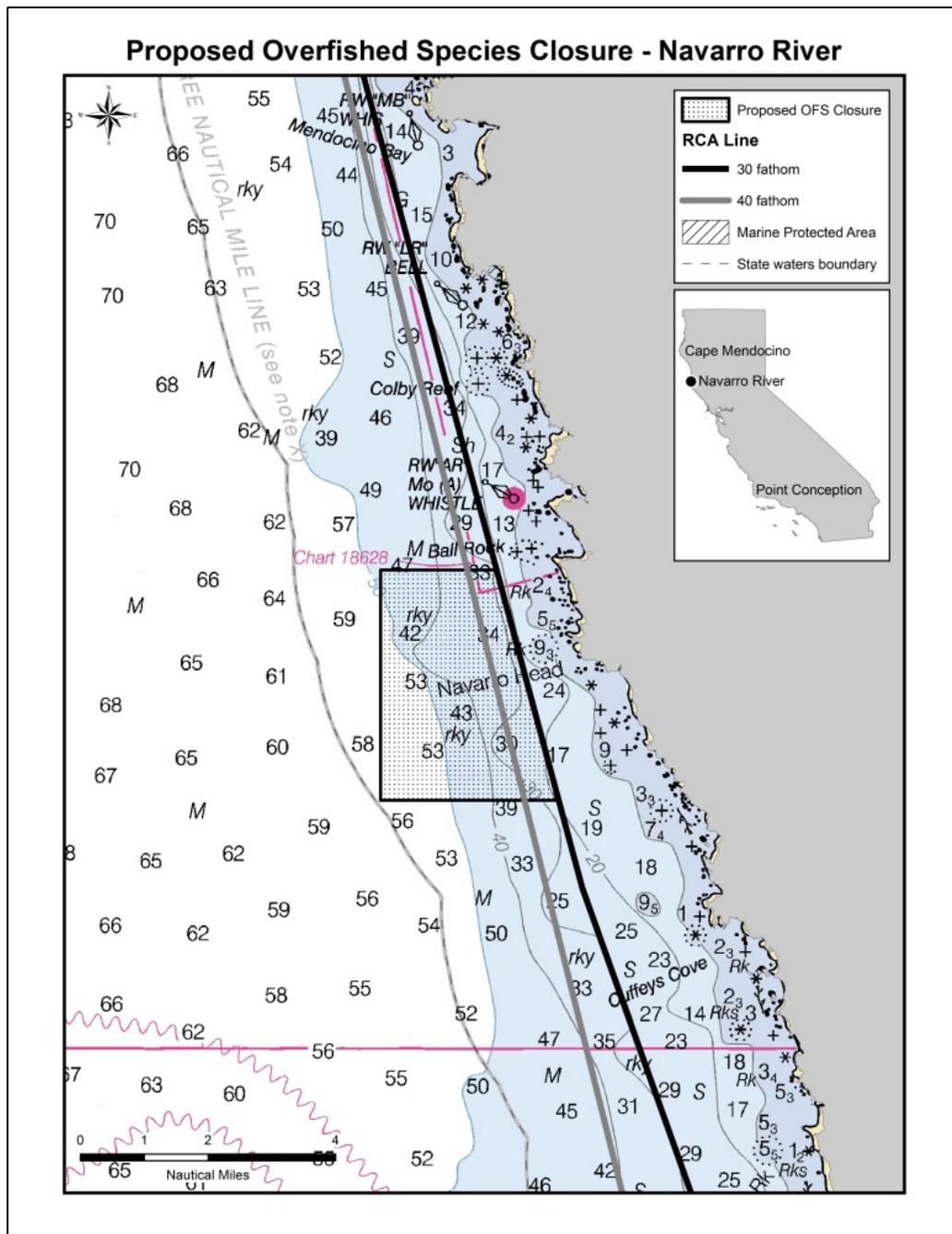


Figure 26. Navarro River OFS Hotspot closure.

Farralon Islands

Figure 27 identifies three possible closures near the Farallon Islands and 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 TNC. 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.

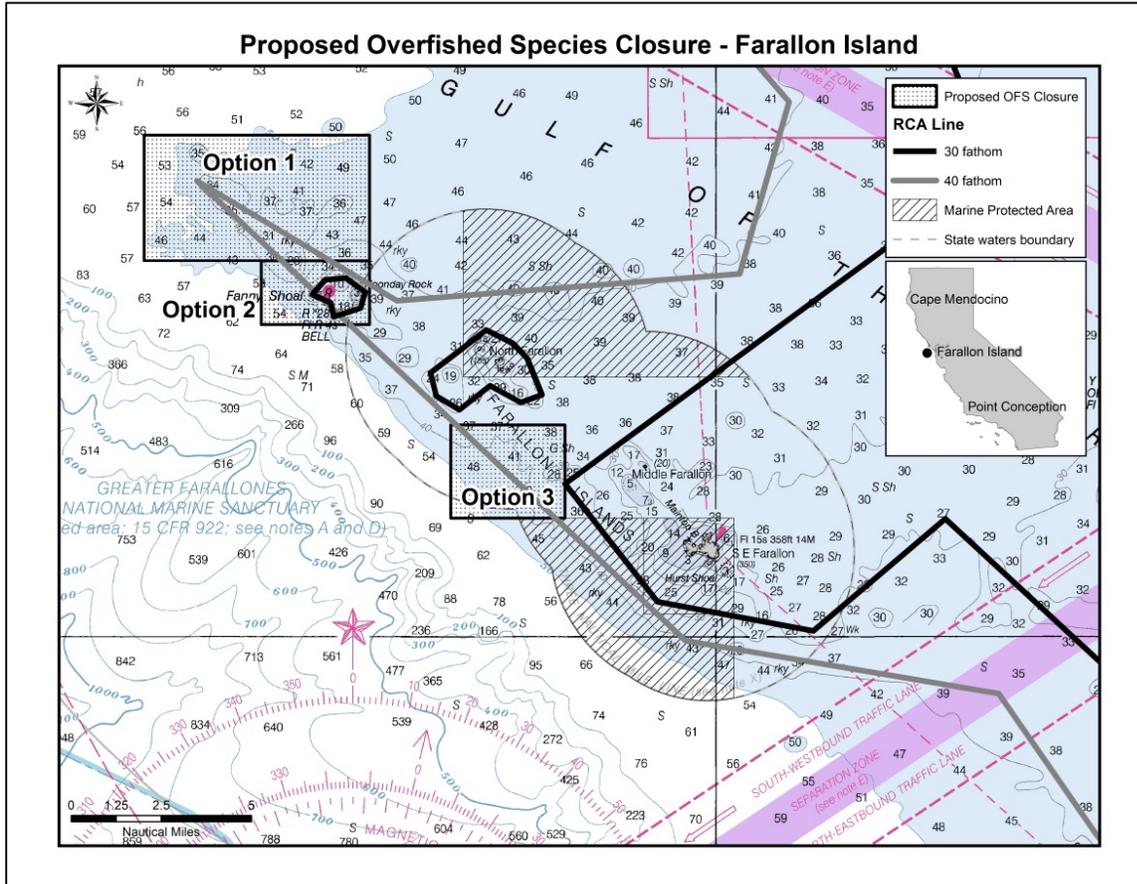


Figure 27. Farallon Island OFS Hotspot closures.

Deep Reef

Figure 28 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.

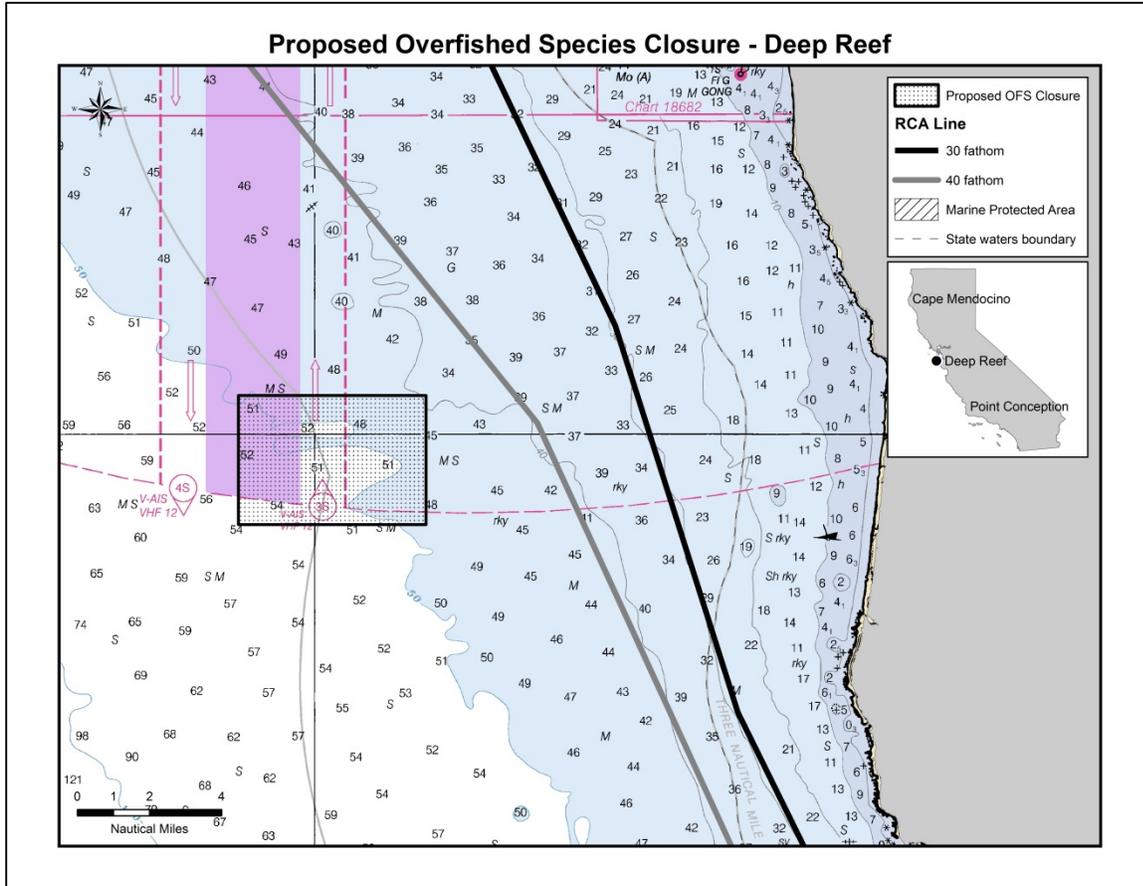


Figure 28. Deep Reef OFS Hotspot closure.

Monterey Canyon

Figure 29 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.

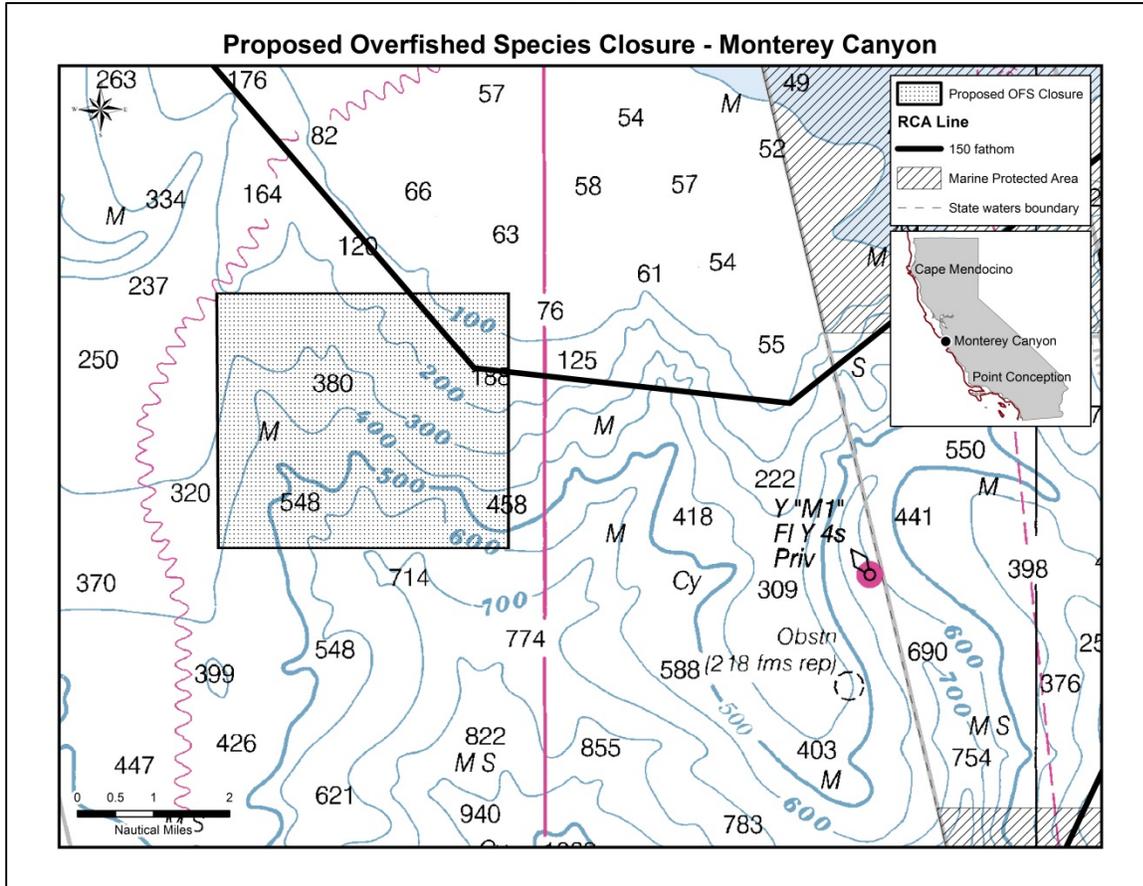


Figure 29. Monterey Canyon OFS Hotspot closure.

Point Sur

Figure 30 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.

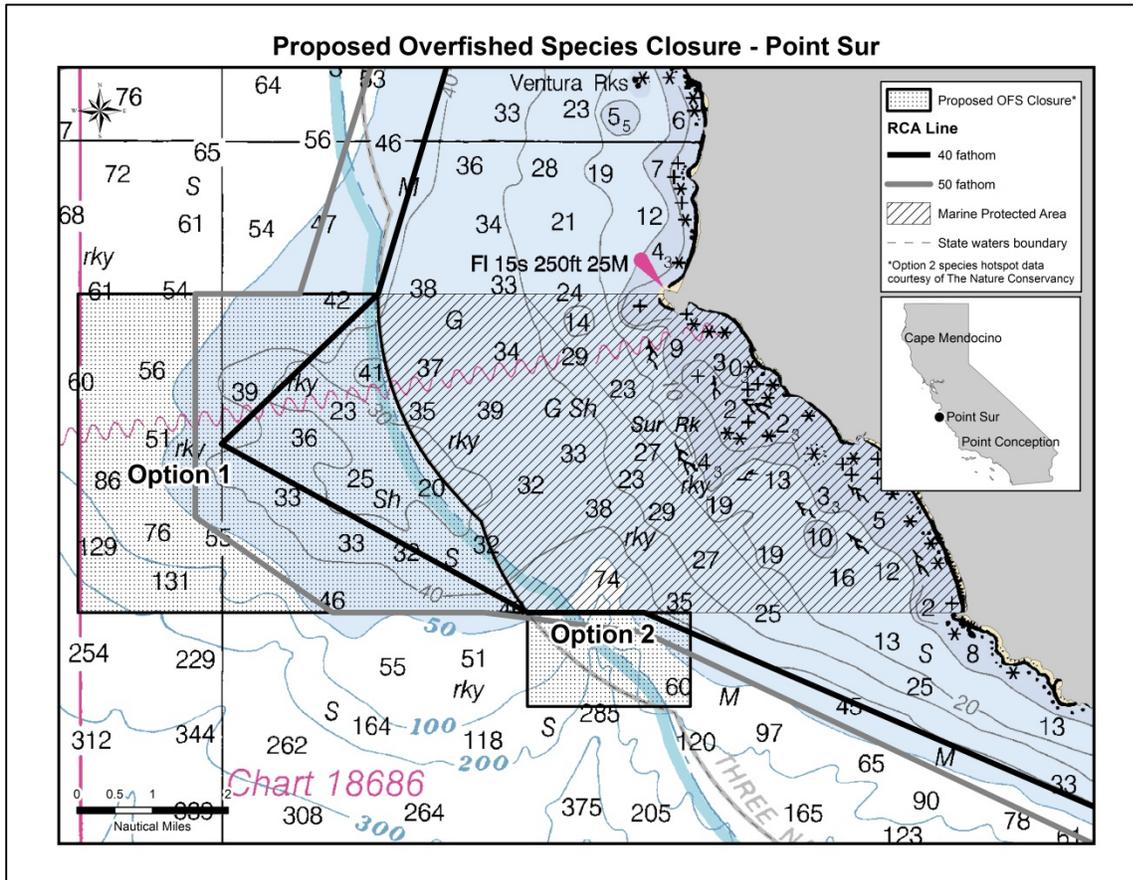


Figure 30. Point Sur OFS hotspot closures.

Table 26. OFS closures, proposed action, coordinates and area of closure.

OFS Closure	Point	Action	LatDeg	LatMin	LatDeg	LongMin	Area_km ²
Devils Rock	1	Add	40	24.57	124	26.100	2.59
Devils Rock	2	Add	40	24.57	124	25.000	
Devils Rock	3	Add	40	23.67	124	25.000	
Devils Rock	4	Add	40	23.67	124	26.100	
Delgada Canyon Option 1	1	Add	40	6.27	124	10.300	13.26
Delgada Canyon Option 1	2	Add	40	6.08	124	9.340	
Delgada Canyon Option 1	3	Add	40	6.64	124	8.000	
Delgada Canyon Option 1	4	Add	40	5.08	124	7.570	
Delgada Canyon Option 1	5	Add	40	4.29	124	8.120	
Delgada Canyon Option 1	6	Add	40	4.29	124	10.300	
Delgada Canyon Option 2	1	Add	40	4.29	124	9.100	11.39
Delgada Canyon Option 2	2	Add	40	4.29	124	8.120	
Delgada Canyon Option 2	3	Add	40	1.00	124	7.450	
Delgada Canyon Option 2	4	Add	40	1.00	124	9.100	
Ten Mile	1	Add	39	37.00	123	51.270	7.81
Ten Mile	2	Add	39	37.00	123	48.810	
Ten Mile	3	Add	39	35.90	123	48.670	
Ten Mile	4	Add	39	35.90	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	54.100	15.35
Point Cabrillo	2	Add	39	23.25	123	52.000	
Point Cabrillo	3	Add	39	20.50	123	52.000	
Point Cabrillo	4	Add	39	20.50	123	54.100	
Navarro River	1	Add	39	12.74	123	49.400	17.20
Navarro River	2	Add	39	12.74	123	47.580	
Navarro River	3	Add	39	9.94	123	46.610	
Navarro River	4	Add	39	9.94	123	49.400	
Farallon Option 1	1	Add	37	51.00	123	15.850	46.65
Farallon Option 1	2	Add	37	51.00	123	9.600	
Farallon Option 1	3	Add	37	48.25	123	9.600	
Farallon Option 1	4	Add	37	48.25	123	15.850	
Farallon Option 2	1	Add	37	48.25	123	12.600	11.41
Farallon Option 2	2	Add	37	48.25	123	9.600	
Farallon Option 2	3	Add	37	46.85	123	9.600	
Farallon Option 2	4	Add	37	46.85	123	12.600	
Farallon Option 3	1	Add	37	44.65	123	7.350	17.66
Farallon Option 3	2	Add	37	44.65	123	4.180	
Farallon Option 3	3	Add	37	42.60	123	4.180	
Farallon Option 3	4	Add	37	42.60	123	7.350	
Deep Reef	1	Add	37	20.85	122	42.100	40.49
Deep Reef	2	Add	37	20.85	122	36.900	
Deep Reef	3	Add	37	18.00	122	36.900	
Deep Reef	4	Add	37	18.00	122	42.100	
Monterey Canyon	1	Add	36	48.42	122	10.750	28.26

OFS Closure	Point	Action	LatDeg	LatMin	LatDeg	LongMin	Area_km²	
Monterey Canyon	2	Add	36	48.42	122	6.920		
Monterey Canyon	3	Add	36	45.73	122	6.920		
OFS Closure	Point	Action	LatDeg	LatMin	LatDeg	LongMin	Area_km²	
Monterey Canyon	4	Add	36	45.73	122	10.750	44.54	
Point Sur Option 1	1	Add	36	18.40	122	1.900		
Point Sur Option 1	2	Add	36	18.40	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	15.00	121	55.955		
Point Sur Option 1	4	Add	36	15.00	122	1.900		
Point Sur Option 2	1	Add	36	15.00	121	55.955		
Point Sur Option 2	2	Add	36	15.00	121	53.800	5.97	
Point Sur Option 2	3	Add	36	14.00	121	53.800		
Point Sur Option 2	4	Add	36	14.00	121	55.955		
Point Sur Option 2								

B.2.7 Petrale Sole 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 from the season and depth restrictions in the California recreational groundfish fishery. Retention of petrale sole is currently permitted during the open seasons and depths for recreational groundfish. This in turn has led to instances where recreational anglers have to discard fish that they catch while targeting other species (e.g. Pacific halibut), where fishing tends to occur in much deeper depths than rockfish trips.

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 bycatch and bycatch mortality of petrale sole encountered outside the current open seasons and depths for groundfish in the California recreational fishery. Removing the restrictions would most likely lead to anglers retaining petrale sole they would otherwise discard while targeting other species. However, given that petrale sole are not been frequently encountered in the recreational fishery in recent years during the closed months, any increase is expected to be minimal and is not expected to result in increased mortality to overfished species or risk exceeding the petrale sole non-trawl allocation. This is further addressed in question number 6.

- 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, soft sandy or muddy bottom, encounters with overfished rockfish species should be minimal.

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

This management measure originated from a public request.

- 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 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 30 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 regulations are being contemplated in the Washington recreational or the non-trawl commercial fisheries. Oregon Department of Fish and Wildlife is requesting to allow targeting of flatfish species (including petrale sole) seaward of the seasonal depth restrictions in their 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?

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.

Petrale sole is currently managed coastwide as a single stock. Under Amendment 21, petrale sole 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. Petrale sole mortality in the commercial fixed gear and recreational sectors has been relatively minimal in recent years.

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 27).

Table 27. 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 (Table 28).

Table 28. Recreational mortality of petrale sole north and south of Point Conception (34°27' N lat.), during an all depth, year round fishery, 1996-2000.

Sub-Region	1996	1997	1999	1998	2000	Average
North	0.31	0.11	0.02	0.00	0.00	0.85
South	0.27	0.11	0.04	0.00	0.15	0.11
Total	0.58	0.22	0.06	0.00	0.15	0.20

As shown in Table 27, 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.

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 minimal opportunity by allowing petrale sole that would otherwise be discarded to be retained. 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 have no bycatch of petrale sole (e.g. Highly Migratory Species). The majority of petrale sole are currently encountered during the open seasons and depths for groundfish (which varies by management area), though this management measure may provide for some additional catch opportunity outside of those months. Given the underutilization of petrale sole, 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. While petrale sole are encountered while targeting non-groundfish species, this management measure alone is not expected to change fishing behavior in those other fisheries.

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. Additionally, petrale sole tend to be found over soft sandy or muddy bottom habitats.

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 MSA 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.

