GROUNDFISH MANAGEMENT TEAM REPORT ON SHORTBELLY ROCKFISH RECOMMENDATIONS FOR 2021- 2022

The Groundfish Management Team (GMT) offers the following comments and recommendations for the Pacific Fishery Management Council (Council) to consider when deciding how to manage shortbelly rockfish for 2021-22.

The GMT recommends the Council reconsider its final preferred alternative (FPA) for establishing a shortbelly rockfish annual catch limit (ACL). Based on new information, the GMT recommends the Council select Alternative 2 as its FPA. Alternative 2 would designate shortbelly rockfish as an Ecosystem Component (EC) species in the Groundfish Fishery Management Plan (FMP) through the 2021-22 biennium. The GMT makes this recommendation after carefully considering new information about the shortbelly rockfish stock (Schroeder et al. 2018[1]), the existing management options and potential economic impacts under an ACL, and the factors used to determine the merit of designating an EC species.

Reconsideration of shortbelly rockfish as an EC species

National Standard guidance allows Councils to choose to identify stocks within their FMPs as EC species[2] if a Council determines that the stocks do not require conservation and management based on the considerations and factors discussed in detail below. The Groundfish FMP currently identifies several EC species. The guidance explains, "Not every fishery requires Federal management. Any stocks that are predominately caught in Federal waters and are overfished or subject to overfishing, or likely to become overfished or subject to overfishing, are considered to require conservation and management". The shortbelly rockfish stock, while predominantly caught in Federal waters, is not overfished or subject to overfishing, nor likely to become so. Thus, the Magnuson Stevens Act (MSA) provides Councils with some leeway to "*consider the following non-exhaustive list of factors when deciding whether additional stocks require conservation and management*[3]*:*

[1] Schroeder, I.D., Santora, J.A., Bograd, S.J., Hazen, E.L., Sakuma, K.M., Moore, A.M., Edwards, C.A., Wells, B.K., Field, J.C. (2018) Source water variability as a driver of rockfish recruitment in the California Current Ecosystem: implications for climate change and fisheries management. Canadian Journal of Fisheries and Aquatic Sciences 76, 950-960.

[2] (*see* §§600.305(d)(13) and 600.310(d)(1))

[3] When considering removing a stock from, or continuing to include a stock in, an FMP, Councils should prepare a thorough analysis of factors in paragraphs (c)(1)(i) through (x) of this section, and any additional considerations that may be relevant to the particular stock…. Councils should consider weighting the factors as follows. Factors (i)-(iii) should be considered first, as they address maintaining a fishery resource and the marine environment. These factors weigh in favor of continuing to include a stock in an FMP. Councils should next consider factors (iv)-(ix), which set forth key economic, social, and other reasons contained within the MSA for an FMP action. Finally, a Council should consider factor (x) before deciding to remove a stock from, or continue to include a stock in, an FMP. In many circumstances, adequate management of a fishery by states, state/Federal programs, or another Federal FMP would weigh in favor of removing a stock from an FMP. *See e.g.*, 16 U.S.C. 1851(a)(7) and 1856(a)(3).

(i) The stock is an important component of the marine environment:

As described in Field et al. 2007[4], and Field et al. 2010[5] shortbelly rockfish is a key forage species of the California Current Ecosystem.

(ii) The stock is caught by the fishery:

Shortbelly rockfish is caught as bycatch, primarily by the Pacific whiting sectors in recent years, with total mortality estimated at 654 mt in 2019 (see Table 4-5 of Agenda Item F.1, Attachment 8, June 2020).

(iii) Whether an FMP can improve or maintain the condition of the stock:

Based on the work of Schroeder et al 2018[1], the shortbelly rockfish stock is expected to thrive for at least the next decade or so based on multiple strong incoming year-classes. Bycatch of shortbelly rockfish has typically been less than 20 percent of the acceptable biological catch (ABC) and therefore are not experiencing overfishing. The GMT has demonstrated on numerous occasions that the best available science supports that both forage and conservation objectives for shortbelly rockfish could be accomplished even if the full ABC was taken in 2021-22 (Agenda Item H.4.a, Supplemental GMT Report 1, November 2020, Agenda Item H.6.a, GMT Report 2, November 2020, Agenda Item G.4.a, Supplemental GMT Report 1, April 2020). The amount and type of catch that occurs in Federal waters is therefore not expected to be a significant contributing factor to the stock's status. There is currently no targeting of shortbelly rockfish and there is no incentive to target shortbelly rockfish. Therefore, in the absence of a targeted fishery, shortbelly rockfish is very unlikely to become overfished and needing of additional management. Therefore, active management in the FMP is not necessary to improve or maintain the condition of the stock.

(iv) The stock is a target of a fishery:

Shortbelly rockfish is not a target stock and there is a low likelihood of a market developing (see discussion below). Additionally, we do not anticipate any change in industry behavior in response to an EC species designation, as shortbelly rockfish has been a low value species (~$0.02/lb. in 2019). Because shortbelly rockfish are small and have spines, they are easily caught in the mesh of trawl nets and codends, and are labor intensive to remove from fishing gear and to sort from the target stock in processing lines. The National Standards define non-target species and non-target stocks as fish caught incidentally during the pursuit of target stocks in a fishery[6]. Non-target stocks may require conservation and management as determined using factors listed above, and if so, must be included in the FMP, and be identified at the stock or stock complex level. If non-target species are not in need of conservation and management, they may be identified in an FMP as an EC species.

(v) The stock is important to commercial, recreational, or subsistence users:

Shortbelly rockfish is not considered an important stock to commercial, recreational, or subsistence users at this time.

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[4] Field, J.C., Dick, E.J., MacCall, A.D. 2007. Stock assessment model for the shortbelly rockfish, *Sebastes jordani*, in the California Current. NOAA Technical Memorandum NOAA-TM-NMFS-SWFSC-405. U.S. Department of Commerce.

[5] Field, J.C., MacCall, A.D., Bradley, R.W., Sydeman, W.J. 2010. Estimating the impacts of fishing on dependent predators: a case study in the California Current. Ecological Applications. 20: 2223-2236.

[6] §600.305(d)(12)

The fishery is important to the Nation or to the regional economy:

Shortbelly rockfish is not an important component of the regional or National economy and has limited economic value with ex-vessel landings totaling about $11,000 in 2019.

(vi) The need to resolve competing interests and conflicts among user groups and whether an FMP can further that resolution:

There is no directed fishery for shortbelly rockfish, no allocations to user groups, and no competing interests among fishery groups.

(vii) The economic condition of a fishery and whether an FMP can produce more efficient utilization.

Shortbelly rockfish have limited economic value relative to other stocks caught by the trawl fishery. The trawl fishery is economically dependent on other stocks that co-occur with shortbelly rockfish, particularly Pacific whiting. The GMT has had substantial discussion and review of available management mechanisms and has not been able to identify any which would produce more efficient utilization of the incidentally caught shortbelly rockfish at this time.

(viii) The needs of a developing fishery, and whether an FMP can foster orderly growth:

There are no developing fisheries for shortbelly rockfish. New fisheries have and continue to develop under the groundfish FMP, such as big skate or the recently rebuilt midwater rockfish fishery. The GMT does not believe that it is feasible for a targeted fishery to develop for shortbelly rockfish, due to the lack of markets, low ex-vessel value, availability of higher value species like Pacific whiting and midwater rockfish, and high trip costs in the trawl fishery. As discussed in prior GMT reports, shortbelly rockfish are only encountered by trawl gear, as they are too small to be caught by hooks or pots. Economic Data Collection (EDC) data show that the average variable cost to fish with trawl gear in 2018 was $165 per mt. In 2019, participants in the shoreside trawl fishery landed 136 mt for which they received no revenue. Coastwide revenue for shortbelly rockfish of $11,381 was associated with landings summing to 117 mt. Most landings of shortbelly rockfish did not have associated ex vessel-revenue, on fish tickets that did, the average ex-vessel revenue in 2019 from shortbelly rockfish landings was $97 per mt, which would not allow the average trawl vessel to break even on a trip targeting shortbelly rockfish.

Shortbelly rockfish is currently primarily utilized in a fishmeal product when not discarded. On the production side, the EDC Whiting Purchase and Production Tool reports that the average product sale price for fishmeal for the at-sea whiting sectors was $1,675 per mt in 2018 (not enough sales were reported from the shoreside sector to be reported). Average production cost produced were $2,073 per mt in the mothership sector and $1,533 for catcher-processors (includes product types other than fishmeal), indicating that expanding fishmeal production is not likely to be profitable for processors at current market prices. Fishmeal is the lowest value Pacific whiting product type in the at-sea sector, relative to $2,800 per mt for fillets, $2,625 per mt for surimi, and $1,800 per mt for minced. Council members, advisory bodies, and the public have indicated shortbelly rockfish is not suitable for other product forms at this time, and with Pacific whiting harvest levels expected to continue to remain high and not fully attained in the next biennium, it is unlikely that processors will shift from the higher value product forms to encourage vessel targeting of shortbelly rockfish in lieu of Pacific whiting.

The abundance of underutilized species in the trawl Individual Fishing Quota (IFQ) sector (114,391 mt of unutilized quota in 2019), length of time required to develop new seafood product markets (observed recently for rebuilt groundfish stocks), and cost/price constraints discussed above indicate that a targeted fishery for shortbelly rockfish is not likely to develop in the 2021-22 biennium. Should markets evolve in that period, driving an increase in ex-vessel revenue sufficient to cover trawl trip and production costs, the Council may wish to revisit the likelihood of a targeted fishery developing.

(ix) The extent to which the fishery is already adequately managed by states, by state/Federal programs, or by Federal regulations pursuant to other FMPs or international commissions, or by industry self-regulation, consistent with the requirements of the Magnuson-Stevens Act and other applicable law:

Currently, there is no targeted fishery for shortbelly rockfish in state or Federal waters. Shortbelly is not subject to overfishing. Industry has provided public comment to the Council and GMT that they are making an effort to avoid shortbelly rockfish to the extent practicable, so the Council may wish to consider the extent to which the fishery is already adequately managed by financial and operational incentives to avoid incidental catch.

Considering the MSA criteria above, the GMT concludes shortbelly rockfish are not in need of conservation and management in the 2021-22 biennium and are appropriate for consideration as an EC species in the FMP.

Consistent with National Standard 9, MSA section 303(b)(12), and other applicable MSA sections, management measures can be adopted in order to, for example, collect data on the EC species, minimize bycatch or bycatch mortality of EC species, protect the associated role of EC species in the ecosystem, and/or address other ecosystem issues.

The Council could elect to select management measures for shortbelly rockfish if it was managed as an EC species: "Consistent with National Standard 9, MSA section 303(b)(12), and other applicable MSA sections, management measures can be adopted in order to, for example, collect data on the EC species, minimize bycatch or bycatch mortality of EC species, protect the associated role of EC species in the ecosystem, and/or to address other ecosystem issues".[7]

Policy Considerations

In substantial discussion about the management of shortbelly rockfish, the Council has noted multiple competing priorities. The GMT notes the discussion generally centers around:

1. preventing a directed fishery from occurring
2. reducing bycatch
3. not constraining or closing fisheries, and
4. managing to annual catch limits

The GMT provides an overview of these objectives with respect to managing shortbelly rockfish as an EC species, relative to ongoing ACL management with management measures below.

[7] §600.305

1. Prohibition on Directed Fishing

During this meeting, there has been discussion in the advisory bodies regarding the prohibition on directed fishing for shortbelly rockfish. This prohibition was suggested by Oceana at the Council's September 2019 meeting during public comment to be included as a management option for consideration through the harvest specifications. At this meeting, there has been some question as to whether or not this was considered as a management measure. To help clarify the situation, the GMT provides the following history:

- September 2019: The Council considered harvest specifications and management measures under Agenda Item H.8, and included the following range of alternatives for shortbelly rockfish:

Stock	Default HCR	Alternative 1	Alternative 2
Shortbelly rockfish	ABC (P*.40), ACL=500 mt	Same PPA selected under H.6. for 2020 Shortbelly Rockfish (3,000 mt)	N/A

  During the management measures discussion, the motion stated, "In addition, for shortbelly rockfish, consider:

  -an ACT below the ACL, and actions that might be triggered by approaching or reaching that ACT,
  -amending the FMP to prohibit directed fishing, and
  -managing shortbelly rockfish as an Ecosystem Component Species or Shared Ecosystem Component species

- November 2019: The Council considered for Agenda Item H.6 Harvest Specifications for 2021-22 Including Final Overfishing Limits and Acceptable Biological Catches and under Agenda Item H.8 Biennial Management Measures for 2021-22.

  Under Agenda Item H.6, the GMT provided a report in the advanced briefing book which included an alternative for shortbelly rockfish as an EC species and an alternative for a prohibition on directed fishing (Agenda Item H.8.a, GMT Report 2 November 2019). In this report, concerning the prohibition on fishing, the GMT stated:

  > "Alternative 3 would be to amend the Groundfish FMP to prohibit a directed fishery for shortbelly rockfish as requested by Oceana (Agenda Item H.8., Oceana Public Comment, September 2019). We do not believe this is necessary due to all the testimony from the public, council discussion at the September meeting, and economic evidence that a market for shortbelly rockfish is unlikely to develop. Additionally without any catch controls or mitigation measures assigned to this language, it will not have any actionable effect on the fishery. The GMT supports limiting a directed fishery but believes this could best be done by providing an ACL which allows for incidental catch in groundfish trawl fisheries but is limited enough to prohibit the fishery from developing."

During the discussion for the motion for Agenda Item H.6., the maker stated:

> "I do want to note that we will be considering alternative management approaches for shortbellies such as an FMP amendment prohibiting directed fishing or designation as an ecosystem component species under H.8."

In the H.8 Attachment 1, the Action Item Checklist, specifically Action Items #11 and #12, potential shortbelly rockfish management measures were noted. These items were specifically referenced by the Council in their motion. The motions did not specifically include the prohibition of a directed fishery. The Council's motion record reads (November 2019 meeting transcripts):

> "I move the Council include in the range of alternatives for analysis action item 11 in the Supplemental GMT Report 3, Agenda Item H.8.a."

Action Item #11 in Supplemental GMT Report 3 states:

> "The Groundfish Management Team (GMT) has been informed by the National Marine Fisheries Service (NMFS) that they will provide a white paper on this topic in the March 2020 advanced briefing book. The GMT expects to work with NMFS overwinter to develop a Range of Alternatives for the preliminary preferred alternative (PPA) in March 2020."

For Action Item #12, the Council considered a motion which included implementing an ACT but then decided to amend the motion to not include Action Item #12.

- March 2020: NMFS presented a paper and presentation that concluded that, of the stocks managed by the Council under the Groundfish FMP, only shortbelly rockfish needed accountability measures implemented through the 2021-22 biennium. NMFS included this in their list of recommendations.

- April 2020: The Council took final action on 2021-22 harvest specifications under Agenda Item G.4. and identified its preliminary preferred alternatives for management measures under Agenda Item G.6. After review of the NMFS report from the March meeting and after analyzing potential inseason options to management for shortbelly rockfish, the GMT recommended an ACT with a closure mechanism as the best approach to manage catch of shortbelly rockfish (Agenda Item G.6.a Supplemental GMT Report 2, April 2020).

  After Council discussion was complete on Agenda Item, G.6., the Council chose to direct the GMT to develop an ACT for shortbelly rockfish. The motion stated, "I move that the GMT continue to develop an ACT alternative for shortbelly rockfish that would close a portion of the trawl fleet upon attainment as recommended by the Groundfish Advisory Subpanel (GAP) in Agenda Item G.6.a, Supplemental GAP Report, April 2020. There was no further direction from the Council at this point to continue with development of management measures for prohibiting a directed fishery.

Lastly, the GMT reminds the Council that a directed fishery is not expected to develop during this biennium, with market forces providing a sufficient mechanism to prevent a targeting strategy (discussed in detail above).

2. Reducing bycatch

National Standard 9 requires Councils to set conservation and management measures to the extent practicable to minimize bycatch, defined as fish not sold or kept for personal use. Along with other incidentally caught species in the Pacific whiting fishery, shortbelly rockfish is often sold for a nominal price which would not be considered bycatch under this definition, although the term ‘‘incidental catch’’ is often used interchangeably with ‘‘bycatch”. In contrast to bycatch, there is no MSA requirement to reduce this type of “incidental” catch. It is important to recognize this distinction between bycatch and incidental catch when considering whether bycatch is being reduced to the extent practicable. The National Standard 9 bycatch guidance explicitly excludes, “fish that legally are retained in a fishery and kept for personal, tribal, or cultural use, or that enter commerce through sale, barter, or trade,” and thus additional shoreside landings may qualify under this exclusion if the vessel hoped to sell the catch to a processor but could not negotiate a non-zero price.

In 2019, unsold fish accounted for about 55 percent of shortbelly rockfish mortality in the shorebased sector. This, with the (unknown) corresponding value in the at-sea sector, shortbelly rockfish catch is neither sold nor kept for personal use and would be appropriately considered bycatch. The National Standard guideline indicates two ways that bycatch can “impede efforts to protect marine ecosystems and achieve sustainable fisheries and the full benefits they can provide to the Nation” (§600.350):

- Bycatch can increase substantially the uncertainty concerning total fishing-related mortality, which makes it more difficult to assess the status of stocks, to set the appropriate optimum yield (OY) and define overfishing levels, and to ensure that OYs are attained and overfishing levels are not exceeded.
- Bycatch may also preclude other more productive uses of fishery resources.

The GMT notes that with one hundred percent monitoring of catch and offloads in the catch share fishery, bycatch of shortbelly rockfish is accurately accounted for. The Council would continue monitoring catch against estimates of biomass. Bycatch of shortbelly rockfish is not likely to preclude more productive consumptive uses of fishery resources as none are identified at this time, however, shortbelly rockfish does serve as an important forage fish resource in the ecosystem. Further consideration of National Standard 9 is included in Appendix A below.

3. Not constraining or closing fisheries

Including shortbelly rockfish as an EC species would not constrain economically important Pacific whiting and other trawl fisheries, while spatial, sector, or fishery closures would negatively affect participants and communities. The impacts of premature closure of Pacific whiting fisheries were analyzed during the salmon mitigation process, (Appendix C of the 2019-20 Environmental Assessment for the 2019-20 biennial harvest specification and management measures, pg. C-30). The need for accountability measures when using ACLs could result in fishery closures that are

not needed to accomplish biological objectives, and could cause considerable negative economic impacts.

4. Managing to annual catch limits

The current system of ACLs used to manage shortbelly rockfish has been efficient and resource intensive in the past year. The Council would not have to manage to an ACL if shortbelly rockfish is managed as an EC species. The FPA or alternative ACLs would require active management by the Council to ensure catch limits do not continue to be exceeded. The accountability measures required are discussed below, after a discussion of whether the FPA ACL is the optimal threshold to achieve the policy objectives discussed above.

Conclusion

Considering the policy considerations and rationale described above, the GMT concludes that shortbelly rockfish does not require conservation and management outside of that provided by an EC species designation and is a suitable candidate for management as such. Management as an EC species adequately provides the level of monitoring needed to protect this species and ecosystem without unnecessarily restricting the fishing industry.

Recommendations

The GMT recommends the Council:

1. **Select Alternative 2 as FPA for shortbelly rockfish: Designate shortbelly rockfish as an Ecosystem Component (EC) species in the Groundfish Fishery Management Plan (FMP) through the 2021-22 biennium.**

Attached:

Appendix A: Alternative 1 and Accountability Measures
Appendix B: National Standard 9 Considerations for Bycatch of Shortbelly Rockfish

Appendix A: Alternative 1 and Accountability Measures

If shortbelly rockfish is kept in the fishery, should the Council reconsider its FPA?

If the Council prefers to continue to manage shortbelly rockfish with harvest specifications, the GMT recommends the Council select an ACL that reflects the best available science (see Schroeder et al. 2018) that large recent recruitments are expected to increase stock biomass and that increased bycatch in groundfish trawl fisheries is likely. If the Council chooses to keep shortbelly rockfish in the fishery, then the Council would need to select the appropriate accountability measure(s) to keep catch from exceeding the ACL.

If the Council prefers to manage shortbelly rockfish to an ACL rather than designating it as an EC species, the GMT recommends increasing the ACL from the PPA of 2,000 mt to an FPA of 3,000 mt in light of the most recent and best available science (Schroeder et al. 2018).

The GMT's previous analysis indicated that the PPA of 2,000 mt is not projected to constrain economically important Pacific whiting and other trawl fisheries. However as discussed above, the biomass of shortbelly rockfish may be exponentially higher than observed historically due to large recent recruitments, and thus models predicated on historic catch data may not accurately predict future bycatch. Any management measures implemented to keep the fishery at an ACL based on these historically grounded projections may ultimately constrain fisheries. With no identified temporal or spatial management tools to slow catch of shortbelly rockfish, the Council may need to implement fishery closures to prevent continued exceedance of ACLs if the projections underestimate catch in the 2021-22 biennium. Recent fishery data indicate this may be the case (Agenda Item I.7.a, Supplemental GMT Report 1, June 2019; Agenda Item F.1.a, GMT Report 1, June 2020). Alternatively, the Council may be required to take emergency action with regard to the ACL (as feasible under the ABC) to prevent fishery constraints or closures.

Should the Council establish an Annual Catch Target (ACT)?

As was described in the Agenda Item H.4.a, Supplemental NMFS Report 2, March 2020, accountability measures are management controls which are necessary to keep catch within the Council's chosen ACL. Due to the way that shortbelly rockfish is currently managed, there are limited accountability measures that can be implemented or adjusted inseason in order to keep catch from exceeding the ACL. For example, the shortbelly rockfish ACL is only distributed down to the fishery harvest guideline level. Therefore, the Council does not have the option of using trip limits, bag limits, or season structures to limit catch. Shortbelly rockfish is also not a quota species and therefore there are no quota limits to keep catch within the ACL. Instead the Council must specify the accountability measures they will use to keep catch from exceeding the ACL during the 2021-22 biennium. Providing a predetermined response to catch approaching or exceeding the ACL will help clarify for the public and the groundfish fishery managers the Council's preferred response should catch exceed, or be projected to exceed, the ACL during the fishing year. **If the Council selects an ACL for shortbelly rockfish for the 2021-2022 biennium, the Council should establish an ACT to ensure catch remains below the ACL.** Below are the options the Council will want to consider when setting an ACT. The considerations are not mutually exclusive. For example, the Council may wish to choose Formula Option 1 ("Fixed ACT") and Year Option 1, or they may wish to choose Formula Option 2 ("Overage Carryover") and Year Option 1. Agenda Item F.1, GMT Report 1, June 2020 discusses all of these options in more detail.

Which years should the ACT apply?

If the Council selects an ACL for shortbelly rockfish for the 2021-2022 biennium, the GMT recommends the ACT be implemented in only 2022 if the 2021 ACL is exceeded (Year Option 1), because there is still uncertainty around the changing status of the stock and potential drivers of stock changes. Implementing the ACT in both 2021 and 2022 (Year Option 2), regardless of any ACL exceedances, may create unnecessary constraints to fisheries with no known conservation concern.

Would any sectors be exempt from closure?

If the Council selects an ACL for shortbelly rockfish for the 2021-2022 biennium, the GMT recommends implementing the ACT for only the at-sea and shoreside whiting sectors, with a 200 mt set-aside deducted from the ACL that accounts for the non-trawl and non-whiting fisheries (170 mt) and the off-the-top deduction (30 mt). As discussed in Agenda Item F.1.a, GMT Report 1, June 2020, the 170 mt would accommodate the maximum historical catch (39 mt) from both the non-trawl and non-whiting sectors.

What formula should be used to set the ACT?

If the Council selects an ACL for shortbelly rockfish for the 2021-2022 biennium, the GMT recommends the "Fixed ACT", referred to as GMT Option 2 in Agenda Item F.1.a, GMT Report 1, June 2020. Under Option 2, a fixed amount of 200 mt would be deducted from the ACL (discussed in detail above), and the ACT would be set at the remaining amount. If there is a need to keep multi-year mortality of shortbelly rockfish at or below the ACL, on average, then Formula Option 1 would serve that purpose, but the GMT does not believe that this approach is necessary since there is no conservation concern and catching the full 4,184 mt ABC would not be problematic for the stock.

Appendix B: National Standard 9 Considerations for Bycatch of Shortbelly Rockfish

The National Standard Guidelines offer the following factors for consideration of bycatch management, which the GMT lays out below with respect to consideration of shortbelly rockfish as an EC species:

(A) Population effects for the bycatch species.
The limited bycatch of shortbelly rockfish relative to the overall population indicates there are not likely to be population effects from a transition to management as an EC species.

(B) *Ecological effects due to changes in the bycatch of that species (effects on other species in the ecosystem).*
In reviewing the available science, the GMT does not anticipate ecological effects due to changes in the bycatch of shortbelly rockfish.

(C) Changes in the bycatch of other species of fish and the resulting population and ecosystem effects.
The Pacific whiting fishery has relatively low bycatch levels of numerous species as a ratio to catch of the target species. However, the high volume fishery encounters numerous species of interest to different stakeholder groups, including endangered salmon species, sablefish, and recently rebuilt midwater rockfish species. There are numerous management measures in place to manage incidental catch and bycatch of these co-occurring species, including closures and avoidance measures. To the extent that pressure to move off of shortbelly rockfish increases catch of other species of concern in other areas, eliminating annual management of the healthy shortbelly rockfish stock may enable increased responsiveness to species in the 2021-22 biennium.

(D) Effects on marine mammals and birds.
Shortbelly rockfish are an important prey species to marine mammals and birds. The GMT has demonstrated on numerous occasions that forage objectives would be met even if the full ABC is taken, which is approximately six times higher than historical maximum mortality. Bycatch is expected to increase with higher stock abundances, but it would be unlikely to exceed the levels associated with the ABC even if managed as an EC species and therefore is not expected to have any effects on marine mammals or birds.

(E) Changes in fishing, processing, disposal, and marketing costs.
Any management measure that would reduce incidental catch of shortbelly rockfish in the trawl fisheries would likely impose increased fishing costs on participants. Measures implemented would likely be targeted at slowing or closing the whiting fishery. Currently, Bycatch Reduction Areas (BRAs), are already available for midwater gear at 75, 100, 150, and 200 fathoms in groundfish regulations for mitigating non-whiting bycatch. New management measures could include Block Area Closures (available in the bottom trawl fishery currently, and used for salmon in the midwater fishery) or trip limits. All of these measures would increase operational costs and possibly the cost of forgone opportunity. Managing shortbelly rockfish as an EC species would reduce costs of avoidance in the upcoming biennium relative to ACL management.

(F) Changes in fishing practices and behavior of fishermen.
Industry has indicated that this low value fishery is problematic in factory processing, and results in wear and tear on fishing and processing equipment and this incentivizes reducing bycatch. This is expected to continue the downward pressure on bycatch of shortbelly rockfish (and other non-whiting species) in the Pacific whiting fishery. However, managing bycatch as an EC species would not include management measures that would reduce bycatch relative to status quo levels. Even if fisheries are not projected to exceed catch limits, fishing practices and behavior may change (at increased costs to participants) if the mitigation measures put in place would curtail the targeted Pacific whiting fisheries. Fishing practices and behavior are not likely to require modification if shortbelly rockfish is managed as an EC species.

(G) Changes in research, administration, and enforcement costs and management effectiveness.
Consideration for shortbelly rockfish under the ongoing ACL management regime has required a substantial amount of discussion, analysis and reporting amongst the Council, advisory bodies, management teams, and Enforcement Consultants. The ACL has been exceeded in 2018 and 2019, indicating the status quo management regime is not effective at reducing bycatch when an ACL is either approached or exceeded. Moving shortbelly rockfish to an EC species would likely result in reduced administration, enforcement, and management costs.

(H) Changes in the economic, social, or cultural value of fishing activities and nonconsumptive uses of fishery resources.
Consideration of shortbelly rockfish as an EC species would preserve the economic, social, and cultural value of the Pacific whiting and bottom trawl fishery resources. Increased catch, either under a higher ACL or as an EC species, would reduce the non-consumptive value of the shortbelly rockfish resource to the ecosystem, however as discussed above, these impacts are expected to be negligible due to the overall abundance of the forage fish after recent strong recruitment events. The GMT is unaware of any nonconsumptive personal uses (e.g., diving, wildlife viewing, etc.) of shortbelly rockfish since they occur in deep waters (mainly 100-200 fathoms).

(I) Changes in the distribution of benefits and costs.
Designation of shortbelly rockfish as an EC species would result in a more stable balance of fishery benefits and costs. One of downsides with ACL management is that the proposed ACT mitigation measures could close Pacific whiting fisheries while leaving other sectors exempt from closures. An EC designation would provide the Council more flexibility to keep Pacific whiting sectors open while abundances remain high and prevent changes in the distributions of benefits/costs.

(J) Social effects
Because it is not a high attainment species nor economically important, there are no anticipated social effects to designating shortbelly rockfish an EC species.

PFMC
06/15/20