

FISHERY MANAGEMENT PLAN AMENDMENT 31 STOCK DEFINITIONS:
A DECISION ROADMAP

The fundamental objective of Fishery Management Plan (FMP) Amendment 31 is to foster a sustainable fishery, while maintaining healthy stocks. This is the tenet of the Magnuson-Stevens Act (MSA) and National Standard 1 (NS1) of the MSA states, “Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield (OY) from each fishery for the U.S. fishing industry.” The need for Amendment 31 arises from the fact the FMP lists species to be managed, but often either A) does not specify the geographic range of stocks in need of conservation and management within the FMP, or B) includes those species within a complex where the complex is the “stock”, thus making it difficult to ensure the health of component species if problems arise. From this need, two approaches and associated rationale arise that include:

- Geographic considerations: Appropriately defining the geographic range of a managed stock is a foundational aspect of sustainability. Without adequate geographic specification of “stocks” it is difficult to attain management objectives, and difficult to implement appropriate management and monitoring measures which prevent overfishing. Managing at appropriate geographic scale helps ensure that Council policies can affect the abundance of a fish population in ways that attain abundance objectives.
- Stock complex considerations: As the risk of overfishing increases, the need to manage a stock more precisely increases in concert. In the case of stock complexes, component stocks that are under a relatively high risk of overfishing compared to other components in that complex should receive greater attention. As the risk of overfishing increases on a component of a stock complex, the need to pull that component out of the complex or mix it with other species at a similar risk of overfishing increases. This would assist with enhanced management and monitoring of those components, including more appropriate status determinations from National Marine Fisheries Service (NMFS).

In cases where stocks are defined as a complex, NMFS cannot determine whether stocks managed in stock complexes are subject to overfishing since the FMP does not explicitly define an overfishing limit (OFL) contribution of a species within that complex as an overfishing threshold. This is a particular problem for the category 1 and 2 stocks managed in complexes since status is known and total mortality is estimated for all species caught in West Coast groundfish fisheries. This frames the purpose and need for Amendment 31.

1. Adopt a Purpose and Need for Amendment 31

Proposed Purpose and Need for Amendment 31: “With Amendment 31 to the Pacific Fishery Management Council’s (Council) Groundfish FMP, the Council intends to enhance the ability to attain sustainability objectives, especially those outlined in National Standard 1 of the Magnuson-Stevens Act. Appropriate specification of stocks at a geographic and stock complex level is a foundational aspect of sustainability, and instrumental in the Council’s ability to attain Optimum Yield objectives. With this Amendment, the Council intends to define a set of stocks that bring together information concerning the biological basis of groundfish populations of the West Coast, and the level at which conservation and management measures are needed, such as at a geographic

or stock complex level. It is the Council’s intent that, when this Amendment is completed, NMFS will be able to make status determinations concerning groundfish managed under the groundfish FMP.”

2. Confirm the priority actions for Amendment 31

The Council decided in June to prioritize those stocks assessed in 2021 and proposed for assessment in 2023 to be defined in the FMP under Amendment 31. The list includes black rockfish (all areas), canary rockfish, copper rockfish (all areas), Dover sole, lingcod, Pacific spiny dogfish, petrale sole, quillback rockfish, rex sole, sablefish, shortspine thornyhead, squarespot rockfish, and vermilion and sunset rockfishes.

Other actions that could be considered in Amendment 31 include designation of stocks as Ecosystem Component (EC) Species, affirming that stocks currently managed with stock-specific harvest specifications will continue to be managed that way (see decision #5 below), and restructuring current stock complexes to be in better compliance with NS1 guidelines. Those actions not considered under Amendment 31 can be considered under subsequent amendments.

3. Proposed timeline for Amendment 31 decisions

It is recommended Amendment 31 decision-making be completed before the start of the 2025-26 biennial specifications process in September 2023. Therefore, the proposed target date to decide a final preferred alternative (FPA) for Amendment 31 is June 2023.

There is a need to identify stock definitions for those stocks selected for assessment in 2023 before those assessments are prepared and reviewed next year. This will enable stock assessment scientists to estimate and report stock status at the areal extent of the stock defined in the FMP. To ensure these assessments are constructed according to the stock definition, it is recommended a preliminary preferred alternative (PPA) be decided by November 2022 for the stocks to be assessed next year, i.e., black rockfish, canary rockfish, copper rockfish, shortspine thornyhead, and rex sole. The PPA for all other stocks considered under Amendment 31 is recommended to be decided in March or April 2023.

Proposed timeline for Amendment 31:

- Nov. 2022: PPA for stocks to be assessed in 2023
- Mar. or Apr. 2023: PPA for all stocks considered under Amendment 31
- June 2023: Amendment 31 FPA

4. Identify stocks in need of conservation and management

One of the steps that could be taken under Amendment 31 is to update a review of both FMP stocks and non-FMP stocks to identify those stocks in need of conservation and management as has been done in the past. This will be an important consideration when deliberating whether to designate EC species. [Table 2](#) in the June 2022 scoping document identifies those FMP stocks with a negligible harvest contribution to the complexes in which they are managed that may be good candidates for an EC designation.

The vulnerability of stocks to overfishing should also be considered, which can be assessed through updating the Productivity and Susceptibility Analysis (PSA). The PSA for groundfish stocks was last performed over 10 years ago. A stock's vulnerability to fishing pressure is a combination of its productivity, which depends upon its life history characteristics, and its susceptibility to the fishery. Productivity refers to the capacity of the stock to produce maximum sustained yield and to recover if the population is depleted, and susceptibility is the potential for the stock to be impacted by the fishery, which includes direct captures, as well as indirect impacts of the fishery (e.g., loss of habitat quality). While it is unlikely the productivity scores will change in an updated PSA, the susceptibility of stocks to fishing pressure has changed in the last decade and a foreseeable restructuring of the fishery to reduce pressure on nearshore stocks will also affect susceptibility scores.

5. Redefine overfishing criteria in the FMP

An expedient action that can be considered in Amendment 31 is explicitly stating that an OFL contribution is the overfishing threshold for category 1 and 2 stocks managed in complexes. Since total mortality is estimated by the West Coast Groundfish Observer Program (WCGOP) for all species caught in the West Coast groundfish fishery, NMFS could then determine whether stocks managed in complexes are subject to overfishing.

A common practice by the Council prior to implementation of the trawl catch shares program was to remove stocks from stock complexes and manage them with stock-specific harvest specifications once they were assessed. There was no impediment to making status determinations in this case since the stock was clearly defined in regulations with a stock-specific OFL. However, with the implementation of the trawl catch share program and the formal sector allocations decided under Amendment 21, that practice was abandoned.

A key concept that should be explored is how defining an OFL contribution of a category 1 or 2 stock as the overfishing threshold for that stock differ from the old practice of removing assessed stocks from their associated complexes.

6. Should stocks currently managed with stock-specific harvest specifications (Table 1) continue to be managed that way?

There are no impediments for determining status of stocks managed with stock-specific harvest specifications. Those stocks shown in Table 1 have been managed with stock-specific harvest specifications for many years. Should these stocks continue to be managed with stock-specific specifications? If so, this can be affirmed in Amendment 31 and explicitly specified in the FMP. Other associated considerations are whether to change some of the areal designations in stock definitions for the stocks in Table 1. For example, consideration could be given to changing the area designation for Pacific ocean perch from north of 40°10' N. lat. to coastwide since a negligible proportion of this stock's abundance occurs south of 40°10' N. lat.

Table 1. West Coast groundfish stocks currently managed with stock-specific harvest specifications.

Stocks	Area	Status
Yelloweye Rockfish	CW	Rebuilding
Arrowtooth Flounder	CW	Non-Overfished
Big Skate	CW	Non-Overfished
Black Rockfish	WA	Non-Overfished
Black Rockfish	CA	Non-Overfished
Bocaccio	S of 4010	Non-Overfished
Cabezon	CA	Non-Overfished
Cabezon	3427 - 42	Non-Overfished
Cabezon	S of 3427	Non-Overfished
California Scorpionfish	CW	Non-Overfished
Canary Rockfish	CW	Non-Overfished
Chilipepper	S of 4010	Non-Overfished
Cowcod	S of 4010	Non-Overfished
Cowcod	4010 - 3427	Unknown
Cowcod	S of 3427	Non-Overfished
Darkblotched Rockfish	CW	Non-Overfished
Dover Sole	CW	Non-Overfished
English Sole	CW	Non-Overfished
Lingcod	N of 4010	Non-Overfished
Lingcod	S of 4010	Non-Overfished
Longnose Skate	CW	Non-Overfished
Longspine Thornyhead	CW	Non-Overfished
Longspine Thornyhead	S of 3427	Non-Overfished
Longspine Thornyhead	N of 3427	Non-Overfished
Pacific Cod	CW	Unknown
Pacific Ocean Perch	N of 4010	Non-Overfished
Pacific Whiting	CW	Non-Overfished
Petrale Sole	CW	Non-Overfished
Sablefish	CW	Non-Overfished
Sablefish	S of 36	Non-Overfished
Sablefish	N of 36	Non-Overfished
Shortspine Thornyhead	CW	Non-Overfished
Shortspine Thornyhead	N of 3427	Non-Overfished
Shortspine Thornyhead	S of 3427	Non-Overfished
Spiny Dogfish	CW	Non-Overfished
Splitnose	S of 4010	Non-Overfished
Starry Flounder	CW	Unknown
Widow Rockfish	CW	Non-Overfished
Yellowtail Rockfish	N of 4010	Non-Overfished

7. How should nearshore stocks be managed?

Determining how nearshore stocks will be managed will be a particular challenge under Amendment 31. Nearshore stocks typically have greater stock structure relative to stocks that spawn or, in the case of rockfish, parturate (i.e., live birth of larvae) further offshore in deeper waters of the continental shelf and slope. Nearshore stocks therefore exhibit less larval dispersal and relatively greater genetic diversity than shelf and slope stocks. There is therefore a greater risk of localized depletion for nearshore stocks without accountability measures that mitigate this risk. This needs to be considered when defining the areal extent of nearshore stocks. This is particularly relevant given results of recent assessments for copper and quillback rockfishes indicating portions of these coastwide populations are significantly depleted.

The decision on delineating appropriate boundaries for nearshore stocks needs to be carefully considered. There is sparse genetic information available to fully understand the stock structure of nearshore rockfish, which is an important consideration since preserving genetic diversity maximizes stock production and minimizes the risk of localized depletion. For example, Buonaccorsi et al. (2002) identified significant genetic divergence of copper rockfish along the U.S. West Coast, indicating a substantial isolation between regions. Johansson et al. (2008) identified isolation by distance in coastal copper rockfish populations similar to Buonaccorsi et al. (2002). However, Johansson et al. (2008) concluded that some of the genetic divergence may be related to habitat patchiness and not distance alone. There are fewer genetic studies of quillback rockfish. However, there is an indication of relatively small home ranges of quillback adults, which may be indicative of genetic diversity of populations along the West Coast.

This objective of preserving genetic diversity and minimizing the risk of localized depletion can be achieved with appropriate biogeographic stock delineations but can also be achieved with area-specific accountability measures. Both political and biogeographic boundaries have been used to manage nearshore rockfish. Most nearshore rockfish are currently managed in the Nearshore Rockfish complexes north and south of 40°10' N. lat., which is adjacent to Cape Mendocino, one of the most prominent biogeographic boundaries on the West Coast (Pt. Conception and Cape Blanco are also noted biogeographic boundaries). Black rockfish, the most targeted West Coast nearshore rockfish north of central California, are currently managed by state (i.e., political) boundaries.

Many nearshore rockfish assessments have been stratified by political state boundaries due to the differential catch histories by state and variable data streams. In the case of China rockfish, last assessed in 2015, a mixture of biogeographic and political boundaries were used to assess the coastwide population. Three area models informed the China rockfish assessment: 1) California waters south of 40°10' N. lat., 2) northern California waters north of 40°10' N. lat. combined with Oregon, and 3) Washington waters. However, the practicalities of area stratifications used in assessments do not dictate stock delineations. Policy considerations such as state-preferred management strategies will also factor into this decision.

Nearshore stock definitions are also complicated by the fact that these species are distributed across different management jurisdictions by depth as well as latitude. Most nearshore species occur in both state territorial waters (0-3 nm) and in Federal waters (>3 nm from shore). The Council process is ideally suited to coordinate across these jurisdictions and Federal management may be

necessary to meet MSA objectives of preventing overfishing and rebuilding depleted populations. A further benefit of Federal management are the resources available to collect data, age structures, and conduct assessments. Regardless, the interjurisdictional issues will need to be worked out.

Literature Cited

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