Amendment 33 to the Pacific Coast Groundfish Fishery Management Plan, 2025-26 Harvest Specifications, and Management Measures

Environmental Assessment, Regulatory Impact Review, Regulatory Flexibility Act Analysis, and Magnuson-Stevens Fishery Conservation and Management Act Analysis

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1. Introduction

This document is an Environmental Assessment/Regulatory Impact Review/Regulatory Flexibility Act Analysis/Magnuson-Stevens Act Analysis (EA/RIR/RFAA/MSA). An EA/RIR/RFAA/MSA provides assessments of the environmental impacts of a proposed action and its reasonable alternatives (the EA), the benefits and costs of the alternatives and the distribution of impacts (the RIR), the identification of the small entities that may be affected by the alternatives (the RFA analysis), and an analysis of how the alternatives align with the National Standards (the MSA analysis). This EA/RIR/RFAA/MSA addresses the statutory requirements of the MSA, the National Environmental Policy Act (NEPA), Presidential Executive Order 12866, and the Regulatory Flexibility Act. An EA/RIR/RFAA/MSA is a standard document produced by the Pacific Fishery Management Council (Council) and the National Marine Fisheries Service (NMFS) West Coast Region to provide the analytical background for decision-making.

We, the Council and NMFS, are analyzing the effects anticipated from setting harvest specifications and management measures for the 2025-26 groundfish fisheries managed under the Pacific Coast Groundfish Fishery Management Plan (hereafter, the PCGFMP)

1.1 Proposed Action

In accordance with the MSA, the principal legal basis for fishery management within the Exclusive Economic Zone (EEZ), the Proposed Action (interchangeably referred to as the Preferred Alternative) would implement the following:

1. Harvest control rules (HCRs), harvest specifications (overfishing limits [OFL], acceptable biological catches [ABC], annual catch limits [ACL], and allocations) for all groundfish stocks and stock complexes "in the fishery."
2. Management measures, to achieve, but not exceed, annual harvest specifications.

Some of these elements require an FMP amendment, which constitutes part of the Proposed Action as described in Chapter 2.

The management area for this action is the EEZ, defined as 3 nautical miles (nm) to 200 nm from shore along the coasts of Washington, Oregon, and California and the communities that engage in fishing in waters off these states. Figure 1 in the PCGFMP depicts this management area

1.2 Purpose and Need

The purpose of this action is to prevent overfishing while achieving, on a continuing basis, the optimum yield from the fishery. (MSA § 301(a)(1)). This is referred to as "to optimize" or "optimizing" the fishery throughout this document.

We (i.e., the Council and NMFS) need to respond to new scientific data about the stocks and stock complexes in the fishery, as well as new information about the needs of fishing communities. Regularly updating harvest specifications and management measures allows us to: 1) ensure catch limits are set according to the best scientific information available (BSIA); 2) ensure that

management measures are set to achieve but not exceed catch limits, and; 3) to afford additional fishing opportunities where possible.

The Proposed Action also must be consistent with the National Standard Guidelines (50 CFR 600.305) for fishery management.

1.3 Tiering and Reference Documents

We are tiering (40 CFR 1501.11) this document from the "Harvest Specifications and Management Measures for 2015-16 and Bienniums Thereafter, Final Environmental Impact Statement" (hereafter, this is referred to as the 2015 EIS). The 2025-26 biennium is the fifth period tiered from the 2015 EIS. As such, the 2015 EIS is incorporated by reference as are the EAs evaluating the 2017-18, 2019-20 2021-22, and 2023-24 bienniums, which hereafter are referenced as such. These documents are posted on the NOAA Fisheries website.

As discussed in the 2015 EIS and each subsequent tiered document, the adoption and adjustment of regulations for managing the groundfish fishery (including harvest specifications and management measures) are part of an ongoing, adaptive process. Changes in the type and intensity of environmental impacts tend not to differ substantially from one period to the next.

This EA also relies on several documents presenting analysis and information relevant to the decision-making process:

- Harvest Specifications Section of the Pacific Coast Groundfish Fishery 2025-26 Harvest Specifications and Management Measures (PFMC 2024a). This document evaluates 2025-26 HCRs and related harvest specifications and routine and new management measures. Hereinafter, referred to as the Council Analytical Document.
- Appendix 1, California Quillback Rockfish Rebuilding Plan Analysis. Hereinafter referred to as the California Quillback Rockfish Rebuilding Plan. Appendix 1 is a finalized version of Agenda Item F.6 Supplemental Revised Attachment 3 (Electronic Only) June 2024.
- Socioeconomic Analyses for the 2025-26 Harvest Specifications and Management Measures (PFMC 2024c), presenting current information on fishery economic conditions and the estimated commercial and recreational socioeconomic impacts of the Alternatives considered in the decision-making process. Hereinafter, referred to as the Socioeconomic Analysis.
- Stock Assessment and Fishery Evaluation (SAFE, PFMC 2024d). The SAFE summarizes the biological condition of managed stocks, stock complexes, and fisheries, as well as the socioeconomic condition of the recreational and commercial fishing industries.

These documents are incorporated by reference and summarized to describe the Proposed Action and the other Alternatives considered

1.4 Public Process

Section 5.4 of the PCGFMP describes the specific implementation procedures for specifications and management measures. The Council discussed the proposed 2025-26 harvest specifications and management measures at five meetings between June 2023 and June 2024. We published draft documents and offered public comment opportunities at each meeting. We noticed the meetings

in the **Federal Register** and on the Council's website and broadcasted the meetings live on the Council's YouTube Channel. Recordings of each meeting are available on the same channel. This EA draws from the highly detailed analytical information provided to the Council and the public, referenced above.

In addition to public comment on the Proposed Action and Alternatives during Council meetings in 2023 and 2024, this draft EA will support federal rulemaking between final Council action (June 2024) and the January 1, 2025 projected implementation date of the final rule. This federal rulemaking process includes a public comment period noticed in the **Federal Register**. Public comment on this draft will inform the contents of the final EA and our decisions are based on its analysis..

2. Alternatives

Fishery managers must adapt to constantly changing fishery and ecosystem conditions while respecting the goals, indicators, and triggers defined in the MSA, the National Standards enumerated in the MSA, and the PCGFMP. Within this context, we manage the fishery by constantly collecting, reviewing, and evaluating data before choosing management actions necessary to achieve the purpose of the Proposed Action. The Proposed Action (Section 1.1) that we evaluate in this EA addresses multiple elements of our ongoing adaptive management framework. Section 5.1 of the PCGFMP describes the default harvest specifications process as the application of BSIA, as required by MSA National Standard 2, to the HCR. The Alternatives analyzed in this preliminary draft EA are the No Action Alternative, which reflects the continued use of HCRs from the 2023-24 biennium in 2025 and 2026, but without the application of BSIA, and four Alternatives under which we would apply either default HCRs (Alternative 1) with BSIA applied or alternative HCRs (Alternatives 2-4). A set of rebuilding parameters are considered for California quillback rockfish under Alternatives 1, 2, and 4. Management measures necessary to manage catch to harvest limits and achieve other biological and socioeconomic objectives are also included under each of these Alternatives.

2.1 Alternatives Design and Screening

Over the past 20 years, we have prepared 32 EAs and 10 Environmental Impact Statements (EISs) for these adaptive groundfish fishery management actions. Five EISs assessed harvest specifications and management measures prior to the 2015-16 biennial cycle. With the stability of fishery management and rationalization of major components of the fishery (described in the 2024 SAFE document), and the development of a programmatic approach, the biennial harvest specifications process (described in Chapter 5 of the FMP), has evolved into a structured process with two components:

> (1) The Council determines catch limits using stock assessments, realized catch, and default HCRs for each biennial cycle. The discretionary action is the HCR, which determines the resulting harvest specifications (OFLs, ABCs, ACLs, etc.); therefore, this component is referred to as the **harvest specifications** throughout this document.
>
> (2) The Council makes additional adjustments as needed to optimize[1] the fishery, referred to as the **management measures** throughout this document. We discuss two types of management measures - "routine" management measures and "new" management measures. Routine management measures include measures that are regularly adjusted each biennium (e.g., trip limits, bag limits, seasonal closures/openings), and do not constitute a substantive change in management. New management measures are novel, and constitute a substantive change in management that warrants additional analysis that would not be contained in prior EAs or EISs.

[1] Optimize means achieving OY and preventing overfishing, per statutory obligations and as described in Section 1.2, Purpose and Need.

Each new or revised management action is the outcome of a consultative process that usually begins with proposals from states, Tribes, fishermen, industry, and/or environmental interest groups. The Groundfish Management Team (GMT) presents the Council and the public with analyses and options. The Council narrows the range of actions and alternatives and further guides the GMT's analysis. Upon completion of the analysis and the Council's adoption of a Preferred Alternative, we prepare an environmental review under NEPA. We also prepare analyses under other applicable laws and executive orders, including the MSA, Executive Order 12866 (Regulatory Planning and Review), and the Regulatory Flexibility Act. This process ensures optimum fishery management while minimizing adverse economic, biological, and physical impacts. The analytical documents listed in Section 1.3 describe many options for components of the Proposed Action that the Council considered but eliminated when refining HCRs and management measures for this biennial cycle. The four Alternatives evaluated in this EA reflect refined proposals, which are evaluated below, and include the Council's Preferred Alternative identified at its June 2024 meeting. The Council's Preferred Alternative is recommended to NMFS for implementation in federal rulemaking.

The programmatic approach we introduced in the 2015-16 cycle has allowed us to focus on key elements of the adaptive management system that are new or changed in a particular biennium and that may result in significant impacts to the human environment (40 CFR 1508.1(m)). Therefore, our analysis in this tiered EA is focused on substantive changes that have not been analyzed in the past: (1) changes to default HCRs, and (2) new management measures..

2.2 Harvest Control Rules

In PCGFMP Amendment 24, supported by the 2015 EIS, we established default HCRs that apply the BSIA to catch limits set during each biennial decision making cycle. Section 2.1 of the 2021-22 EA defines the catch limit terms, how we apply rules to the latest estimates of biomass for each stock or stock complex, and how we account for uncertainty to determine the ACLs. We incorporate this section by reference. It describes a process by which we determine OFLs, ABCs, and ACLs for managed stocks and stock complexes.

Additional information on this process and on catch limits can be found in the following documents:

- Final rule for the 2015–16 harvest specifications and management measures and Amendment 24 (80 FR 12567, March 10, 2015);
- PCGFMP (Chapter 4); and
- SAFE Document.

These default HCRs and resulting harvest specifications (OFLs, ABCs, and ACLs) are part of Alternative 1. The Council may decide to diverge from a default HCR. Of approximately 100 fish species managed under the PCGFMP, we diverged from four default HCRs in 2017-18, four in 2019-20, five in 2021-22, and three in 2023-24. In this 2025-26 cycle, we are considering alternative HCRs for California quillback rockfish, Dover sole, shortspine thornyhead, and rex sole. For all other stocks and stock complexes, default HCRs are considered under each of the following alternatives, in addition to the stocks with alternative HCRs. Alternative 2 contemplates

alternative HCRs for Dover sole, shortspine thornyhead, rex sole and a rebuilding strategy for the California quillback rockfish. Alternative 3 contemplates a California Department of Fish and Wildlife (CDFW) proposal for California quillback rockfish harvest specifications and Alternative 4 contemplates a zero (0) fishing mortality rebuilding strategy for California quillback rockfish. Alternatives 3 and 4 implement all of the default/alternative HCRs and management measures described under Alternatives 1 and 2 except for those applicable to California quillback rockfish

2.3 Management Measures

Once stock-specific ACLs are derived based on default or alternative HCRs, we use management measures to allow fishermen to maximize fishing opportunity to achieve, but not exceed, ACLs.

PCGFMP Chapter 6, Management Measures, describes "the procedures and methods that may be used to directly control fishing activities so that total catch of a given species or species group does not exceed specified harvest limits." Management measures may also involve making downward adjustments to the ACL to account for certain fishing activities and allocating the resulting fishery HG to facilitate attainment or equitable harvest opportunities in specific fisheries or states. PCGFMP Section 6.2 describes the framework procedures that we use to establish, adjust, and implement management measures. We classify these as automatic actions, routine management measures, or new actions.

- **Automatic actions** are non-discretionary. NMFS may initiate them without prior public notice, opportunity to comment, or a Council meeting. The impacts must be reasonably accountable, based on previous application of the action or past analysis. We may apply these measures to a stock, stock complex, or to individual stocks in a complex. Examples include fishery, season, or gear type closures when a quota is projected to, or has been, attained.

- **Routine management measures** that the Council determines are likely to be adjusted on an annual or more frequent basis and that we have classified as routine through either the specifications and management measures or rulemaking processes. Section 6.2.1.1 of the PCGFMP and 50 CFR 660.60(c) describes all available routine management actions. We may apply these measures to a stock, stock complex, or to individual stocks in a complex.

- **New actions** require discussion at one to three Council meetings and public notice in two **Federal Register** notices depending on the type of management measure. An FMP amendment or regulatory amendment may be required.

Chapter 6 also inventories the range of management measures available to us. We use management measures to: account for set-asides, deductions, and targets (FMP Section 4.7); adjust or allocate the catch limits (Section 6.3); reduce bycatch and bycatch mortality (Section 6.5); authorize or prohibit gear, gear configurations, and deployment strategies (Section 6.6); restrict catch through landing, trip frequency, bag, and size limits (Section 6.7); establish fishing seasons and closed areas (Section 6.8); and limit fishing through permits, licenses, endorsements, and allocations (Section 6.9). Changing ecosystem or economic conditions, or other factors, may precipitate routine adjustments to this suite of management measures implemented at the outset of the biennium, if necessary to achieve conservation objectives or with the goal of attaining optimum yield (referred to as "inseason actions").

2.3.1 Management Measure Adjustments for the 2025-26 Biennium

For the 2025-26 biennium we will adjust management measures defined in Sections 6.6 to 6.9 of the FMP and at 50 CFR 660.60 and may apply automatic actions (if needed during the fishing season). Together, these actions help us ensure that catch of individual stocks, stock complexes, or stocks within a complex do not exceed ACLs adopted for the biennium.

Most of the management measures the Council recommended for the 2025-26 biennium are minor variations to existing routine management measures (i.e., deductions or allocations of ACLs or adjusting ACTs, bag limits, trip limits, and recreational season structures). We summarize key aspects of these changes here and incorporate by reference the relevant sections of the Council Analytical Document that supports the Council's decision-making process under the MSA. These routine management measures act as mitigation measures for achieving but not exceeding ACLs, in and of themselves, they do not have environmental impacts and as such are not analyzed further.

In addition to routine management measure adjustments, a list of new management measures is being considered. These new management measures are detailed in the Council Analytical Document (PFMC 2024a). Most of the new management measures are minor administrative updates and corrections for various ongoing monitoring and management processes and do not generate environmental impacts beyond what has previously been disclosed. However, one new management measure, the California Quillback Rockfish Rebuilding Plan, is discussed in this EA and included as Appendix 1. The following is a complete list of new management measures in this Proposed Action:

- Develop a directed open access (OA) fishery permit (see Agenda Item E.7.a, NMFS Report 1, November 2023 and Agenda Item F.6.a NMFS Report 1 June 2024).
- Align the Electronic Monitoring discard species list in federal regulation with the list that is currently in the Vessel Monitoring Plan for the exempted fishing permit.
- Modify continuous transit limitations to allow recreational anglers to stop and/or anchor in federal waters while inside of a Recreational Rockfish Conservation Area (RCA).
- Require recreational anglers to possess a descending device aboard their vessel while fishing in federal waters.
- Remove the management line for shortspine thornyhead at 34° 27' North latitude (N lat.) and recombine area-specific allocations into coastwide allocations.
- Update the scientific name of Pacific sand lance and the common name of Pacific spiny dogfish in federal regulation.
- Implement a rebuilding plan for California quillback rockfish (see Appendix 1).

These management measures are not time-limited and may be in place beyond the 2025-26 biennium or until otherwise modified.

2.3.2 California Quillback Rockfish Rebuilding Plan

The Council and NMFS are proposing the implementation of a rebuilding plan for California quillback rockfish as a new management measure in the 2025-26 biennium. NMFS declared California quillback rockfish overfished in December 2023 in response to a data moderate assessment conducted by the Northwest Fisheries Science Center (NWFSC) in 2021 (Langseth et al. 2021). When NMFS declares a stock overfished, the Council must develop and manage the

stock in accordance with a rebuilding plan (MSA §304(e)(3)), which must include certain rebuilding parameters, including T_{MIN}, T_{MAX}, and T_{TARGET}. T_{MIN} means the amount of time the stock or stock complex is expected to take to rebuild to its MSY biomass level in the absence of any fishing mortality (see § 600.310(j)(3)(i)(A)). T_{MAX} means the maximum time allowable for rebuilding a stock or stock complex to its MSY biomass. If T_{MIN} for the stock or stock complex is 10 years or less, then T_{MAX} is automatically 10 years. If T_{MIN} for the stock or stock complex exceeds 10 years, then T_{MAX} must be calculated as T_{MIN} plus the length of time associated with one generation time for that stock or stock complex. ‘‘Generation time’’ is the average length of time between when an individual is born and the birth of its offspring. T_{TARGET} means the specified time period for rebuilding a stock that is considered to be as short a time as possible, taking into account the status and biology of the overfished stock, the needs of fishing communities, recommendations by international organizations in which the U.S. participates, and the interaction of the stock within the marine ecosystem (50 CFR 600.310(j)(3)(i)). In March 2024, the Council adopted the California quillback rockfish rebuilding analysis (Langseth et al. 2023), which specified the following rebuilding parameters: T_{MIN} = 2045, T_{MAX} = 2071, and mean generation time of 26 years. To meet rebuilding plan requirements, the Council considered a range of alternative HCRs during the development of this action, which are explained below in Section 2.4 and Appendix 1.

Development of the rebuilding plan is part of the Proposed Action because its parameters will determine 2025-26 harvest of California quillback rockfish. Additionally, quillback rockfish is co-occurring with other groundfish targets, therefore rebuilding is not possible without restrictions to other stocks in this multispecies fishery, which are effectuated in this biennial specifications and management measures action.

As a general note, California quillback rockfish inhabit nearshore waters, with the majority of fishing mortality occurring in state waters (0-3 nautical miles from shore). Per 16 U.S.C. 1851(a)(3), the Council and NMFS are required to manage stocks throughout their range. The Council and NMFS only have the authority to implement fishery management regulations in federal waters, and the State of California has discretion to implement management complementary to federal action, or other management actions, in its State waters. This rebuilding plan would be in effect only in the EEZ. Therefore, analysis of the effects of these management measures will be limited to the portion of the stock’s range found in the EEZ. However, mortality of California quillback rockfish in both federal (3-200 nm) and state waters would be accounted for up to the ACL. Whether similar rebuilding measures are enacted in state waters by the State of California is outside the scope of this action. Thus, because this is a trans-boundary stock, whether or not rebuilding can be achieved in the proposed timeline depends on the State of California implementing management in its waters to complement this federal action.

Allocations and Catch Accounting

Once ACLs are established, various allocation and catch accounting measures must be specified. An allocation sets a limit on catch within a fishery sector. Other mechanisms are not hard limits but are used as catch tracking benchmarks. Management measures may be adjusted during the biennium to reduce the likelihood that such “soft” limits (or informal allocations) are not exceeded. Figure 1 is a generalized schematic showing the distribution of the ACL to the fishery during the biennial process, including the determination and application of two-year allocations and the

application of those specified in the FMP. Allocation and catch accounting measures considered for this biennium are:

- Establishing **off-the-top deductions** for fisheries for which the Council does not exercise management authority: Tribal fisheries, research, exempted fishing permits, incidental open access, bycatch in other fisheries, etc. We explained these deductions in Section 4.2.1.1 of the 2015 EIS. Proportionally, the proposed deductions for this biennium did not substantively change from the last management period and are largely consistent with past deductions, although the actual amounts may vary. (Chapter 1 in the Council Analytical Document describes these deductions for each alternative and the methods used to derive them).
- Establishing **set-asides** to account for incidental catch of non-whiting species in the catcher-processor and mothership (at-sea) sectors targeting Pacific whiting.
- Adjusting short-term, **two-year trawl/non-trawl allocations** for stocks where the allocation is not defined in the PCGFMP ("Amendment 21 allocations"). Existing short-term allocations will continue during the 2025-26 biennium except for widow rockfish to better account for the needs of the fishery.
- **Informal allocations** in the form of Harvest Guidelines or sharing agreements between states for the limited entry fixed gear, OA, and recreational fishery sectors (under the non-trawl allocation) also may be adjusted. The ability to make short-term changes to allocations for particular stocks is meant to better match fishing opportunities with the needs of various groundfish fishery sectors.
- Establishing or adjusting **Annual Catch Targets (ACTs)**. The existing yelloweye rockfish ACT for non-trawl fisheries would not be adjusted while a recreational ACT for California copper rockfish south of 34° 27′ N. lat. would be established, replacing the current statewide ACT. A new ACT is proposed for shortspine thornyhead north of 34° 27′ N. lat. in the non-trawl commercial sector. An existing ACT for California quillback rockfish would be removed, as it does not provide a useful metric for the low ACL. As defined in Section 2.2 of the PCGFMP, an ACT is "a management target set below the ACL and may be used as an [accountability measure] in cases where there is uncertainty in inseason catch monitoring to ensure against exceeding an ACL. Since the ACT is a target and not a limit it can be used in lieu of harvest guidelines (HG) or strategically to accomplish other management objectives in Section 4.7 of the PCGFMP."

In addition to the short-term (two-year) allocations described above, Section 6.3.2 of the PCGFMP defines fixed allocations for a variety of stocks. Sablefish north of 36º N lat. is allocated according to the scheme depicted in FMP Figure 6-1. The FMP specifies a "trawl/non-trawl" division between the trawl fishery and non-trawl fishery, which comprises the commercial and recreational sectors, for 14 stocks and 2 stock complexes listed in FMP Table 6-1.[2] Finally, because Pacific

[2] Table 6-1 of the FMP Document shows the formal limited entry trawl and non-trawl sector allocations, as defined in Amendment 21,which were previously evaluated in during previous biennial cycles (see the 2015 EIS and 2022 EA).

halibut bycatch is managed through individual bycatch quotas in the IFQ fishery, an allocation is made for that species. Modifying these allocations requires an FMP amendment.

As depicted in Figure 1, the non-trawl fishery HG is further allocated among commercial and recreational fisheries. For a concise enumeration of these allocations and catch accounting measures considered for the 2025-26 biennium, see the June 2024 Action Items checklist.

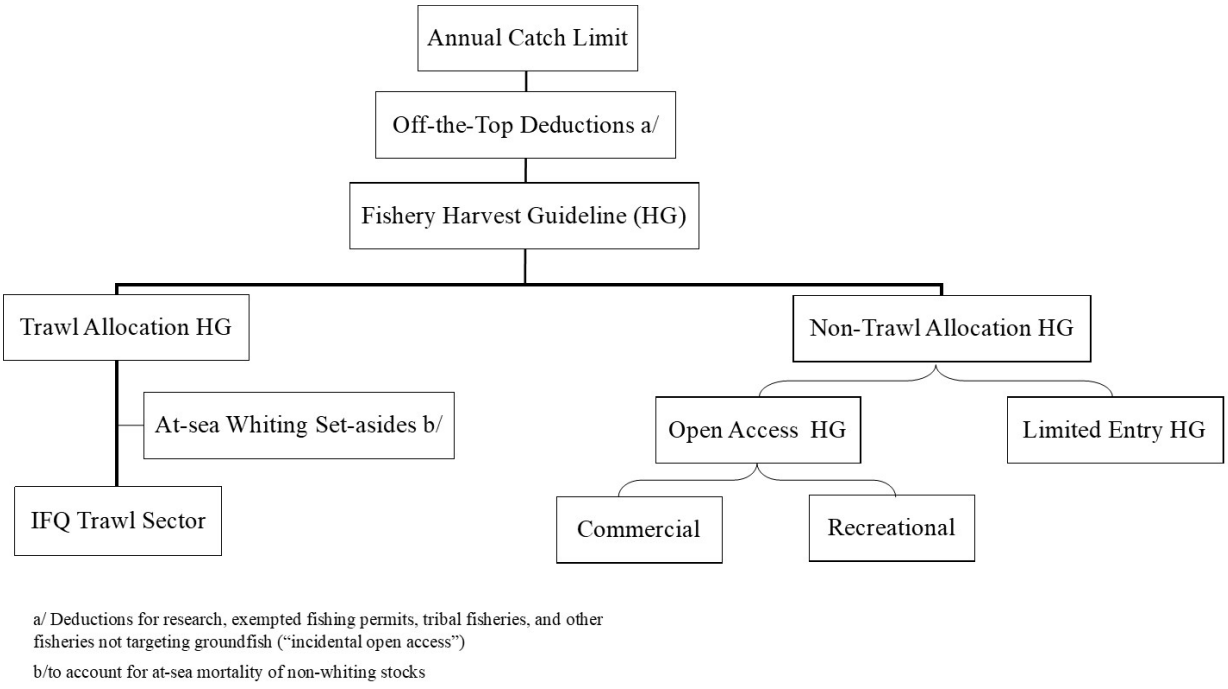

Figure 1. Generalized schematic showing distribution of an annual catch limit (ACL) across all West Coast Groundfish fishery sectors. Schematic does not imply all stocks and stock complexes are subject to ACL distribution in the manner shown in this figure. Each stock or stock complex is subject to a specific distribution. Generally, apportionment of sector specific HGs are not formal and are either shared or biennially apportioned.

2.4 Description of the Alternatives

Below we describe the Alternatives, which combine HCRs and the management measures necessary to optimize the fishery consistent with the ACLs determined by the HCRs under each Alternative.

2.4.1 No Action Alternative: 2023 Harvest Specifications

The NOAA NEPA Companion Manual (Section 6.B.i, p. 9) defines the No Action Alternative as "no change from current, ongoing management" (NOAA 2017). *CEQ's Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations* (46 FR 18026, March 23, 1981) states that for management actions, "'no action' is 'no change' from current management direction or level of management intensity." Amendment 24 established the process by which BSIA would be applied to default HCRs. Thus, this process would never select a true no change scenario, as to do so would ignore BSIA and would be inconsistent with National Standard 2 of the MSA. If, in the rare instance where federal rulemaking was delayed, the harvest specifications and management measures in place in 2024 would continue until the rulemaking

process was finalized. In the Council Analytical Document, we use the 2023 harvest specifications and fishery performance as No Action, for comparative purposes to the proposed Alternatives, only because complete fishery data from 2024 was not available when this EA was prepared. This comparison is useful for Council and stakeholders as it can show the relative change of values between biennia across the Alternatives.

Differences in harvest specifications in 2023 and 2024 are relatively small, meaning that the use of 2023 specifications in the analysis does not meaningfully affect the conclusions. Where appropriate, we use 2024 management measures that were not in place in 2023 as a basis of comparison of the Alternatives to No Action. In particular, commercial and recreational management measures were adopted for the 2023 and 2024 biennium to address concerns regarding California quillback rockfish. In 2023-24, quillback rockfish coastwide is managed in the Nearshore rockfish complexes north and south of 40°10' N lat. In 2023, PCGFMP Amendment 31 defined California quillback rockfish as its own stock. Stock complexes are managed to a summed ACL for the component stocks. Beginning in September 2023, CDFW (for state waters) and the Council adopted a suite management measures to reduce mortality in response to the ACT being exceeded. Chapter 5, Section 1.2 of the Council Analytical Document details these measures. Briefly, the management measures prohibited retention of quillback rockfish in groundfish fisheries off California and established area-based commercial trip limits for certain groundfish that co-occur with California quillback rockfish. At their November 2023 meeting, the Council took action to continue the 2023 commercial management measures into 2024 with minor adjustments. In March 2024, the Council adopted recreational fishery management measures to change time/area-based closures for the 2024 recreational fishery. These continued measures in 2024 are therefore more appropriate as the basis of comparison to No Action than earlier 2023 measures, which were less restrictive .

2.4.2 Action Alternative 1: Default Harvest Control Rules and Associated Management

As specified in the PCGFMP, default HCRs represent a continuation of the current harvest policy without change, but by using BSIA (most recent information from stock assessments and other sources); the harvest specifications themselves do change. In general, this does not constitute a change in management direction or intensity. The resulting ABCs and ACLs aim to ensure that we do not exceed the OFL for any particular stock or stock complex.

PCGFMP section 4.3 describes the harvest specifications framework, which is based on the use of F_{MSY} proxies. Using BSIA, these proxies are translated into OFL values. The ABC represents a precautionary reduction from the OFL to account for scientific and management uncertainty. FMP section 4.4 describes the methods used to determine these values. Additional details on the harvest specifications framework and the use of different types of assessments in this framework may be found in the 2024 SAFE document. The Council Analytical Document shows the resulting default (this Alternative), Alternative 2, Alternative 3, and Alternative 4 harvest specifications (OFLs, ABCs, ACLs, and where applicable, ACTs) being considered for the 2025-26 biennium.

As described in Section 2.3, allocations and catch accounting measures, catch control measures, and other administrative changes are incorporated into this Alternative. Overall, these measures are intended to optimize the fishery and we conclude do not represent a material change in management intensity.

As described in Section 2.3.1, the status of California quillback rockfish is overfished and a rebuilding plan must be developed. Under Alternative 1, the default HCR (P*= 0.45, spawning potential ratio [SPR]= .55) would be used to set harvest specifications for California quillback rockfish within the Nearshore rockfish complex. The default HCR and default management for this stock would be inappropriate given that the overfished stocks must be carefully managed to prevent overfishing. Beginning with the 2025-26 biennium, California quillback rockfish would be removed from the Nearshore rockfish complexes and managed as a separate stock with a stock-specific ACL. Measures necessary to limit catch of California quillback rockfish to the ACL values (1.26 mt in 2025 and 1.47 mt in 2026) under the default HCR (P*= 0.45, SPR= 0.55) are of particular note. These ACLs require minimizing catch through retention prohibitions, catch control measures, and time/area closures for fisheries in nearshore areas where the stock occurs in the commercial non-trawl and recreational fisheries off California. The Council Analytical Document Chapter 5, Section 2 describes measures applied to commercial non-trawl (fixed gear) fisheries and Chapter 8, Section 2 describes the recreational management measures in California. Alternative 1 comports to the California quillback rockfish rebuilding analysis (Langseth 2023) for SPR = 0.55. This Alternative is projected to rebuild the stock with a 50 percent probability by 2062, well within the statutory maximum time to rebuild of 2071 (T_{MAX}). Alternative 1 represents a 69.4 percent probability of rebuilding by 2071 (T_{MAX}).

2.4.3 Action Alternative 2: Alternative Harvest Control Rules, Associated Change in Management Intensity, and New Management Measures

Under this Alternative we diverge from the default HCRs for four stocks to address conservation objectives, socioeconomic concerns, management uncertainty, or other factors necessary to meet management objectives. Alternative HCRs are considered for four stocks: Dover sole, rex sole, shortspine thornyhead, and California quillback rockfish (Table 1), for all other stocks and stock complexes, default HCRs would be implemented. This Alternative incorporates all the routine adjustments to management measures described in Alternative 1, but with adjustments in the nominal values of various allocations, catch accounting limits, and catch control measures consistent with changes in ACLs where alternative HCRs are applied. Similar to Alternative 1, under Alternative 2, management intensity would not change from the level in 2024. The rationale for the departure from Alternative 1 HCRs under Alternative 2 is as follows:

Dover sole: The default HCR sets the ACL equal to a constant catch level of 50,000 metric tons (mt). However, projections of stock size in 2025-26 indicate that a constant 50,000 mt ACL would exceed the ABC. So as not to exceed the ABC, the ACL would be set equal to the ABC or 47,424 mt in 2025 and 42,457 mt in 2026. The Council's preferred HCR for Dover sole is Alternative 2.

Rex sole: Increasing P* from 0.40 to 0.45 results in a slightly more risk tolerant increase in the ACL, which would allow the trawl fleet greater flexibility in the event that participation and fishing effort increases. The Council's preferred HCR for rex sole is Alternative 2

Shortspine thornyhead: Under Alternative 2, the P* increase from 0.40 to 0.45 for this stock is more risk tolerant and would reduce the likelihood of this stock becoming a constraining species to the non-whiting bottom trawl sector. The 40-10 adjustment is applied because the stock is in the precautionary zone (below the target biomass level but not overfished), which means the ACL is automatically reduced from the ABC, with the reduction from the ABC increasing the farther

below target biomass the stock becomes. Shortspine thornyhead could constrain commercial fishing behavior in the 2025-26 biennium because of increases in co-occurring sablefish ACLs under the default HCR, due to increased abundance estimated in the most recent stock assessment (Johnson*, et al.* 2023). In a common seasonal harvest strategy, the bottom trawl fleet targets Dover sole, thornyheads, and sablefish together on the continental slope (referred to as the DTS strategy). The non-nearshore gear fishery targets sablefish and also catches shortspine thornyhead in association with that species. Fishing effort could expand due to the increased availability of sablefish which may result in increased catches of shortspine thornyhead. The higher P* of 0.45 is slightly more risk tolerant but would allow greater fishing opportunity for sablefish, a higher value species. The Council's preferred HCR for shortspine thornyhead is Alternative 2.

Under Alternative 2, the shortspine thornyhead trawl/non-trawl allocation would be changed by combining the current within-sector allocations north and south of 34°27′ N. latitude into a single coastwide allocation for each sector. Combining these area allocations triggers a procedure to recompute the trawl/non-trawl split to address existing quota share holdings.

Agenda Item F.5, Supplemental GMT Report 2, April 2024 describes the reallocation procedure, provides a rationale for the reallocation, and presents preliminary draft analysis of the proposed reallocation. The Council Analytical Document Chapter 9E includes further description and analysis. The GMT states that the reallocation "is needed because shortspine thornyhead allocation reductions in 2025-26 are expected to constrain fisheries, specifically by requiring substantial trip limit reductions to stay within the non-trawl allocation and potentially limiting targeting flexibilities of bottom trawl vessels." These constraints emerge from the substantial reduction in the shortspine thornyhead ACL compared to No Action, even with the application of the alternative HCR for this stock.[3] Historically, attainment of the allocation south of 34º 27' N. latitude has been low. For example, in 2023 total catch was only 4% of the ACL set for that portion of the stock. As explained above in relation to the HCR change, in addition to constraints imposed on catching shortspine thornyhead, the attainment of substantial increases in sablefish ACLs north and south of 36º N (see the Council Analytical Document) could be constrained by the shortspine thornyhead ACL and resulting allocations, because the two species tend to be co-occurring. Sablefish is an economically important stock for both IFQ bottom trawl and non-nearshore fixed gear fisheries. As noted above, since the current allocation is specified in the PCGFMP, this action would require an FMP amendment, which would convert the allocation structure from FMP-specified to a 2-year allocation species (i.e., the trawl/non-trawl allocations would be specified with each biennial harvest specifications and management measures action).

California quillback rockfish: Under Alternative 2, the Council is considering the "ABC Rule" rebuilding strategy. In June 2024, the Council adopted the "ABC rule" rebuilding strategy as its preferred rebuilding strategy. Under this rebuilding strategy the ACL is set equal to the ABC based on a pre-specified management risk tolerance (P*) and the scientific uncertainty (sigma) reducing the ABC from the OFL. This calculation applies the ABC harvest rate with Category 2 time-varying sigma = 1.0 and a P* = 0.45, as described in the Council Analytical Document. The projected target rebuilding year under this strategy is 2060, which is sooner than the maximum permissible time (T_{MAX}) of 2071, under National Standard 1 Guidelines. The estimated probability

[3] Shortspine thornyhead is a single coastwide stock but, to date, separate ACLs are established north and south of 34º27' N. latitude.

of rebuilding by T_{MAX} is 0.736 (73.6 percent). This alternative HCR results in 2025-26 ACLs that are not substantially different than those resulting from the default HCR (400 kg greater in 2025 and 300 kg greater in 2026). A Rebuilding Plan is included as Appendix 1. The alternative California quillback rockfish stock rebuilding HCR results in ACLs that are effectively identical to those under the default HCR (see Table 1). As described in the Council Analytical Document, the same types of management measure controls would be necessary under this Alternative. As explained above for Alternative 1, management measure intensity would not change from the level in 2024.

2.4.4 Action Alternative 3: Alternative Harvest Control Rules, Associated Change in Management Intensity

Alternative implements all of the default/alternative HCRs and management measures described under Alternative 2 except for those applicable to California quillback rockfish.

California quillback rockfish: This Alternative is specific to California quillback rockfish and does not impact fisheries off of Washington or Oregon. Under Alternative 3, alternative harvest specifications for California quillback rockfish were proposed by CDFW during the November 2023 Council meeting as detailed in Agenda Item E.2.a. Supplemental CDFW Report 2, November 2023. The alternative utilized a substitute OFL of 8.41 mt with a Category 3 buffer and a P* of 0.40 to obtain an ABC/ACL = 5.06 mt. The management measures proposed under Alternative 3 would be expected to be similar to, if not the same as, measures adopted for the 2021-22 biennium (PFMC 2022). Those measures did not restrict the commercial and recreational nearshore fishery as proposed under Alternative 1 or Alternative 2. The Council Analytical Document indicates this Alternative would implement restrictions on California quillback rockfish possession, but not constrain the fishery otherwise to limit impact to California quillback mortality. This Alternative was removed from consideration at the March 2024 Council meeting, as described below in Section 2.4.7, because it is not consistent with rebuilding requirements under the MSA.

2.4.5 Action Alternative 4: Alternative Harvest Control Rules, Associated Change in Management Intensity

This Alternative implements all of the default/alternative HCRs and management measures described under Alternative 2 except for those applicable to California quillback rockfish.

California quillback rockfish: This Alternative is specific to California quillback rockfish and does not impact fisheries off of Washington or Oregon. Under Alternative 4, the rebuilding strategy for California quillback rockfish would be F = 0 (F stands for fishing mortality). The "F = 0" rebuilding strategy assumes no fishing mortality in fisheries over which the Council and NMFS have jurisdiction and has a 50 percent probability of rebuilding the stock by 2045 and a 99.9 percent probability of rebuilding by 2071 (T_{MAX}). This Alternative rebuilds the stock on the fastest schedule; however, it assumes that there would be no mortality in any fishery, groundfish or non-groundfish. To achieve this parameter, the California Quillback Rockfish Rebuilding Plan (Appendix 1) and the Council Analytical Document (PFMC 2024a) indicate the entire groundfish fishery off of California would need to be closed to eliminate risk of any mortality from the fishery. These documents also describe the potential for California quillback rockfish mortality from non-groundfish fisheries that would not be controlled through this action. Management intensity off of California would substantially increase under Alternative 4, when compared to the other

Alternatives. It is debatable whether an F = 0 scenario could be achieved. Moreover, because Alternative 4 could result in a complete groundfish fishery closure off of California, it would likely have disastrous short-term economic consequences for fishing communities, and thus would not promote efficient utilization of fishery resources nor meet the needs of fishing communities. Still, this analysis includes this Alternative for comparative purposes to the preferred California quillback rockfish rebuilding strategy (Alternative 2 in the California Quillback Rockfish Rebuilding Plan).

Table 1. Proposed Action Alternatives showing harvest control rules (HCR) for Dover sole, rex sole, shortspine thornyhead, and California quillback rockfish under consideration by the Council

Stock	Alternative 1 – Default HCR	Alternative 2 – Alternative HCR	Alternative 3 – Alternative HCR	Alternative 4– Alternative HCR
Dover sole	P*= 0.45 Constant catch ACL = 50,000 mt 2025-26 ACL (mt) 50,000	P*=0.45 ACL=ABC 2025-26 ACLs (mt): 47,424, 42,457	Not applicable	Not applicable
Rex Sole	P* = 0.40 ACL=ABC 2025-26 ACLs (mt): 3,967; 3,310	P*= 0.45 ACL=ABC 2025-26 ACLs (mt): 4,550; 3,719	Not applicable	Not applicable
Shortspine thornyhead	P* = 0.40 ACL=ABC 2025-26 ACLs (mt)*: 711, 713	P*= 0.45 ACL=ABC, 40-10 adjustment 2025-26 ACLs (mt)*: 816, 825	Not applicable	Not applicable
California quillback rockfish	ACLs with P*=0.45, SPR 0.55 2025-26 ACLs (mt): 1.26, 1.47	Rebuilding plan "ABC Rule" HCR, P* = 0.45 2025-26 ACLs (mt): 1.3, 1.5	ABC=Category 3 buffer w/ P*= 0.40 2025-26 ACLs (mt) 5.06	Rebuilding plan "F = 0" 2025-26 ACLs (mt):0

*Sum of ACLs specified north and south of 34º27' N. latitude.

2.4.6 California Quillback Rockfish Rebuilding Plan

The Council halted further analysis of Alternative 3 for California quillback rockfish in April 2024. The Alternative 3 harvest specifications are based on assumptions made from the 2021 stock assessment and not the adopted 2023 rebuilding analysis (Langseth et. al 2023) results. The process for developing the harvest specifications is described in Agenda Item E.2.a, Supplemental CDFW Report 2, November 2023. The Council's decision not to move Alternative 3 forward for full analysis was based on initial analysis, which determined it would result in harvest specification values greater than those estimated in the adopted 2023 rebuilding analysis and harvest levels beyond what would appear biologically reasonable for a rebuilding population. Additionally, this Alternative would exceed the OFL and ABC values recommended by the SSC, which is inconsistent with applicable law and policy. As such, Alternative 3 does not comport with the

MSA rebuilding requirements and BSIA per National Standard 2. The preliminary analyses of Alternative 3 are provided in the Council Analytical Document.

In setting the range of alternatives for California quillback rockfish rebuilding, the Council did not include an alternative between the ABC rule (Alternative 2) and F = 0 (Alternative 4) because the ACLs under each of the rebuilding scenarios provided in the 2023 Rebuilding Analysis are so similar (only tenths of a metric ton different) that the existing models used to develop management measures for the fishery simply do not provide that fine of a scale of differentiation. As such, it would be impossible with current management tools to develop a suite of management measures with differences sufficiently discernable in order to provide meaningful analysis of the disparate impacts.

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3. Methodology

In this section, we discuss our analytical approach for this tiered EA and explain why we are including new elements in this biennial cycle or excluding elements that we have addressed in previous cycles.

Our decisions are based on 40 years of experience managing the Pacific groundfish fishery. We carefully consider whether each proposal is justified by one or more of the MSA's National Standards and whether it improves the balance between three simultaneous purposes: (1) maximizing fair, equitable, and efficient attainment from the fishery, while considering the importance of fishery resources to fishing communities and the safety of human life at sea, (2) protecting natural resources by preventing overfishing of groundfish and minimizing adverse effects on other species or habitat, and (3) ensuring that proposed modifications are legal, enforceable, and not overly burdensome on both regulators and fishery stakeholders. As required by the MSA and NEPA, we base our decisions on BSIA (40 CFR 1502.23 Methodology and Scientific Accuracy). We note that since preparation of the 2015 EIS, from which we are tiering this analysis, the fishery and the affected environment have evolved with a mature fishery rationalization structure, rebuilt stocks, emerging fisheries responding to new opportunities and increased catch limits, changes in gear (NMFS 2018), and adjustments to closed areas (PFMC and NMFS 2019). Refer to the 2024 SAFE Document for more recent information on the current management structure of the fishery and the status of managed stocks.

Below we outline factors contributing to the analytical approach taken in this EA.

3.1 Groundfish Stocks

The NEPA determination of significance is based on context and intensity (1978 NEPA Regulations) or affected environment and degree (2020 NEPA Regulations). The context is the groundfish fishery within the U.S. EEZ off the coasts of California, Oregon, and Washington. In Section 4.1 of the 2015 EIS, we identified the following biological indicators of resource health that describe the intensity or degree of the effect on the groundfish species:

- Stock Productivity
    - Are fishing practices likely to change the reproductive success of groundfish stocks?
    - Are fishing operations likely to interfere with or disturb spawning and reproductive behavior or juvenile survival rates such that it raises concern about a stock's ability to maintain its biomass at or above the biomass level that produces the Maximum Sustainable Yield (B_{MSY})?
- Fishing Mortality
    - Are harvest levels likely to result in overfishing?
    - For healthy and precautionary zone stocks are harvest levels likely to remove a portion of the spawning population from the stock such that the stock is likely to become overfished?
    - For overfished stocks, are harvest levels likely to rebuild the stock by T_{TARGET} ?
- Genetic structure

- Are changes in the time and location of fishing likely to result in changes to the genetic structure of the groundfish populations?
- Will fishing on particular sub stocks or targeting fish with certain characteristics (e.g., large size) alter the genetic structure of the population over time?

The 2015 EIS identified prey availability as a fourth indicator of biological health. We discuss this as an ecosystem impact in Section 4.4 of this tiered EA.

The Council Analytical Document assesses the total catch mortality of selected exploited groundfish stocks and stock complexes under the Alternatives. The purpose of these assessments is to identify management measures necessary to constrain catch within limits established for various fishery sectors and the overall ACL for each stock. During each biennium we monitor catch on an ongoing basis and implement adjustments to these accountability measures, as necessary to ensure ACLs are not exceeded. This substantially reduces the risk that overfishing will occur.

Factors contributing to impacts on genetic structure have not materially changed from what is disclosed in the 2015 EIS (Section 4.1.3), so resulting impacts are not further discussed in this EA. The likelihood of adverse effects on genetic structure and reproductive success is reduced if fishing mortality is maintained below the OFL, which is the purpose of updating harvest specifications (based on default or alternative HCRs) and related management measures.

In Section 4.8 of the 2015 EIS, we evaluated the biological impacts of alternative harvest specification policies over a 10-year period based on projections from stock assessments current at the time. Projections were run under three alternative "states of nature," which captured the principal source of uncertainty in the relevant stock assessment. While those projections were useful in the evaluation of alternative harvest policies, we do not use them in considering the impacts of the Proposed Action, because more recent information is available through stock assessments.

We evaluate the impacts of fishing authorized by the Proposed Action through stock assessments, conducted periodically. Stock assessments estimate the status of a stock, in terms of fishing mortality and biomass, which are judged against related biological reference points specified in National Standard 1 Guidelines. Stock assessments are also used to evaluate how the application of harvest policies (HCRs) will affect the future status of stocks in relation to those biological reference points. These projections take a conservative approach in that full attainment of projected ACLs is assumed even though historically attainment has been below, and in some cases well below, the catch limits for many stocks. Benchmark stock assessments and update assessments (in which the existing model specification is run with added catch data) are conducted according to a recommended schedule considered biennially by the Council. That means that in most cases we use more recent information on the status of stocks in the biennial process than what is presented in the 2015 EIS. In addition, the harvest specifications framework dictates an additional precautionary reduction from the OFL based on how long it has been since a new assessment or update was conducted.

While seven stocks were managed under rebuilding plans when the 2015 EIS was prepared, all but one has been declared rebuilt. However, as discussed in Chapter 2, California quillback rockfish

was declared overfished in 2023. As part of the Proposed Action, a rebuilding plan for California quillback rockfish would be implemented consistent with the stock rebuilding framework described in National Standard 1 Guidelines.

The harvest specification policy framework evaluated in the 2015 EIS and incorporated into the PCGFMP by Amendment 24 allows us, through the biennial process, to modify existing, default HCRs should BSIA revealed in more recent stock assessments dictate that need (or to optimize the fishery without risking overfishing). As discussed in Section 2.4, in this biennial cycle, we are proposing to revise default HCRs for four stocks including the HCR derived from the rebuilding plan for California quillback rockfish. We will continue, in future cycles and between those cycles, if necessary, in compliance with the MSA and NEPA, to revise HCRs based on environmental and economic conditions. In doing so, we aim to optimize the fishery consistent with the purpose and need for the Proposed Action described in Section 1.2.

3.1 Non Groundfish Fish

Non-groundfish fish include fish managed under the Council's Salmon, Highly Migratory Species, and Coastal Pelagic Species FMPs. The species composition of non-groundfish species caught in groundfish fisheries is described in Section 3.6 of the 2015 EIS. We have not changed harvest policies or seen changes in fishery performance that have substantively changed the composition in incidentally caught non-groundfish. The most recent information about non-groundfish species caught in the groundfish fishery can be found in the 2023 groundfish discard and catch report (Somers*, et al.* 2023). Given that the management framework and resulting management intensity has not substantially changed, we do not address impacts on non-groundfish species in this tiered EA..

3.2 Parallel Fishery Management Actions

NEPA requires us to evaluate and disclose the environmental impacts of a proposed action and its alternatives. The components of the Proposed Action presented in Section 1.1 include all aspects of rulemaking needed to authorize a sustainable groundfish fishery in early 2025. However, we have the discretion to implement other management measures that we may have discussed during 2023 and 2024 Council meetings, through subsequent rulemaking processes, outside of the biennial harvest specifications and management measures process. Furthermore, we may implement measures that we determine constitute discrete actions that are not tied to the harvest specifications process and are therefore "unconnected single actions," defined by the NEPA regulations at 40 CFR 1501.9(e)(1).

3.3 Effects of Allocating Fishing Opportunity

In past biennial cycles, we found that we cannot determine the specific impacts of changes to the allocation of fishing opportunity as described in Section 2.3. This is because it is not possible to predict how any allocation changes might affect fishing strategies, which in the aggregate, affect spatio-temporal patterns of fishing and the resulting catch composition.

As part of the biennial decision-making process, we quantitatively estimate the aggregate impacts of management, including allocations, on managed fish stocks and the resulting socio-economic impacts derived from the estimated ex-vessel revenue. We use a variety of catch projection models to identify management measures for various fishery sectors that are estimated to keep catch within

the limits established by the allocation framework (see Section 2.7.2 in the 2024 SAFE Document for description of the catch projection models and Section 2.3 for an overview of allocation procedures).

Section 4.2.1.1 (Deductions from the ACL and Allocations) of the 2015 EIS describes allocations across all sectors. We do not discuss the impacts of specific allocations or other allocative measures (e.g., sharing agreements, ACTs, and HGs) further in this tiered EA because they do not generate new environmental impacts.

3.4 Evaluation of Other Environmental Components

As noted, socioeconomic impacts are derived from the estimated ex-vessel revenue from landings. In some cases, the aforementioned catch projections are used to estimate landings while in other cases full attainment of an allocation is assumed. However, for most stocks and stock complexes, catch has historically been less than the limits we establish. Therefore, the impacts on managed fish and economics are likely to be less than is forecast in this EA. Our analysis of impacts on the other resources (protected resources, habitat, and ecosystem) is not quantitative. Catch limits are not a predictable proxy for the rate of protected species and habitat interactions, or for any incremental effect on the California Current.

4. Environment / Environmental Consequences

The Alternatives evaluated here are described in Chapter 2.

4.1 Managed Fish

We tier this section from the 2015 EIS with an emphasis on Section 2.1.1 (Harvest Specifications), Section 3.1 (Affected Environment-Groundfish), Section 4.1 (Biological Impacts of 2015-16 Biennial Harvest Specifications on Groundfish Stocks), and Section 4.8 (Biological Impacts of Alternative Long-term Biennial Harvest Specifications on Groundfish Stocks) as updated by the biennial Environmental Assessments (2017-18, 2019-20, 2021-22, and 2023-24).

The 2015 EIS describes the process by which we establish harvest specifications (Section 2.1.1) and the species that we manage under the PCGFMP (Section 3). Section 2.1.1 presents the latitudinal and depth distribution for each species (Table 3-1). Section 3.1.1 presents fishery stock assessments, a scientific and statistical process that assesses the population size, reproductive status, fishing mortality, and sustainability. We derive fishery specifications, including ACLs, from these assessments as guided by the default HCRs. Section 3.1.1 of the 2015 EIS also explains how we consider uncertainty in the stock assessments when setting these biennial harvest specifications. Section 4.1.2 describes our productivity and susceptibility assessment, which analyzes the vulnerability of stocks to overfishing.

4.1.1 Status/Affected Environment

The SAFE Document provides information on groundfish stocks and fisheries described in the 2015 EIS sections listed above.

The SAFE Document Table 2-1 presents the most recent latitudinal and depth distribution of managed groundfish species, Tables 2-2 and 2-3 present the most recent productivity and susceptibility assessment scores for healthy stocks and overfished or rebuilding stocks, and Table 2-4 lists the year the recent stock assessments were completed (as of 2023) and associated management indicators from which we derive the harvest specifications as of 2024. We incorporate these four tables by reference and summarize the changes since the 2023-24 EA. While the fishery and underlying ecosystem conditions constantly evolve, we determine that the information below has the greatest influence on the potential impacts of the Proposed Action and the Alternatives evaluated in this document on managed fish for the 2025-26 biennium.

1. In 2023 new benchmark stock assessments were completed for black rockfish (four model areas), canary rockfish, copper rockfish off California (two model areas), Dover sole, petrale sole, rex sole, sablefish, and shortspine thornyhead. Stock assessment updates (catch only projections) were completed for widow rockfish and yelloweye rockfish. The most recent stock assessments are found on the Council's website. Of these, copper rockfish is among the stocks with the highest vulnerability rating as presented in the 2024 SAFE document Table 2-2. We will continue to focus upcoming stock assessments on these vulnerable stocks, as time and resources permit.

2. Yelloweye rockfish is managed under a rebuilding plan, most recently updated in 2019, with a target rebuilding year of 2029. Rebuilding measures and related impacts are discussed in the 2019-20 EA.
3. California quillback rockfish was declared overfished in 2023. A rebuilding plan must be implemented for the 2025-26 biennium. The Council and NMFS developed a rebuilding plan describing the adopted HCR, its consistency with the stock rebuilding framework described in National Standard 1 Guidelines, and the related management measures necessary to constrain catch to the resulting ACLs

4.1.2 Effects of the Alternatives

No Action Alternative

The No Action Alternative HCRs would result in ACLs that are not based on BSIA. As described in the Council Analytical Document, application of BSIA to default HCRs (Alternative 1) results in a decrease in ACLs for most of the managed stocks (see the Chapter entitled 2025-26 Harvest Specifications: The Preferred Alternative Table 2).[4] This means that managing to No Action ACLs would increase the likelihood of overfishing for many stocks. The ACLs for sablefish stocks (separate ACLs are established for portions of the stock north and south of 36º N. latitude) are the notable exception, increasing by more than 200 percent under Alternatives 1 and 2. Maintaining the No Action ACLs for these two stocks would result in substantial forgone harvest opportunity for this valuable species. Furthermore, California quillback rockfish would continue to be managed as part of the Nearshore rockfish complexes and harvest specifications would not be set according to a rebuilding plan, as required by the MSA when a stock is declared overfished. However, as discussed below, CDFW and the Council took action in 2023 and 2024 to reduce California quillback rockfish catch to levels similar to those that would be implemented through the rebuilding plan. This includes prohibiting retention of California quillback rockfish in commercial and recreational fisheries, reducing trip limits in commercial non-trawl fisheries for co-occurring species, and modifying the season structure for recreational fisheries in California. These management measures were previously implemented and as such are part of the No Action Alternative.

Action Alternative 1

In comparison to No Action, under this alternative, harvest specifications would be set according to BSIA, by applying default HCRs to information in the most recent stock assessments and pre-prescribed changes such as time varying sigmas. For most stocks this is more likely to prevent overfishing, meanwhile allowing greater realization of economic benefits in cases where BSIA indicates ACLs can be increased compared to No Action. However, the following stocks are called out, because alternative HCRs are considered under Alternative 2 and conservation and socioeconomic goals may not be achieved under the default HCRs.

Dover sole: The default Dover sole HCR, a constant catch ACL of 50,000 mt, exceeds the ABC determined consistent with BSIA, which is 47,424 mt in 2025. The 2025 OFL is 51,214 mt, so overfishing would not occur in 2025 under the default HCR, unless that value is mis-specified or

[4] This is mainly due to application of time-varying sigma values used to compute the precautionary reduction from the OFL. The time-varying sigma term accounts of the age of the stock assessment, recognizing that older stock assessments provide less reliable estimates of current stock status.

management error results in catch above the ACL. However, because an ACL cannot be set higher than an ABC, use of this HCR for Dover sole is not consistent with the MSA and National Standard Guidelines.

Rex sole: Based on the 2023 stock assessment, the rex sole ABC would increase from 1,437 mt under No Action to 3,767 mt under this Alternative. The default HCR maintains the same level of overfishing risk tolerance (P* = 0.40) as under No Action. This would very likely prevent overfishing while allowing greater realization of economic benefits compared to No Action.

Shortspine thornyhead: Based on the 2023 stock assessment, the shortspine thornyhead ABC is substantially reduced compared to the 2023 value (No Action), from 2,078 mt to 716 mt in 2025. The default HCR maintains the same level of overfishing risk tolerance (P* = 0.40) as under No Action. Constraining catch consistent with the results of the most recent stock assessment would have beneficial impacts on the stock in terms of maintaining it around the target biomass level, with lower than risk neutral (P* < 0.5) overfishing risk.

California quillback rockfish: In April 2024, the Council did not select Alternative 1 for California quillback rockfish for further consideration as its Preferred Alternative. The California quillback rockfish default HCR under Alternative 1, as used in the 2023-24 management cycle, includes SPR = 0.55 to determine the ACL. This HCR is used in the rebuilding analysis (Langseth 2023) and is projected to rebuild the stock with a 50 percent probability by 2062, within the statutory maximum time to rebuild of 2071 (T_{MAX}) and represents a 69.4 percent probability of rebuilding by 2071 (T_{MAX}). Overall trends represented by Alternative 1 (default) and Alternative 2 (ABC rule) HCRs were functionally identical in that they did not deviate until well into the rebuilding period. Under the Alternative 1 default HCR the stock would have a slightly lower probability of rebuilding (69.4 percent) within the required time period, compared to Alternative 2 ABC rule HCR (73.6 percent). Additionally, Alternative 1 would also take two years longer (2062) for the stock to reach the target rebuilding level, compared to Alternative 2 (2060).

Management measures necessary to optimize the fishery consistent with the ACLs derived from the default HCRs would be applied under Alternative 1. This includes the array of adjustments to sector allocations or limits and related catch control measures described in Section 2.4.2. As discussed there, a variety of measures to limit California quillback rockfish catch would be applied to commercial nearshore and recreational fisheries in California. These would be a continuation of management measures implemented in 2024 (No Action) in response to the stock being declared overfished.

Action Alternative 2

Under this Alternative, alternative HCRs would be adopted for all stocks identified below, based on BSIA (using the recent stock assessments and rebuilding analyses conducted in 2023), to better achieve conservation and socioeconomic goals in comparison to No Action and Alternative 1. Under this Alternative, default HCRs, similar to HCR Alternative 1, are used for all stocks except as discussed below. Except for California quillback rockfish and Dover sole, default HCRs would be consistent with BSIA. Both default and alternative HCRs for rex sole and shortspine thornyhead are consistent with BSIA, but the default HCRs may not accommodate fishing opportunity needs within conservation constraints.

Dover sole: Under this Alternative the ABC is set as a precautionary reduction from the OFL based on the information in the most recent stock assessment. At 47,424 mt in 2025, this is slightly lower than the Alternative 1 default HCR ABC, which is a constant value of 50,000 mt. The alternate ACL slightly reduces the risk of exceeding the OFL and is consistent with the National Standard 1 Guidelines and the PCGFMP management framework. And as noted above, the 2026 ACL value under this Alternative is lower still, emphasizing the conservation need of departing from the 50,000 mt constant value under No Action and Alternative 1. At its June 2024 meeting, the Council adopted Alternative 2 as the preferred HCR for Dover sole.

Rex sole: Under this Alternative the risk tolerance would be increased (P* = 0.45) while still being risk averse (P* < 0.5). This increases the ABC from the default HCR value of 3,967 mt to 4,550 mt in 2025. This will reduce the likelihood of adverse socioeconomic impacts while achieving conservation goals pursuant to the MSA and the PCGFMP. At its June 2024 meeting, the Council adopted Alternative 2 preferred HCR for rex sole

Shortspine thornyhead: The Alternative HCR for shortspine thornyhead has a similar policy basis as rex sole, increasing the risk tolerance (P* = 0.45) to mitigate adverse socioeconomic impacts. The ABC would be 821 mt in 2025 under this Alternative HCR, as compared to 716 mt under the default HCR (Alternative 1). As discussed elsewhere, shortspine thornyhead co-occurs with sablefish and they are caught together in the DTS bottom trawl fishing strategy. As a result, shortspine thornyhead limits could constrain catch of higher value sablefish. This Alternative allows for more catch and, therefore, a greater socioeconomic benefit is achieved, while still preventing overfishing.

Alternative 2 also includes changing the allocation scheme for shortspine thornyhead by combining the current geographic split at 34°27′ N lat into a coastwide trawl/non-trawl allocation. While resulting changes in the distribution of fishing effort cannot be forecast, this change would not be expected to have a discernible impact on the stock since fisheries catch would still be managed to levels that would prevent overfishing and represent BSIA. Moreover, the stock does not exhibit population structure at a finer scale, therefore, appropriate coastwide mixing is expected to occur, which would mitigate any impact of a change in geographic harvest patterns.

California quillback rockfish: This stock would be managed according to a rebuilding plan. The rebuilding plan has been developed consistent with National Standard 1 Guidelines and is intended to rebuild the stock in as short a time as possible "taking into account the status and biology [of the stock], the needs of fishing communities, … and the interactions of the overfished stock … with the marine ecosystem…" (MSA §304(e)(4)(A)(i)). At its June 2024 meeting, the Council adopted its preferred HCR consistent with the 2023 Rebuilding Analysis for California quillback rockfish (Langseth 2023). As noted above and in Chapter 2, the resulting 2025-26 ACLs under the Preferred Alternative differ only slightly from those under Alternative 1 and the stock is projected to rebuild by 2060 under Alternative 2, two years earlier than under the default HCR. The probability that the stock rebuilds by T_{MAX} also increases to 0.736 (73.6 percent).

This Alternative employs the same types of management measures applied under Alternative 1 (described in Section 2.3). As noted above, measures to limit California quillback rockfish catch to levels comparable to those which would result from the rebuilding plan HCR were implemented in 2023 and 2024 and are, thus, part of the No Action Alternative. Alternative 2 includes managing

California quillback rockfish under a rebuilding plan, which also necessitates removing it from the stock complex and managing it individually.

Action Alternative 3

California quillback rockfish: Alternative 3 is not fully analyzed in this EA/RIR/RFAA/MSA, as it was removed from further consideration by the Council at their April 2024 meeting. This Alternative is not consistent with applicable law and policy, as it would result in a catch limit substantially higher than the SSC-recommended OFL.

Action Alternative 4:

California quillback rockfish: Under Alternative 4, this stock would be managed according to a rebuilding plan strategy of F = 0, or no fishing mortality. The California Quillback Rockfish Rebuilding Plan has been developed consistent with National Standard 1 Guidelines and is intended to rebuild the stock in as short a time as possible "taking into account the status and biology [of the stock], the needs of fishing communities, … and the interactions of the overfished stock … with the marine ecosystem…" (MSA §304(e)(4)(A)(i)). The rebuilding analysis (Langseth 2023) indicates the F = 0 strategy would rebuild the stock in the shortest amount of time. As noted above and in Section 2, the resulting 2025-26 ACLs under this Alternative would be 0 mt, which is a substantial decrease from the already low ACLs of Alternative 1 and Alternative 2. The stock would be projected to rebuild by 2045, 17 years earlier than under Alternative 1 and 15 years earlier than under Alternative 2. Under Alternative 4, the probability that the stock rebuilds by T_{MAX} also increases to 0.999 (99.9 percent). Alternative 4 would, however, likely require the complete closure of the groundfish fishery off of California in order to achieve the 2025 and beyond ACLs under the F = 0 HCR rebuilding parameter. Additionally, Alternative 4 cannot be realistically implemented, because it would require prohibiting California quillback rockfish catch in all fisheries encountering the stock. This is likely impossible without closing all fishing (not just the groundfish fishery) within the area where the stock occurs. This would result in disastrous short-term economic impacts to fishing communities, as well as the potential loss of shoreside infrastructure, which could impact the ability of the fishery to receive the benefits of a rebuilt stock by the end of the rebuilding period.

The MSA directs NMFS and the Council to consider not only the biology of the stock, but the needs of fishing communities in setting a rebuilding plan when the minimum time to rebuild is beyond 10 years. MSA National Standard 1 instructs that conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery within the United States. And, MSA National Standard 8 provides that management measures must take into account the importance of fishery resources to fishing communities, in order to allow for the sustained participation of such communities and to minimize adverse economic impacts. Thus, because it would result in devastating adverse socioeconomic impacts and could close fisheries coastwide in California, Alternative 4 is inconsistent with MSA and its National Standard Guidelines. For these reasons, the Council did not choose this Alternative as its Preferred Alternative.

4.1.3 Synthesis

The combination of HCRs and management measures proposed by the Council and NMFS is intended to allow groundfish fisheries to attain but not exceed the ACLs during the 2025-26

biennium while optimizing the fishery in other ways (e.g., by considering the distribution of fishing opportunity across sectors). However, while in this evaluation we assume that realized catch equals the ACL, historically catch has been well below ACLs for most groundfish stocks. As discussed in Section 2, the ABC represents a precautionary reduction from the OFL for each stock, making it unlikely that overfishing would occur. ACLs are set equal to the ABC unless additional conservation and management concerns dictate that it be set below the ABC.

Our management measures (adjustments in the allocation of fishing opportunity, catch controls, inseason monitoring and management, near-real time accounting, etc.) ensure that the fisheries do not exceed their allocated limits. Therefore, the combination of HCRs and management measures under this Proposed Action, when based on BSIA, would not result in significant impacts to managed fish.

As noted above, default and alternative HCRs result in lower ACLs compared to No Action for most stocks. The No Action Alternative could result in overfishing because the harvest specifications are not based on BSIA and management measures would not be adjusted to address conservation concerns and optimize the fishery. By contrast, Alternative 2 would achieve conservation objectives articulated by MSA National Standard 1 Guidelines and the PCGFMP.

As noted above, for most stocks and stock complexes catch historically has been less than the ACL. The GMT Scorecard shows that in 2023 attainment was below ACLs, in many cases substantially, for all management units. If similar patterns persist in the 2025-26 biennium, the actual impact of fishing mortality on the future status of most stocks and stock complexes is likely to be less than forecasted in the assessment projections and disclosed in this tiered EA.

For California quillback rockfish, overall rebuilding trends represented by Alternative 1 (SPR 0.55) and Alternative 2 (ABC rule) HCRs are functionally identical in that they do not deviate until well into the rebuilding period. Alternative 1 would have a slightly lower probability of rebuilding (69.4 percent) within the required timeline, compared to Alternative 2 (73.6 percent) with the ABC rule. Alternative 1 would also take two years longer (2062) for the stock to reach the target rebuilding level, compared to Alternative 2 (2060). Alternative 4 would rebuild the stock in shortest amount of time, with a median rebuilding time of 2045 and a 99.9 percent likelihood of rebuilding by Tmax. The Council adopted Alternative 2 as their Preferred Alternative and compared that rebuilding parameter against Alternative 4 in the California Quillback Rockfish Rebuilding Plan (Appendix 1). Alternative 4 would have devastating short-term socioeconomic impacts on fishing communities, as it would likely require a complete groundfish closure in the EEZ off California; whereas, Alternative 2 is the most similar to the current management of the fishery (since restrictive management measures were put in place to protect California quillback rockfish in 2023 and 2024) and would allow restricted access to the resource in the waters off the northern half of California. Management intensity is intrinsically tied to the rebuilding parameter the Council adopts for this stock and would differ with another alternative, particularly Alternative 4 (F = 0). The Council's preferred rebuilding parameter for California quillback rockfish is Alternative 2.

4.2 Protected Resources

4.2.1 Status/Affected Environment

Several Federal laws protect mammals, reptiles, fish, and birds. These laws include the Endangered Species Act (ESA), the Marine Mammal Protection Act (MMPA), the Migratory Bird Treaty (MBTA), and Executive Order (EO) 13186—EO 13186, Responsibilities of Federal Agencies to Protect Migratory Birds.

The Services (NMFS and the Fish and Wildlife Service, FWS) have issued Biological Opinions and Incidental Take Statements (ITSs) for ESA-listed species that the groundfish fishery may affect. The Services have concluded that the fishery is unlikely to jeopardize any of these species or their critical habitat. To track and report on impacts to these species, the Council established the Groundfish Endangered Species Workgroup (ESA Workgroup) in 2015. Appendix A of their most recent report (Agenda Item H.6.a, GESW Report 1, June 2023), which we incorporate by reference, identifies each Biological Opinion and presents the current incidental take allowances and the estimated take from the bycatch reports for humpback whales, short-tailed albatross, eulachon, green sturgeon, and leatherback sea turtles.

The ESA Workgroup confirmed that the fishery generally has minimal interactions with these ESA-listed species and that the fishery has not exceeded any of the current incidental take statement amounts. The workgroup continues to monitor the impacts of the fishery and recommend to us, where appropriate, refinements to reduce uncertainty and impacts.

The Services have determined the groundfish fishery would not adversely affect other ESA-listed species (except for salmon discussed below) not presented in Appendix A of the ESA Workgroup report.[5] This tiered EA does not further address these unaffected species.

On August 2, 2021, NMFS issued a final rule revising the southern resident killer whale critical habitat designation by expanding it to include habitat along the U.S. West Coast. On September 28, 2022, NMFS initiated consultation on the Pacific coast groundfish fishery for southern resident killer whales. As there is no documented take of southern resident killer whales in the Pacific coast groundfish fishery (see List of Fisheries below), the primary potential for impacts to newly designated critical habitat are indirect effects from the take of Chinook salmon, a prey species. On December 7, 2022, NMFS concluded the ongoing operation of the Pacific Coast groundfish fishery is not likely to adversely affect southern resident killer whales.

Historically, salmon bycatch in groundfish fisheries has mostly comprised Chinook salmon with small amounts of coho salmon. This bycatch has been subject to ESA consultations since 1990. In the 2017 Biological Opinion (NMFS 2017), incidental take is described in numbers of both listed and non-listed salmon. Incidental take of Chinook may not exceed 11,000 salmon per year in the whiting sector and 5,500 in the non-whiting sector, in addition to a reserve of 3,500 Chinook salmon per year in the event that bycatch increases unexpectedly. The coho salmon bycatch will not exceed 474 coho (whiting) or 560 coho (non-whiting) per year. On February 23, 2021, NMFS published a final rule implementing salmon bycatch minimization measures to keep fishery sectors

[5] For example, in their May 2, 2017, Biological Opinion, FWS confirmed that the fishery is not likely to adversely affect marbled murrelet, California least tern, southern sea otter, bull trout, nor bull trout critical habitat.

within these guidelines, to allow industry to access the Chinook salmon bycatch reserve, and to create Chinook salmon bycatch closure thresholds for the trawl fishery (86 FR 10857).

The GMT regularly presents the Council with a Chinook Salmon Scorecard under groundfish inseason management agenda items (for example, E.63a, Supplemental GMT Report 1, November 2023, pp. 8-9). This allows for tracking of estimated or assumed bycatch against expected incidental take presented in the Incidental Take Statement attached to the Biological Opinion. The NWFSC's most recent report (Richerson*, et al.* 2023) was presented to the Council in November 2023 (Agenda Item E.1.b NWFSC Report 4, November 2023). The fishery has not exceeded the limits defined in the 2017 Opinion since its publication.

While the ESA protects threatened or endangered marine mammals, the MMPA protects all marine mammals. Under the MMPA, all commercial fisheries must be categorized based on the estimated incidental mortality and serious injury (M/SI) resulting from their operations relative to the potential biological removal (PBR) level for each marine mammal stock. NMFS annually publishes the List of Fisheries, which classifies fisheries according to their impact on marine mammal stocks: Category I: Annual M/SI greater than or equal to 50 percent of the PBR level; Category II: M/SI greater than 1 percent and less than 50 percent of the PBR level; Category III: M/SI less than or equal to 1 percent of the PBR level.

The 2023 List of Fisheries (88 FR 16899) [6] classifies PCGFMP fisheries and lists marine mammal stocks taken in the fisheries as follows:

- WA/OR/CA sablefish pot (Category II): Humpback whale, CA/OR/WA
- WA/OR/CA groundfish, bottomfish longline/set line fishery (Category III): bottlenose dolphin (CA/OR/WA offshore), California sea lion (U.S.), Northern elephant seal (California breeding), Sperm whale, Stellar sea lion (Eastern U.S.).
- WA/OR/CA groundfish trawl (Category III): California sea lion (U.S.), Dall's porpoise (CA/OR/WA), harbor seal (OR/WA coast), northern fur seal (Eastern Pacific), white-sided dolphin (CA/OR/WA), and Steller sea lion (Eastern U.S.). The List of Fisheries

Section 3.5 of the 2015 EIS describes the fishery's impacts on these stocks.

NMFS publishes annual marine mammal stock assessment reports (SARs) by region. Each assessment describes the status and biology of the stocks along with sources of human-caused and fishery-caused M/SI. Appendix 2 in the report summarizes population status indicators and total/fishery M/SI. The 2023 Pacific SAR includes a reevaluation of humpback whale stock structure to reconcile ESA distinct population segments (DPSs) with MMPA stocks (Carretta*, et al.* 2023). It identified two demographically independent populations (DIPs) that the sablefish pot fishery interacts with: the Central America/Southern Mexico-CA/OR/WA and Mainland Mexico-CA/OR/WA DIPs. It includes updated assessments for these two humpback whale stocks (pp. 177-200). It notes that these stocks are designated as strategic under the MMPA, because they are listed as endangered under the ESA. In addition, total commercial fishery M/SI is greater than the

[6] The 2024 proposed List of Fisheries has the same classification (88 FR 62748).

calculated PBR for the Mainland Mexico-CA/OR/WA DIP and both DIPs are not achieving the zero M/SI rate goal (ZMRG), which is defined as 10 percent of PBR.

The West Coast Groundfish Observer Program (WCGOP) estimates and periodically reports bycatch of protected species, including marine mammals and seabirds, compiled from observer, landings, and electronic monitoring data. These reports are published on the NOAA Fisheries website: West Coast Fishery Observer Bycatch and Mortality Reports. The most recent marine mammal report (Jannot, *et al.* 2022) covers 2002 to 2019.

On September 29, 2023 (88 FR 67254), NMFS announced it is establishing, pursuant to the MMPA, a Take Reduction Team (TRT) to address humpback whale M/SI in the sablefish pot fishery (its remit could be expanded to consider other fisheries). The TRT will develop a Take Reduction Plan (TRP) as required under the MMPA §118(f)(1) to assist in the recovery or prevent the depletion of the aforementioned DIPs. NMFS initiated formation of the TRT pursuant to litigation. Under the settlement agreement, NMFS must establish this TRT by October 31, 2025, and convene the first TRT meeting by November 30, 2025. The TRT would then develop the TRP. A draft TRP must be submitted within 6 or 11 months of establishment of the TRT, depending on the level of M/SI compared to a stock's PBR. TRT recommendations are aimed at reducing fishery M/SI below PBR within six months of plan implementation and achieving the ZMRG (10 percent of PBR) within five years of implementation. Given these timelines, it is uncertain whether mitigation measures identified in the TRP would be implemented during the 2025-26 biennium.

The Council recently made a final recommendation on expanded gear marking requirements and other entanglement risk reduction measures for vessels that operate under the PCGFMP that use pot and longline gear. These new measures are expected to be implemented during the 2025-26 biennium.

Section 3.5.4 and Table 3-42 of the 2015 EIS describes the fishery's impacts on non-ESA-listed seabirds and estimates future mortality estimates.

The most recent WCGOP seabird bycatch report (Jannot, *et al.* 2021) covers seabird interactions from the groundfish and Pacific halibut fisheries as well as selected State fisheries from 2002 to 2018. The report finds that:

> Hook-and-line fisheries account for the largest number of albatrosses taken among the three gear categories (hook-and-line, trawl, pot). Over the last six years, hook-and-line fisheries accounted for 50–63 percent of seabird mortality, followed by trawl fisheries at 31–45 percent, and pot fisheries at 2–6 percent of bycatch (Table 1.) The largest number of albatross taken comes from limited entry (LE) sablefish vessels fishing hook-and-line gears. This prompted regulations requiring streamer lines on hook-and-line vessels fishing in U.S. West Coast groundfish fisheries; these were implemented in December 2015 for vessels 55 ft or longer.

In 2019, based on a Council proposal, NMFS extended the streamer line requirement to vessels 26-55 feet LOA (84 FR 67674).

No short-tailed albatross (ESA-listed) has been observed caught in the groundfish fishery since we published the 2015 EIS.

Pages 19-33 of WCGOP seabird bycatch report present albatross and non-albatross bycatch data for selected groundfish fixed gear and trawl fisheries, summarized by sector:

- Black-footed albatross were the main species caught in the **limited entry (LE) sablefish endorsed fishery**, which uses longlines. Since 2015, estimated annual mortality in this fishery exceeds five for three non-albatross species (sooty shearwaters, northern fulmars, and western gulls) (Table 6) with all annual estimates for each species being less than 10 birds, except sooty shearwater (20.75 in 2018).
- **Limited entry daily trip limits (DTL) longline vessels** target groundfish, primarily sablefish and thornyheads. These vessels have attained their annual sablefish quota limit and fish outside the normal LE sablefish season. On average, 3-4 pink-footed shearwaters are estimated to be caught each year in this fishery (Table 7).
- **Open access fixed gears** use a variety of fixed gear with hooks, including longlines, fishing poles, and stick gear to target non-nearshore groundfish. Two bird taxa have been reported and estimated (Table 8): black-footed albatross (estimate 6-11) and unidentified gulls (estimate 3-5).
- **Catch share longline fisheries** that hold individual fishing quotas (IFQs) primarily target groundfish species, mainly sablefish. This fishery has 100 percent observer coverage; therefore, the observed bycatch is a complete census of these vessels. Since the 2015 EIS, 0-2 black-footed albatross have been caught and estimated for 2015-2018 (Table 9).

The report also provides mortality data for pot gear and trawl fisheries, which are generally lower than those listed above.

4.2.2 Effects of the Alternatives

NMFS continues to monitor and report on impacts as described in the previous section and to ensure that the fishery minimizes impacts to protected resources and operates within the incidental take parameters for each applicable species. The Council will continue to explore, test, and implement, where appropriate, management measures that reduce impacts on protected resources. Although we are not proposing any new related measures in this biennial cycle, in recent years, we have adopted tools for mitigating impacts to salmon, including, in 2021, adaptive block area closures and selective flatfish trawl gear requirements (86 FR 10857). As noted above, we adopted recommendations for seabird bycatch mitigation in 2015 and 2019 (80 FR 71975, (84 FR 67674), requiring either streamer lines be deployed during setting operations on certain vessels or vessels only setting gear at night. Because trawl fisheries are 100 percent monitored through observers or electronic monitoring, any take of protected and prohibited species will be known quickly and accountability measures, including block area closures for the groundfish bottom trawl fishery, could be implemented to reduce interactions with protected species.

The effects of the Proposed Action on protected resources are difficult to assess and cannot be predicted quantitatively. In past NEPA documents, we have explained that fishery management actions may have positive or negative impacts based on changes in the spatial distribution of fishing effort and the occurrence and abundance of protected resource populations. Management-induced changes in the distribution and intensity of groundfish fishing are unlikely to discernibly affect food web dynamics (see Section 4.4), or indirectly impact protected species.

Within this analytical context, we find that the proposed HCRs and management measures are not anticipated to change interactions with protected resources as compared to the No Action Alternative. Management-induced changes in the intensity and distribution of fishing effort are far outweighed by ecosystem and other external factors:

Ecosystem factors include ocean conditions and trophic relations. The most recent California Current Ecosystem Status Report (Agenda Item H.1.a, CCIEA Team Report 1, March 2024) summarizes climate and ocean drivers, indicators related to the abundance and condition of key species and the dynamics of ecological interactions, protected resources, a habitat compression index as a way of understanding food web dynamics, species distribution, and conditions that can lead to whale entanglement. However, despite this information and analysis, as previously emphasized, we cannot predict how these conditions will play out with respect to groundfish fishery and protected resources interactions during the 2025-26 biennium.

External factors include markets and fishermen's decisions as to where, when, and how to fish. This includes decisions on what gear to use and where to land or sell their fish. The risks to protected species differ across fishery sectors and gear types. For example, the midwater trawl fishery has a higher risk of salmon interactions, while the fixed gear fishery has a higher risk of whale entanglements. We do not directly regulate the behavior of fishery participants; we only set catch limits and catch controls for the fishery and sectors, which taken together indirectly affects such behavior.

Based on the 2015 EIS and the 1978 NEPA Regulations, we determine significance under NEPA by looking at the context and intensity of interactions with protected species. Based on the 2020 NEPA Regulations at 40 CFR 1501.3(b), we define significance by the affected environment and degree of effects on protected species. For this tiered EA, we interpret the context as the affected environment, which is the groundfish fishery across multiple sectors and in federal waters off three states. The intensity or degree of impacts on protected resources will vary based on the ecosystem and external factors listed above and are not a foreseeable consequence of the proposed action.

We note that impacts on protected resources from fisheries subject to the Proposed Action are constrained by discretionary and non-discretionary measures enumerated in the relevant ITSs, such as those for Chinook salmon and short-tailed albatross. As described above, other statutory mandates, like the MMPA, may trigger the implementation of mitigation measures outside of the Proposed Action. Adaptive management, fishery monitoring, and periodic adjustment, indirectly supports the objectives of protected species mandates. In the NEPA context, this combination aims to avoid significant impacts to protected species.

4.3 Essential Fish Habitat

4.3.1 Status/Affected Environment

We tier this section from the 2015 EIS Section 3.3 and 4.11. Essential fish habitat (EFH), protected by the MSA (§3(10), §303(a)(7)), includes the waters and substrate necessary to support a fish population necessary to maintain both a sustainable fishery and a healthy ecosystem. We have defined waters to include aquatic areas and their associated physical, chemical, and biological properties that fish use. Substrate includes sediment, hard bottom, structures underlying the waters, and associated biological communities (50 CFR 600.10).

The PCGFMP (Chapter 7), as amended by Amendment 19 (2006) and Amendment 28 (2019), defines groundfish EFH and identifies Habitat Areas of Particular Concern. The FEIS for Amendment 28 (PFMC and NMFS 2019) describes the relative impact of trawl and fixed gear on habitat types. This impact depends on a variety of factors and is difficult to predict. The factors include substrate type, features (e.g., seamounts and canyons), key benthic organisms (e.g., canopy kelp and seagrass), benthic macro invertebrates (e.g., corals and sponges), gear type and configuration, frequency and duration of bottom contact, and the frequency of fishing in a particular area.

We use management measures to mitigate the adverse impacts of fishing on groundfish EFH, as mandated by the MSA (§Sec. 303(a)(7)) and elaborated in regulatory guidance (50 CFR 600 Subpart J). PCGFMP Chapter 6 describes related measures: gear restrictions (Section 6.6), time/area closures (Section 6.8), and measures to control fishing capacity (Section 6.9). For example:

- We implemented prohibitions on the dredge and beam trawl gear. We also prohibited bottom trawl gear with footropes larger than eight inches in diameter shoreward of a line approximating the 100 fm depth contour to protect habitat (Section 6.6.1).
- We established EFH Conservation Areas to protect habitats, especially those that are important, rare, or vulnerable, from the adverse effects of bottom-contacting fishing gears (Section 6.8.6).

We are required to periodically review EFH provisions based on BSIA (PCGFMP Section 7.6). In doing so, we continue to adjust the management measures in response to changing circumstances or new information. Measures implemented pursuant to Amendment 28 resulted in a net increase in habitat closed to bottom trawl activities. We added dozens of new and revised EFH Conservation Areas, including the large closure of the Southern California Bight, which closed most federal waters in the area, except some areas closest to state waters, where non-groundfish bottom trawling occurs. We also closed waters deeper than 3,500 m to bottom contact gear. We will continue to refine the definition of EFH as needed; for example, under Amendment 28, we determined that methane seeps should be identified as EFH for groundfish. We also created additional EFH Conservation Areas for bottom contact gears under Amendment 32. We will continue these efforts outside of the Proposed Action.

4.3.2 Effects of the Alternatives

None of the Alternatives would result in a significant impact on EFH beyond those previously disclosed in prior analyses because they will not Change the definition and designation groundfish EFH,

- Authorize any new gear that may impact bottom substrate, or
- Change the extent or efficacy of EFH Conservation Areas.

While we cannot predict fishing behavior, we do not expect any of the Alternatives to substantially change the intensity or location of fishing-gear related impacts to EFH.

4.4 California Current Ecosystem and Climate

4.4.1 Status/Affected Environment

Ecosystem

We tier this section from the 2015 EIS Sections 3.4 and 4.12, as updated by Section 3.2 of the 2021-2022 EA and Section 4.4.1 of the 2023-2024 EA. The Pacific Coast Fishery Ecosystem Plan (FEP) discusses the impacts that fisheries and other human activities have on ecosystem dynamics and marine habitat within the California Current Ecosystem (CCE) (PFMC 2022). Section 3.4 of the 2015 EIS characterizes the ecosystem as a web of trophic relationships within the system and indicates how the harvest specifications and management measures impact the relative abundance of organisms within this web.

Because the flow of energy is more of a food web than a food chain, the species in the ecosystem do not neatly divide into clearly delineated trophic levels (for example, an organism may eat a prey item and also eat items that its prey eats), except at the highest and lowest levels. Groundfish, therefore, may occupy multiple trophic levels when considering changes that occur over the course of their life, as they change both their size and feeding preferences. (See Figure 3.2.1 in the 2015 EIS for an example of the complexity of the food web). Groundfish are also the prey of several species (2015 EIS Section 3.4.2), including marine mammals, seabirds, and high trophic level fish such as Chinook salmon and large demersal sharks.

The FEP discusses the three major factors that drive changes in the abundance and distribution of fished species in ecosystems: removals by fishing (and consequent changes in community structure and energy flow/predation within ecosystems), removals or habitat loss unrelated to fishing (typically such impacts are greater in freshwater, estuarine, and nearshore systems), and shifts in climate that lead to both direct and indirect changes in productivity (including indirect effects such as changes in the abundance of prey or predators). Any and all of these effects can have cascading and cumulative impacts on ecosystem structure and energy flow in marine ecosystems that could lead to unexpected changes or surprises with respect to marine resource and fisheries management activities.

Climate

Both the 2015 EIS (Section 3.4.5) and the FEP (Section 4.1) detail the effects of climate change on the ecosystem. Climate change is expected to lead to substantial changes in physical characteristics and dynamics within the marine environment, with complex and interacting impacts on marine populations, fisheries, and other ecosystem services (Doney*, et al.* 2014; Harley*, et al.* 2006; Scavia*, et al.* 2002). Three major aspects of future climate change that will have direct effects on the CCE are ocean temperature, pH (acidity versus alkalinity) of ocean surface waters, and deepwater oxygen (2015 EIS).

4.4.2 Effects of the Alternatives

Ecosystem

Section 3.4.3 of the 2015 EIS, which we incorporate by reference, presents the fishery's impacts on the ecosystem. For example, the reduction of a predator population may allow a prey population to increase. Density-dependent interactions such as competition for habitat may decrease as the

population of one or both interacting species declines. The analysis was based on ecosystem simulation modeling of fleets, catch, ecosystem components, and ecosystem health, and demonstrated the complexities of these effects. For example, the analysis showed that:

- Bottom trawl fishing indirectly affected small shallow rockfish and zooplankton (krill), with their populations increasing due to the reduction in predation;
- Fixed gear fishing indirectly affected mesozooplankton (copepods), with their populations increasing due to removal of their predators; and
- Pacific whiting trawl fishing indirectly resulted in increases of small planktivores, large piscivorous flatfish, Dover sole, shortbelly rockfish, and shrimp, due to reduced predation by Pacific whiting.

The 2015 EIS analysis explored the effect on ecosystem attributes of successively adding fleets, and found that forage fish mortality increases with each fleet addition. We take proactive measures to protect marine resources when possible. For example, in 2016, we published an EA for comprehensive ecosystem-based management to protect unfished and unmanaged forage fish species. We amended all of the Council's FMPs to "bring Shared [ecosystem component] Species into the FMPs as EC species and to prohibit new directed commercial fishing in federal waters on them until the Council has had adequate opportunity to both assess the scientific information relating to any proposed directed fishery and consider potential impacts to existing fisheries, fishing communities, and the greater marine ecosystem" (81 FR 19054).

None of the Alternatives would result in a significant impact on the CCE beyond those disclosed in prior analyses because the Proposed Action is part of the adaptive management system that continuously optimizes fishery and ecosystem protections through stock and stock complex management, rebuilding plans, harvest specifications, and management measures.

Climate

NMFS "should consider (1) the potential effects of proposed actions on climate change as indicated by assessing the estimated greenhouse gas (GHG) emissions of the proposed action, and (2) the effects of climate change on proposed actions and their environmental impacts." (NOAA 2017). The Proposed Action does not regulate individual fishermen's decisions as to how far to travel and what engines to use. However, continued management of the fishery at the same level of intensity, as is the case with the Alternatives evaluated herein, does not entail measures substantially affecting GHG emissions due to fishing, because we do not expect the Proposed Action to substantially change the scale, intensity, degree, or location of fishing. External factors (fuel price, market conditions, oceanographic changes affecting the location of the target groundfish, etc.) are likely to have much greater influence on GHG emissions. Therefore, we do not discuss further the effects of emissions on climate change.

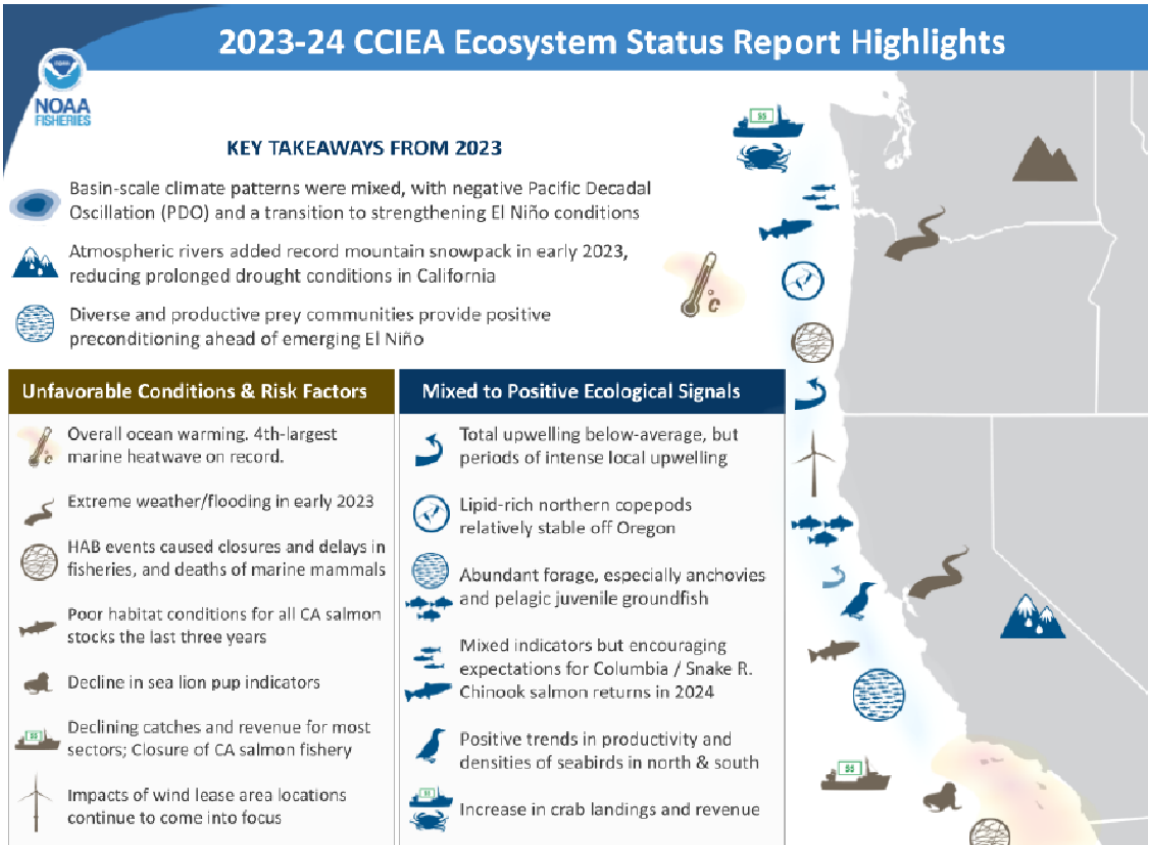

Figure 2. Highlights from the 2023-24 California Current Ecosystem Status Report (Source: Agenda Item H.1.a, CCIEA Team Report 1, March 2024)

The 2023-24 California Current Ecosystem Status Report notes mixed conditions occurred in 2023 (Figure 2). A strong El Niño began developing in late 2023, but the region is likely to return to neutral conditions before the next biennial management period.

These annual ecosystem status reports, regular stock assessments, and groundfish SAFE documents identify likely or plausible groundfish responses to a constantly evolving context that includes climate change. For example, the growth of splitnose rockfish was found to correlate with climate and environmental variables, oxygen thresholds throughout the slope waters that impact the vertical distribution of populations and the species composition of ecosystems, and climate change-driven distributional shift and/or the effect of large recruitments of shortbelly rockfish (2022 SAFE Document).

With this information, we adjust our HCRs and management measures to optimize the fishery while protecting stocks and stock complexes in response to BSIA. The biennial process allows us to consistently ensure that our fishery management decisions are adaptively managing for possible climate change impacts. While we do not know the cause of the current status of overfished species, the continuation of harvest specifications based on rebuilding plans are examples of this adaptive management process.

We do not anticipate any synthesis ecosystem impacts in addition to the individual effects described above.

4.5 Socioeconomics

4.5.1 Status/Affected Environment

We tier this section from the 2015 EIS Sections 3.2 (Affected Environment) and 4.10 (Long-term impacts), as updated by the 2023-24 EA Section 4.2 (Effects of the Proposed Action on the Socioeconomic Environment). Section 1 in the Socioeconomic Analyses for the 2025-26 Harvest Specifications and Management Measures (hereafter Socioeconomic Analysis) provides the most recent description of the landings and revenue in the commercial, tribal, and recreational groundfish fisheries.

Section 4.1 in the 2023-24 Annual California Current Ecosystem Status Report presents graphs showing trends in fishery revenue. Figure 3 shows shoreside (trawl and non-trawl) and at-sea (catcher-processor, mothership) groundfish landings and inflation-adjusted ex-vessel revenue since 2017, in a similar format to the graphs in the Ecosystem Status Report. The solid lines indicate one standard deviation above and below mean, represented by the dotted line. These figures show groundfish landings and inflation-adjusted revenue have declined over the past four bienniums (through 2023). As noted throughout this document, landings in the groundfish fishery are often substantially below the ACL for nearly all species. Landings and revenue are driven in large part due to market conditions, which may make it difficult to connect trends in landings and revenue specifically to a particular management measure.

Figure 3. (a) shoreside groundfish landings (mt), (b) shoreside inflation-adjusted revenue ($1,000), (c) at-sea landings (mt), and (d) at-sea inflation-adjusted revenue ($1,000), 2017-2023. (PacFIN comprehensive_ft, 4/22/2024)

Recreational fisheries in the EEZ are managed with federal limits and management measures decided in the PFMC process. Recreational fisheries primarily target groundfish using hook-and-line gear, although groundfish are also occasionally targeted by divers using spears. Recreational fisheries extend from shorebased modes (fishing off the beach or man-made structures, such as wharves and jetties) to boat-based modes, including private boats and charter/commercial passenger fishing vessels (CPFVs). This action only pertains to recreational fishing in the EEZ; therefore, all recreational fishing activity is conducted from vessels. Each State manages their respective recreational fisheries to Federally-specified State HGs for select stocks. Total recreational catch (landings plus estimated discard mortalities) counts against the non-trawl allocation (see Section 2.3.1.1).

A large proportion of angler fishing effort occurs in California, and particularly Southern California, as shown in Figure 4, which reproduces Figure 2 in the Socioeconomic Analysis. California accounted for 81 percent of coastwide bottomfish and Pacific halibut boat trips (private and charter), 2012-2023. San Diego, Orange, and Los Angeles counties accounted for 47 percent of coastwide trips during that period.

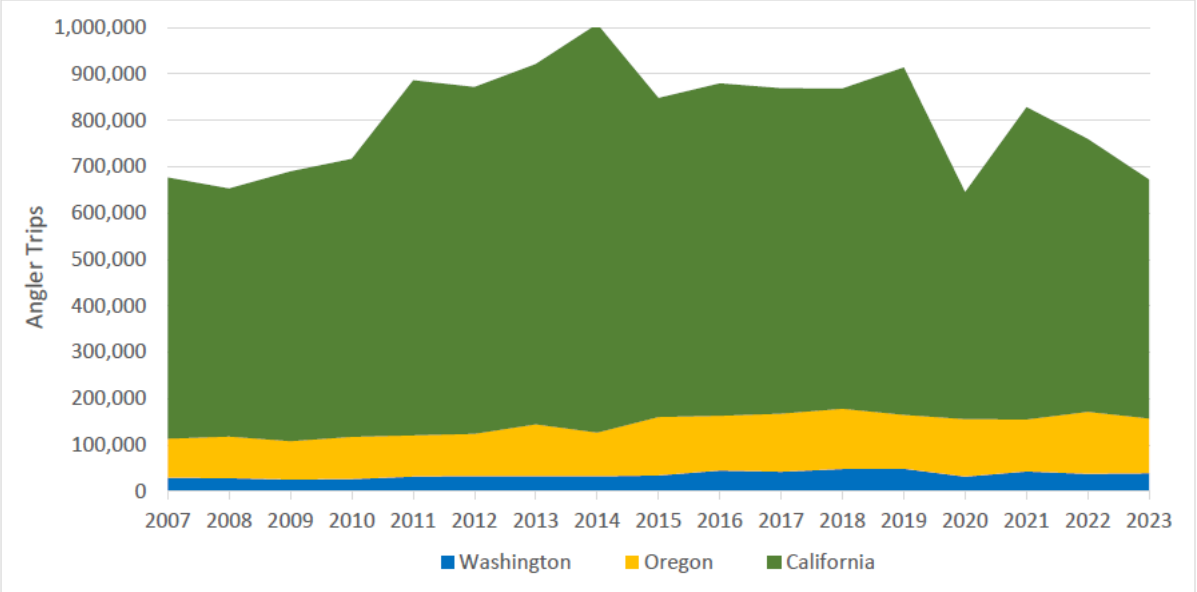

Figure 4. Total bottomfish plus Pacific halibut marine angler boat trips (private and charter) by state, 2007 to 2023. (Source: Figure 2 in Draft Socioeconomic Analysis, April 2024)

4.5.2 Effects of the Alternatives

In addition to NEPA and other applicable laws and executive orders, we have to comply with Executive Order 12866 *Regulatory Planning and Review*, which requires that we determine whether the action could be considered a significant regulatory action. Our Regulatory Impact Review (RIR) provides an analysis of the costs and benefits of the action and Alternatives (see Chapter 7 of this EA).

Under the E.O. 12866, an action may be considered significant if it has an annual effect on the economy of $200 million or more, or "adversely affect in a material way the economy, a sector of

the economy, productivity, competition, jobs, the environment, public health or safety, or State, local or tribal governments or communities."

NEPA does not have a federal-wide economic threshold of significance, nor has NMFS established one. The NEPA determination of significance is based on context and intensity (1978 NEPA Regulations) or affected environment and degree (2020 NEPA Regulations). For this EA, we have established the context as the groundfish fishery within the larger west coast fisheries and we evaluate the intensity or degree by determining the change in economic impacts across the Alternatives described in Chapter 2.

Section 2.1.1 in the Socioeconomic Analysis explains the methodology used by the GMT to estimate ex-vessel revenue and recreational fishing effort under the Alternatives. Catch or landings projection models are documented in Appendix C to the Council Analytical document. The GMT modeled four scenarios or Alternatives, which are mainly driven by management of recreational fisheries in California in response to the rebuilding ACL for California quillback rockfish. Of these, No Action, Alternative 1, and Alternative 2 align with the Alternatives evaluated in this EA. (Alternative 3 in the economic analysis generally aligns with Alternative 2 in this EA, but with a California quillback HCR that is not the Preferred Alternative, which is included in this EA as part of Alternative 2.).

For the California recreational fishery season structure, Alternative 1 in the Socioeconomic Analysis uses Option 3 from the Council Analytical Document, which is a complete closure of the fishery (see Table 7, p. 298). Alternative 2 in the Socioeconomic Analysis incorporates two scenarios driven by bracketing catch projections for the shoreside IFQ fishery. For the California recreational fishery, the Option 1 season structure in the Council Analytical Document is used (see Table 6, p. 297). Section 2.2 and 2.3 in the Socioeconomic Analysis detail the modeling approach, and requisite assumptions made by the GMT, for commercial and recreational fisheries, respectively. Table 1 in Section 2.1.1 relates each modeled scenario to the Alternatives evaluated in the Council Analytical Document.

As described in Section 2.4 of the Socioeconomic Analysis, commercial catch projections are converted into estimates of net revenue for each Alternative. Net revenue and recreational angler effort estimates are then used to estimate changes in income and employment at a sub-regional scale using the NWFSC input-output model (IOPAC) . These income and employment impacts combine direct, indirect, and induced economic effects resulting from projected changes in recreational angling, commercial fishing, fish processing, and related input supply and industry support activities. Impacts from commercial landings and recreational angling are reported separately but at the same sub-regional scale. Income and employment impacts from Tribal and at-sea Pacific whiting fisheries are not included in the income and employment impact estimates, because of limitations on data needed to inform the input-output model. Presumably, most of the income and employment impacts associated with at-sea whiting fisheries would accrue in the Seattle region and Washington and Oregon coastal communities; while impacts of shorebased tribal groundfish fisheries most likely accrue in Washington Coast communities. Another caution is that analysis of scenarios very different from current conditions (the No Action Alternative) can be biased because economic impact models are calibrated to current conditions.

The resulting commercial income impact estimates are summarized in Tables 11-13 in the Socioeconomic Analysis while recreational income impact estimates are summarized in Tables 14 and 16. The summed coastwide income impact estimates are shown in Table 2. As noted in the Socioeconomic Analysis, however, any "small differences between the Alternatives are likely well within the margin of error of the economic modeling." As shown in the table below, commercial fishery income for Alternative 1 and Alternative 2, are generally similar to each other, but greater than No Action and Alternative 4. With Alternative 4, we would expect some reduction in commercial fishery income impacts due to restrictions on commercial fisheries occurring within the area where the California quillback rockfish stock occurs. Nearshore commercial fisheries off California would be the most affected fishery sector.

Table 2. Summary of coastwide commercial and recreational fishery income impacts (millions of dollars) reported in the Draft Socioeconomic Analysis. (Note that here the reported estimates are rounded to the closest million dollars while in the Draft Socioeconomic Analysis they are rounded to the closest $100,000.)

Fishery Sector	No Action (2023)	Action Alternative 1	Action Alternative 2	Action Alternative 4
Commercial	$118	$188	$198-199	135[7]
Recreational	$151	$230	$230	$18.3

Most fishery effort and landings information for both commercial and recreational groundfish fisheries is not readily differentiated between activity in the EEZ (and relevant to this action) and state waters (outside the scope of this action). Because of this inability to split the data, all economic impacts provided in this EA/RIR/RFAA/MSA and the underlying analyses and documents that support this analysis are overestimates of the actual impacts of the Alternatives. Additionally, Table 2provides a coastwide summary of commercial and recreational income impacts anticipated from the Alternatives, rather than a state-by-state analysis. Different stocks drive the fishing economy off the West Coast states; for example, sablefish (for which ACLs have increased significantly under all Alternatives) is the economic driver off Washington and Oregon. Accordingly, the anticipated socioeconomic impacts of the Alternatives vary by state, with the California quillback rockfish restrictions having particular impact in California and within recreational fishing sectors.

For commercial fisheries, the No Action Alternative uses 2023 recorded landings and resulting ex-vessel revenue for modeling purposes. Likewise, 2023 recreational fishing effort for groundfish and Pacific halibut angler trips was used for modeling purposes. The Alternatives are compared to the No Action Alternative levels. While commercial income impacts are reported by sub-region, differences across commercial fishery sectors can be deduced, at least comparatively, from net revenue estimates reported in Section 2.4, Table 11-13 of the Socioeconomic Analysis. Resulting impacts under the Alternatives are presented using No Action as a baseline.

In terms of commercial fishery sectors, the nearshore sectors show negative net revenue under the No Action Alternative, which is carried across the Alternatives for the nearshore segment of this fishery (Section 2.4, Section 2.4, Table 8-10 of the Socioeconomic Analysis). In contrast, the limited entry fixed gear and non-nearshore sectors show substantial increases ($16.2 and $8.2

[7] derived from subtracting all California port estimated income from total coastwide income estimates, Section 2.4, Section 2.4, Table 8-10 of the Draft Socioeconomic Analysis

million, respectively) across the Alternatives. This reflects the substantial increase in the sablefish ACL under the default HCR and the assumption in the projection models that these sectors' proportion of the ACL is fully realized in catches. (Market conditions and other factors are likely to belie this assumption.) The Total Allowable Catch (TAC) for Pacific whiting is set annually outside of this harvest specifications process so, in the Socioeconomic Analysis, the 2025-26 TAC and allocations are assumed to be the same as 2023. This means that net revenue does not vary across the No Action and Alternatives.

As noted, the increase reflected in Table 2 of personal income from No Action to Alternative 1 and Alternative 2 is likely derived from the increase in sablefish available to the commercial fishery. The table simultaneously recognizes the impact of rebuilding strategies for California quillback rockfish under these Alternatives in the decreases in income derived from commercial and recreational fishing under Alternative 4. Negative economic impacts from the California quillback rockfish rebuilding strategies under consideration are likely to be confined to California only, as Washington and Oregon fisheries do not interact with this stock. The substantial decline in personal income from commercial and recreational fishing under Alternative 4, as compared to the other Alternatives in the table, reflects the complete closure of all California groundfish fisheries under the F = 0 rebuilding strategy (Table 2). The recreational fishing decline is particularly significant because, as described above, a large proportion of angler fishing effort on the U.S. West Coast occurs in California, and particularly Southern California.

4.5.3 Synthesis

Alternative 1 and Alternative 2 (the Preferred Alternative) are estimated to produce higher commercial fishery income and employment compared to the No Action Alternative. Alternative 1 and Alternative 2 are estimated to produce comparable recreational income impacts, which are also greater than No Action. Alternative 4 is estimated to result in a substantial decline in recreational fishery income, as well as adverse economic impacts to commercial fishing in California, because California quillback rockfish catch would be prohibited under the F=0 HCR. For most commercial fishery sectors on the West Coast, income impacts resulting from Alternative 4 are likely to be broadly similar to Alternative 2, except for those fisheries occurring in the area where the California quillback rockfish stock is distributed, which would most likely be the nearshore fixed gear fishery off California. As noted previously, however, the majority of this fishery activity, and therefore the associated income impacts, occurs in state waters and is outside the scope of this action.

For most groundfish stocks and stock complexes, catch has historically been less than the ACL. If similar patterns in commercial fishery landings and revenue and recreational fishery angler effort persist in the 2025-26 biennium, actual personal income and employment impacts are likely to be lower than estimated in the Socioeconomic Analysis. As shown in Figure 3 above, commercial fishery inflation-adjusted ex-vessel revenue has been declining over several previous bienniums. Recreational fishery angler effort occurs predominantly in California and Figure 4 suggests declining effort in California since 2014. Therefore, personal income and employment is likely to be lower in 2025-26 as compared to previous years. Moreover, landings and revenue are driven in large part due to market conditions, which may make it difficult to connect trends in landings and revenue to a particular management measure.

5. Cumulative Effects

5.1 Analysis Approach

This biennial analysis, tiered from the 2015 EIS (Section 4.15), uses the same parameters as the cumulative effects analysis in the 2023-2024 EA. The EEZ constitutes the geographic scope, the temporal scope for past and present actions begins with the 1982 implementation of the PCGFMP, and future actions are limited to the 2025-26 period, because we will evaluate the effects of proposed actions for each future biennium as they are developed through Council decision making.

As in previous cycles, this analysis does not identify the specific effects of past actions because we cannot attribute biological, physical, or socioeconomic effects to a specific fishery or non-fishery action across the entire EEZ. We continuously manage the fishery to optimize harvest while minimizing adverse effects on environmental resources. Collectively, the impacts of past actions within our adaptive management system have contributed to the rebuilding of species, management within HGs, and continued compliance with ESA ITSs, while accounting for climate change, other environmental trends, and other anthropogenic actions within the EEZ.

5.2 Reasonably Foreseeable Future Actions

As part of our adaptive management system, we are continuously considering and analyzing potential improvements to the fishery. Section 4.15.4 of the 2015 EIS describes the broad range of fishery management and non-fishery management actions that we consider. The most recent Groundfish Workload Planning report lists possible upcoming actions. As appropriate, NEPA analyses associated with each of these actions will take into account the effects of harvest specifications and management measures for the 2025-26 biennium.

5.3 Incremental Cumulative Impact

The incremental contribution of the Proposed Action to the cumulative impacts on the resources evaluated in this EA/RIR/RFAA/MSA will be minor, as described below.

5.3.1 Managed Fish

As we discussed in Section 4.1, we adaptively manage all stocks and stock complexes within a system that periodically assesses stocks, monitors catch, adjusts management measures (catch controls) to keep projected catch within the catch limits, and adjusts management measures to maximize attainment within the catch limits. This adaptive management system does not operate within a vacuum. It accounts for all other effects on the managed fish stocks and stock complexes, including, but not limited to, climate change effects, bycatch in other fisheries, effects on groundfish essential fish habitat, and other sources of mortality.

Therefore, for the 2025-26 biennium, when combined with the effects of past, present, and reasonably foreseeable future actions, there would not be a significant cumulative impact from the Proposed Action on the managed fish.

5.3.2 Protected Resources

As described in Section 4.2, several species (e.g., humpback whales and some stocks of Pacific salmon) that interact with the groundfish fisheries are listed under the ESA. The Proposed Action, when combined with the effects of past, present, and reasonably foreseeable future actions, would not change the trajectory of any of these protected species and the incremental effect of the action, given the ITS constraints and constant monitoring discussed in Section 4.2, would be minimal. We do not anticipate any difference in the incremental contribution or the cumulative impacts across the Alternatives.

5.3.3 Essential Fish Habitat

Section 4.15.4.3 of the 2015 EIS summarizes past, present, and reasonably foreseeable future actions that may impact groundfish EFH. The 2020-2021 EA (Sections 5.2.2 and 5.4.1) summarized the impact of the Pacific Coast Groundfish Trawl Changes and Amendment 28. Those impacts, both beneficial and adverse, are expected to continue into the future.

The Proposed Action and Alternatives, when coupled with ongoing and reasonably foreseeable future actions that are not speculative, would not result in any cumulative significant impacts to EFH. The incremental contribution of the Alternatives would be negligible and not discernable across the Alternatives.

5.3.4 Ecosystem

The incremental contribution of the Proposed Action to cumulative ecosystem impacts is negligible. Overall impacts from the Proposed Action and Alternatives, when combined with the effects of past, present, and reasonably foreseeable future actions, would not result in significant cumulative impacts on the ecosystem..

5.3.5 Socioeconomics

As we discussed in Section 4.1, and above for Managed Fish, we adaptively manage all stocks and stock complexes within a system that, among other things, adjusts management measures to maximize attainment within the catch limits. This adaptive management system does not operate within a vacuum; it accounts for other effects on the socioeconomic environment, including market interruptions and stability, available harvest and mortality of target and non-target stocks, dynamics with and status of other fisheries (such as salmon, etc.), and other social and economic factors.

Therefore, for 2025-26 and beyond, when combined with the effects of past, present, and reasonably foreseeable future actions that are not speculative, there would not be a significant cumulative socioeconomic impact resulting from the Proposed Action.

6. Regulatory Impact Review

The President of the United States signed E.O. 12866, "Regulatory Planning and Review," on September 30, 1993. This order established guidelines for promulgating new regulations and reviewing existing regulations. The E.O. covers a variety of regulatory policy considerations and establishes procedural requirements for analysis of the benefits and costs of regulatory actions. The E.O. stresses that in deciding whether and how to regulate, agencies should assess all of the costs and benefits of available regulatory alternatives. Based on this analysis, they should choose those approaches that maximize net benefits to the Nation, unless a statute requires another regulatory approach.

NMFS satisfies the requirements of E.O. 12866 through the preparation of a Regulatory Impact Review (RIR). The RIR provides a review of the potential economic effects of a proposed regulatory action in order to gauge the net benefits to the Nation associated with the action. The analysis also provides a review of the problem and policy objectives prompting the regulatory proposal and an evaluation of the available alternatives that could be used to solve the problem.

The RIR provides an assessment that can be used by the Office of Management and Budget to determine whether the action could be considered a significant regulatory action under E.O. 12866. E.O. 12866 defines what qualifies as a "significant regulatory action" and requires agencies to provide analyses of the costs and benefits of such action and of potentially effective and reasonably feasible alternatives. An action may be considered significant if it is expected to:

- Have an annual effect on the economy of $100 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local or tribal governments or communities;
- Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;
- Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or
- Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in E.O. 12866.

Statement of Problem:

We need to respond to new scientific data and information about the stocks and stock complexes and the needs of fishing communities, to provide additional tools to ensure catch limits are not exceeded and to afford additional fishing opportunities where possible.

Description of Management Goals and Objectives:

A description of management goals and objectives is above in Section 1.2. In brief, The proposed action is needed to conserve and manage Pacific Coast groundfish fishery resources. This proposed

action will set catch limit specifications for 2025-26 consistent with existing or revised harvest control rules for all stocks, and established management measures designed to keep catch within the appropriate limits. The harvest specifications are set consistent with the optimum yield (OY) harvest management framework described in Chapter 4 of the FMP. The management objectives of this action are: to prevent overfishing, to rebuild overfished stocks, to ensure conservation, to facilitate long-term protection of essential fish habitat (EFH), and to realize the full potential of the nation's fishery resources (MSA §2(a)(6)). This rule is authorized by 16 U.S.C. § 1854–55 and by the FMP.

6.1 Description of Fisheries and Other Affected Entities:

A detailed description of the fishery and affected entities is available in the SAFE document (PFMC, 2024d). The SAFE includes a summary of historical harvests, a description of the management and economic characteristics of the commercial, tribal, and recreational fisheries, and a description of the relevant commercial port communities. The SAFE is incorporated by reference.

Federally managed Pacific groundfish fisheries occurring within the EEZ off the coasts of Washington, Oregon, and California establish the geographic context for the action. West Coast communities engaged in these fisheries are also part of the context. The number of vessels participating in the non-tribal commercial fishery are shown in Table 1. Additionally, all three states have an active charter-for-hire/Commercial Passenger Fishing Vessels (CPFV) or charter boat fishery engaged in recreational groundfish fishing. The most recent estimated numbers of active CPFV/Charter vessels that took at least one groundfish trip is 357 and are shown in Table 2 as reported in Agenda Item F.6, Attachment 2, June 2024 –New Management Measure 9E.

Table 1.Counts of participating non-tribal vessels for groundfish fishery sectors in 2023. Total values for Whiting, and IFQ Non-whiting aggregate sectors equal the sum of their subsectors, not true for LEFG and OA totals, reflecting the overlap in participation among subsectors for these cases. Sources: PacFIN, APEX, and NorPAC, June, 2023

Sector	Number of Vessels in 2023
WHITING - TOTAL	**45**
Catcher-Processor	17
Mothership	4
MS Catcher Vessel	10
Shoreside	27
IFQ NON-WHITING - TOTAL	**68**
Mid-water trawl	24
Bottom trawl	44
Gear Switching	13
Non-Trawl Total	**423**
Limited Entry	105
Nearshore	256
OA Fixed Gear	403
Sum	**536**

Table 2. Number of Charter/Commercial Passenger Fishing Vessels (CPFV) with at least one groundfish trip by state in 2023. Source Groundfish Management Team

State	Number CPFV/Charter Boats
Washington	34
Oregon[8]	69
California	254
Sum	**357**

6.2 Methods Used for Impact Analysis

The economic impacts analysis (Section 4.5) describes economic impacts, both by applying alternative HCRs (for Dover sole, rex sole, shortspine thornyhead, and California quillback rockfish) and management measures. The HCRs for all remaining stocks and stock complexes are consistent across all Alternatives. The alternatives used in the quantitative analysis in the Council Analytical Document and this RIR have slight differences, but are largely comparable to the Alternatives in the EA, as described in more detail below.

For simplicity, fishery and community economic impacts in the following sections are displayed as the average of 2025-26, unless otherwise specified. Although the totals during the different years of the management cycle may be somewhat different in some cases, the relative distribution of economic effects and inferences regarding rankings of the Alternatives will not change. The 2015 EIS included detailed descriptions of the models and data used to project socioeconomic impacts. Appendix 1to the 2025-26 Council Analytical Document (PFMC, 2024a) details the quantitative economic models used for that analysis. General information about the methodology for assessing impacts in the EA, including socioeconomic impacts, can be found in Chapter 3.

The following sections summarize and compare expected economic effects for each of the Alternatives. All monetary values are in 2023 dollars. The Socioeconomic Analysis which provides the following data is available on the PFMC June Briefing Book (PFMC 2024c) and is incorporated by reference.

6.3 Description of the Alternatives

A complete description of the Alternatives is available in Section 2.4. An analysis of the economic effects expected to result from the action is provided in Section 4.5 and additional detail is provided in PFMC 2024c[9]. A detailed analysis of the expected effects of the Alternatives, relative to the No Action Alternative, is available above in Section 4.3. The following sections summarize that discussion and compare expected economic effects of the Alternatives. All monetary values are in 2023 dollars.

In the commercial and recreational fishery impacts sections below, No Action, Alternative 1 (default HCR), and Alternative 4 are analyzed. While Alternative 3 (California Department of Fish

[8] There is not an Oregon license or tracking of "six pack" or party fishing vessel businesses.
[9]

and Wildlife option) for California quillback rockfish was considered by the Council, it was removed from consideration detailed in the Quillback Rebuilding Plan Analysis and is described in Section 2.4.

A comparison of the No Action Alternative, Alternative 1, and the Preferred Alternative where alternative HCRs are proposed to be adopted for Dover sole, rex sole, shortspine thornyhead and California quillback rockfish is shown in Table 3 below. A comparison of the No Action Alternative, Alternative 1 (default HCRs), and the Preferred Alternative for all stocks and stock complexes where default HCRs are proposed to be adopted[10] is shown in Table 4. The differences in ACLs between 2025 and 2026 are minor and are not shown here, but are detailed in PFMC, 2024a.

Table 3. Comparison of the No Action (2024), Alternative 1 (Alt 1), and Final Preferred Alternative (FPA) annual catch limits (ACLs) for stocks where alternative harvest control rules were considered by the Council, rounded to the nearest whole metric ton and percent (%) change for 2025 ACLs.

Species/Stock Complex	No Action (2024, mt)	Alt 1 ACL (2025, mt)	Alt1 % Change from No Action a/	FPA ACL (2025, mt)	FPA % Change from No Action a/	FPA % Change from Alt 1 a/
Dover sole	50,000	50,000	0%	47,424	-5.2%	-5.2%
Rex sole	1,437	3,967	+176.1%	4,550	+216.6%	+14.7%
Other Flatfish Complex b/	4,862	7,392	+52%	7,974	+64%	+7.9%
Shortspine thornyhead	2,078	711	-65.8%	824.8	-60.3%	+16%
CA quillback rockfish	1.76	1.26	-13.6%	1.3	-26.1%	+3.2%

Source: Agenda Item F.6, Attachment 2, June 2024;
a/ Percent change was calculated using the values in PacFIN, then rounded to the nearest whole percent.
b/ Rex sole is managed under the Other Flatfish Category. Changes to a component stock ACL likewise change the complex ACL, hence, the Other Flatfish Complex ACL is shown here for reference..

Table 4. Comparison of No Action and Final Preferred Alternative (FPA) annual catch limit (ACL) values for stocks where the Council adopted Alternative 1 default harvest control rules as their preferred.

Stock/Complex	Area	No Action ACL (2023, mt)	FPA ACL (2025, mt)	% Change No Action to FPA 2025
Yelloweye Rockfish	CW	66	56	-15.2%
Arrowtooth Flounder	CW	18,632	11,193	-39.9%
Big Skate	CW	1,320	1,224	-7.3%
Black Rockfish	WA	290	245	-15.5%
Black Rockfish	CA	334	234	-29.9%
Bocaccio	S of 4010	1,842	1,681	-8.7%

[10] Except for rex sole, which is part of the other flatfish complex. The ACL contribution cannot be decoupled from the ACL to show an accurate representation of the change between alternatives.

Stock/Complex	Area	No Action ACL (2023, mt)	FPA ACL (2025, mt)	% Change No Action to FPA 2025
Cabezon	CA	182	162	-11.0%
Cabezon/Kelp Greenling	WA	20	15	-25.0%
Cabezon/Kelp Greenling	OR	185	177	-4.3%
California Scorpionfish	CW	262	244	-6.9%
Canary Rockfish	CW	1,284	571	-55.5%
Chilipepper	S of 4010	2,183	2,815	28.9%
Cowcod	S of 4010	80	77	-3.8%
Darkblotched Rockfish	CW	785	754	-3.9%
English Sole	CW	9,018	8,884	-1.5%
Lingcod	N of 4010	4,378	3,631	-17.1%
Lingcod	S of 4010	726	768	5.8%
Longnose Skate	CW	1,708	1,616	-5.3%
Longspine Thornyhead	N of 3427	2,295	2,050	-10.7%
Longspine Thornyhead	S of 3427	725	648	-10.7%
Pacific Ocean Perch	N of 4010	3,573	3,328	-6.9%
Petrale Sole	CW	3,485	2,354	-32.5%
Sablefish	N of 36	8,486	28,688	238.1%
Sablefish	S of 36	2,338	7,857	236.1
Spiny Dogfish	CW	1,456	1,361	-6.5%
Splitnose	S of 4010	1,592	1,508	-5.3%
Widow Rockfish	CW	12,624	11,237	-11.0%
Yellowtail Rockfish	N of 4010	5,666	6,241	10.1%
Pacific Cod	CW	1,600	1,600	0.0%
Starry Flounder	CW	392	392	0.0%
Blue/Deacon/Black Rockfish	OR	597	423	-29.2%
Nearshore Rockfish North	N of 4010	93	88	-5.4%
Nearshore Rockfish South	S of 4010	887	932	19.4%
Other Fish	CW	223	223	0.0%
Other Flatfish	CW	4,862	7,974	52.0%
Shelf Rockfish North	N of 4010	1,283	1,392	8.5%
Shelf Rockfish South	S of 4010	1,469	1,465	-0.3%
Slope Rockfish North	N of 4010	1,540	1,488	-3.4%
Slope Rockfish South	S of 4010	701	693	-1.1%

6.4 Commercial Fishery

6.4.1 Ex-vessel Revenue Impacts

Projected annual average ex-vessel shoreside sector revenue (including shoreside whiting revenues) under the Preferred Alternative is $193.9 million, approximately $67 million more than No Action, and approximately $7.8 million more than Alternative 1, and equivalent to Alternative 2. Projected ex-vessel at-sea revenue remains constant under the Alternatives at $49.8 million. Non-whiting trawl revenue under Alternative 1 is the same as No Action ($28.5 million), but increases by approximately $8 million under Alternatives 2 and 4. Revenues in the Tribal groundfish sector (including shorebased whiting) are projected to be the same under the Alternatives at approximately $3.6 million. Estimated ex-vessel revenue impacts are the highest, quantitatively, under the Alternative 2, which is the most similar in terms of harvest specifications and management measures to the Preferred Alternative.

The primary driver of the predicted increase to ex-vessel revenue is likely sablefish. This stock's ACL will increase threefold under the Alternatives. The localized impact to California ports due to California quillback rockfish rebuilding parameters, under both Alternative 2 and Alternative 4, is masked by the increase in available sablefish off the West Coast. California quillback rockfish is primarily harvested by the nearshore open access (OA) fleet, which is mostly outside the jurisdiction and scope of this action. The estimated ex-vessel revenue for the OA sector is the same under Alternative 1 and Alternative 2, both of which allow for some OA opportunities, at $3.8 million. However, under Alternative 4, which would close groundfish fisheries in the EEZ off California, the estimated ex-vessel revenue decreases to $1.6 million. This decline is an overestimate, however, because of the inability to separate out impacts due to state waters fishing. Accordingly, the actual expected economic decline due to changes in fishing in the EEZ is much less. Additionally, the $1.6 million amount remaining under Alternative 4 is likely to represent the Oregon OA income only, as Washington does not allow commercial nearshore fishing. The Preferred Alternative is the same as Alternative 2 in terms of ex-vessel revenue.

While the Preferred Alternative allows more flexibility and may reduce the chances that inseason actions would be needed to keep catch within ACLs and prevent overharvest, uncertainty regarding future actions by the Council is inherent to understanding the final outcome of these potential impacts. Table 5 summarizes the above information.

6.4.2 Estimated Vessel Net Revenue (*Crew and Captain Wages*)

For all Alternatives, combined estimated coastwide net vessel revenue ranges from $15.3 million under No Action to a high of $41 million under the Preferred Alternative. This increase could, in part, be due to increases in sablefish and rex sole (managed in the Other Flatfish Complex) quotas, as well as other increases in catch limits resulting from the application of default HCRs for sablefish and Alternative 2 HCRs for rex sole – Other Flatfish Complex (Table 4). The projected range of estimated vessel net revenue could also be large due, in part, to the challenges in predicting how the fishery will capitalize on the increase in the sablefish ACL and the variability of the price per pound of landed fish.

In the non-whiting trawl and non-trawl IFQ fishery, net vessel revenue is lowest (about $6.1m) under Alternative 1, which is the same as No Action, but is approximately $8.7 million under the Preferred Alternative. The limited entry fixed gear (LEFG) sector shows the most change between

No Action and the Alternatives. The Alternatives are projected to be $22.2 million, which is $16.2 million greater than No Action ($6.0 million). This increase from No Action may be, in part, due to the large increase in the sablefish ACL (Table 4).

Income in the nearshore OA fishery is static under all Alternatives at $0.4 million, which is lower than No Action by approximately $0.1 million. It is reasonable to assume the restrictions necessary to achieve rebuilding the stock of California quillback rockfish will limit, if not completely restrict, nearshore fishing opportunity off much of California in the 2025-26 biennium. Non-nearshore OA is a static $7.6 million across all Alternatives, which is approximately $8.2 million greater than No Action. Overall, revenues are highest under the Preferred Alternative, at approximately $40.4 million coastwide. Table 5 summarizes the above information.

6.4.3 Estimated Coastal Region Income Impacts

Coastwide estimated personal income impacts from commercial groundfish fishing are estimated to range from $117.9 million under No Action to $198.9 million under the Alternative 2. All community groups are estimated to see positive income impacts under all alternatives, averaging approximately $80 million over No Action, except for under Alternative 4 (F = 0). Alternative 4 assumes a complete groundfish closure off of California, however, even in that instance, estimated positive income impacts are greater than No Action by approximately $37.7 million. Projected positive income impacts in Washington, Oregon, and California ports are estimated to be approximately $29 million, $105.9 million, and $44.8 million, respectively, under the Preferred Alternative. However, as discussed above for vessel net revenue, the income impacts in the non-whiting trawl and non-trawl IFQ fishery are likely to be different than predicted, due to various factors leading to an underestimate of the income impacts that the higher sablefish ACLs may yield. Table 5 summarizes the above information.

Overall, the increases in regional income impacts are likely driven by the high sablefish ACLs, with the adverse income impacts that rebuilding the California quillback rockfish stock will cause likely overshadowed by the positive community impacts predicted to result from higher sablefish ACLs. As discussed in the California Quillback Rebuilding Plan, Alternative 4 (F = 0) would likely result in disastrous short-term economic impacts in California's fishing communities, with the estimated loss in California regional income projected at approximately -$52 million annually, when compared to the Preferred Alternative.

6.4.4 Estimated Coastal Region Employment Impacts

Coastwide estimated employment impacts from commercial groundfish fishing are estimated to range from 1,688 jobs under No Action to nearly 3,000 jobs under the Preferred Alternative. Under all Alternatives, jobs are projected to increase in all port communities by at least 1,200 positions. The Preferred Alternative has the highest employment estimates relative to No Action. However, the overfished status of California quillback rockfish creates uncertainties that are unquantifiable in California ports, as impacts to employment could be higher or lower based on the ability of a given port to shift effort to other groundfish targets. Table 5 summarizes the above information.

Table 5 Comparison table of No Action to the Preferred Alternative for sector-combined coastwide estimated economic effects in the commercial fishery of the Alternatives ($2023 million dollars) and estimated number of jobs (employment impact) between No Action and the preferred alternative.

	No Action (2023)	Preferred Alternative
Ex-Vessel Revenue	$126.8	$193.9
Revenue (Wages)	$13.3	$41
Income Impacts	$117.9	$197.8
Employment Impact	1,688	2,946

6.5 Recreational Fisheries

6.5.1 Estimated Recreational Effort Impacts

The coastwide recreational effort is projected between a low of 116.7 thousand angler trips under Alternative 4 to a high of 1.1 million angler trips under the Preferred Alternative (Table 6). The Preferred Alternative is most similar to Alternative 1 in terms of recreational effort and also projects approximately 1.1 million angler trips coastwide. It is important to note these projections may be overestimates, particularly off the coast of California, where recreational groundfish fishing seasons are shorter and have more restrictive bag limits under the Preferred Alternative due to the need to achieve rebuilding of California quillback rockfish.

Alternative 4 is projected to have a drastic impact on California ports as, under Alternative 4, the groundfish fishery would be closed in the EEZ off of California. California has the highest recreational effort of the three West Coast states. Alternative 4 would therefore account for a loss of 0.9 million angler trips, or an 84.4 percent decrease in recreation groundfish effort coastwide.

6.5.2 Estimated Recreational Groundfish Fisheries Income Impacts

The coastwide recreational fishing income impacts are projected to range from $18.8 million under Alternative 4 to $230 million under the Preferred Alternative as well as Alternative 1 and Alternative 2. Alternative 4 is projected to be 92 percent lower than the Preferred Alternative as under this Alternative groundfish fishery would be closed in the EEZ off of California.. These projections may be overestimates, particularly off the coast of California for the reasons stated above relating to Effort Impacts. The Preferred Alternative allows for a recreational groundfish season in the EEZ off of California, albeit with pronounced time/area restrictions; whereas, Alternative 4 provides no opportunity for recreational fisheries in the EEZ off of California. The lack of resolution in demographics of these small businesses means the potential income impact estimates are highly uncertain (Table 6).

6.5.3 Estimated Recreational Groundfish Fisheries Employment

The coastwide recreational fishing employment impacts projections range from 596 jobs under Alternative 4 to 3,940 jobs under the Preferred Alternative. Alternative 4 is projected to be 92 percent lower than the Preferred Alternative, with respect to recreational groundfish fisheries employment, as under this Alternative groundfish fishery would be closed in the EEZ off of California. These projections may be overestimates, particularly off the coast of California, for the

reasons stated above. The Council heard public testimony from some charter vessel owners and operators that shortened seasons may reduce their employment potential, meaning reductions in seasonal work for crew. For the same reasons described above, relating to Income Impacts, these potential employment impact estimates are highly uncertain (Table 6).

Table 6. Comparison table of No Action (2023) and the Council's Preferred Alternative sector-combined coastwide estimated recreational groundfish effort and economic effects in the recreational fishery of the Alternatives ($2023 million dollars) and estimated number of jobs (employment impact)

	No Action (2023)	Preferred Alternative
Effort impacts (1,000s of trips)	728.9	1,070
Income Impacts ($millions)	$151.4	$230
Employment Impact (#)	2,669	3,940

6.6 Summation of the Alternatives with Respect to Net Benefit to the Nation

Potential costs from the Proposed Action would be unlikely and only in the event of unexpected closures or management restrictions on groundfish sectors would they be expected to accrue. Closures and restrictions not analyzed to date are not anticipated by either fishery managers or participants, so long as participants monitor their catch inseason and continue to use co-op structures and information sharing to limit bycatch. The harvest specifications, routine management measures, and other new management measures contained in this Proposed Action are not expected to result in additional regulatory costs for any directly regulated entity. Specifically, there is no direct impact on compliance, reporting, or recordkeeping costs; changes in market competition between entity types/sizes; taxes or fees required; or other administrative costs associated with this rulemaking. Estimated benefits may vary by entity type and size, as defined and described in the Regulatory Flexibility Act Considerations in Chapter 7.

Preliminary analysis indicates the Preferred Alternative is expected to provide an estimated total of approximately $328 million in income impacts and nearly 7,00000 jobs coastwide (Table 7).

Table 7. A comparison of the No Action and the Preferred Alternative (PPA) for the summarized estimated income impacts (2023 $ millions), employment impacts (number of jobs) for coastwide commercial and recreational fisheries combined.

	No Action (2023)	PPA
Comm. Income Impacts ($millions)	$118	$198
Rec. Income Impacts ($millions)	$151	$230
Total Income Impacts ($millions)	**$269**	**$328**
Comm. Employment Impacts (#thousands)	1,688	2,946
Rec. Employment Impacts (#thousands)	2,669	3,940
Total Employment Impacts (#thousands)	**4,357**	**6,931**

7. Regulatory Flexibility Act

For any rule subject to notice and comment rulemaking, the Regulatory Flexibility Act (RFA) requires Federal agencies to prepare, and make available for public comment, both an initial and final regulatory flexibility analysis, unless the agency can certify that the proposed and/or final rule will not have a "significant economic impact on a substantial number of small entities." These analyses describe the impact on small businesses, non-profit enterprises, local governments, and other small entities as defined by the RFA (5 U.S.C. § 603). This analysis is to inform the agency and the public of the expected economic effects of the alternatives, and aid the agency in considering any significant regulatory alternatives that will accomplish the applicable objectives and minimize the economic impact on affected small entities. The RFA does not require the alternative with the least cost or with the least adverse effect on small entities be chosen as the Preferred Alternative.

The RFA considerations only address the effects of a proposed rule on entities subject to the regulation (i.e., entities to which the rule will directly apply) rather than all entities affected by the regulation, which will include entities to which the rule will indirectly apply.

Part 121 of Title 13, Code of Federal Regulations (CFR), sets forth, by North American Industry Classification System (NAICS) categories, the maximum number of employees or average annual gross receipts a business may have to be considered a small entity for RFAA purposes. See 13 C.F.R. § 121.201. Under this provision, the U.S. Small Business Administration established criteria for businesses in the fishery sector to qualify as small entities. Standards are expressed either in number of employees, or annual receipts in millions of dollars. The number of employees or annual receipts indicates the maximum allowed for a concern and its affiliates to be considered small (13 C.F.R. § 121.201).

- A fish and seafood merchant wholesaler (NAICS 424460) primarily engaged in servicing the fishing industry is a small business if it employs 100 or fewer persons on a full time, part time, temporary, or other basis, at all its affiliated operations worldwide.

- A business primarily engaged in Seafood Product Preparation and Packaging (NAICS 311710) is a small business if it employs 750 or fewer persons on a full time, part time, temporary, or other basis (13 CFR § 121.106), at all its affiliated operations.

In addition to small businesses, the RFA recognizes and defines two other kinds of small entities: small governmental jurisdictions and small organizations. A small governmental jurisdiction is any government or district with a population of less than 50,000 persons. A small organization is any not-for-profit enterprise that is independently owned and operated and not dominant in its field, while. (5 U.S.C. § 601). There is no available guidance beyond this statutory language regarding how to determine if non-profit organizations are "small" for RFA purposes. The Small Business Administration (SBA) does have provisions for determining whether a business is "small" for RFA purposes and whether it is "dominant in its field," and those provisions can inform how NMFS classifies non-profit organizations for the purposes of RFA analyses in rulemaking.

After consultation with the SBA, NMFS has decided to use SBA's size standards for non-profit organizations to determine whether a non-profit organization is "small" and, in turn, whether it is "dominant in its field," to apply the statutory definition of a "small organization" in practice:

A nonprofit organization is determined to be “not dominant in its field” if it is considered “small” under SBA size standards:

- Environmental, conservation, or professional organizations (NAICS 813312, 813920): Combined annual receipts of $19.5 million or less.

- Other organizations (NAICS 813319, 813410, 813910, 813930, 813940, 813990): Combined annual receipts of $13.5.5 million or less.

The SBA size standard for Subsector 487, “Scenic and Sightseeing Transportation, Water”, which includes charter fishing, is $14 million in gross receipts (13 CFR § 121.201).

Provision is made under SBA’s regulations for an agency to develop its own industry-specific size standards after consultation with Advocacy and an opportunity for public comment (see 13 CFR 121.903(c)). NMFS has established a small business size standard for businesses, including their affiliates, whose primary industry is commercial fishing (80 FR 81194, December 29, 2015). This standard is only for use by NMFS and only for the purpose of conducting an analysis of economic effects in fulfillment of the agency’s obligations under the RFA.

NMFS' small business size standard for businesses, including their affiliates, whose primary industry is commercial fishing is $11 million in annual gross receipts. This standard applies to all businesses classified under North American Industry Classification System (NAICS) code 11411 for commercial fishing, including all businesses classified as commercial finfish fishing (NAICS 114111), commercial shellfish fishing (NAICS 114112), and other marine fishing (NAICS 114119) businesses. (50 C.F.R. § 200.2; 13 C.F.R. § 121.201).

7.1 Description of why action by agency is being considered

The reasons why this agency action is being considered are explained in the “Statement of the Problem” Section of the RIR and in Chapter 1, Section 1.2 titled “Purpose and Need” of the EA above.

7.2 Statement of the objectives of, and the legal basis for, the proposed rule.

The reasons why this agency action is being considered and legal basis for the proposed rule are explained in the “Description of the Management Goals and Objectives” section in the RIR above.

7.3 A description and, where feasible, estimate of the number of small entities to which the proposed rule will apply; and a description and estimate of economic effects on entities, by entity size and industry.

All vessels participating in the groundfish fisheries in the EEZ off Washington, Oregon and California managed under the groundfish FMP may be affected by this action.

With regard to non-tribal commercial fisheries, a count of participating vessels from 2023 is found in Table 1 in Section 7.1above.

All directed OA vessels are assumed to be small entities, with ex-vessel revenues for all commercial landings (groundfish and non-groundfish) averaging $81,026 in 2023. In 2023, 197 of 223 LEFG endorsed permits were reported to be owned by 127 small entities. Not all LEFG vessels are owned by the registered permit owners and therefore the number of impacted small businesses may be more than the 127 permit owners. The average LEFG permit owner that identifies as a small entity owns 1.6 LEFG endorsed permits, with 43 small entities owning between two and four permits each. Non-trawl commercial participants are expected to benefit from the increases in sablefish quotas, but will be negatively impacted by reductions in allocations for nearshore species and midwater rockfish stocks, such as canary rockfish (which is in the precautionary zone according to the most recent stock assessment). Impacts will be particularly significant for vessels operating off of California north of 37° 07' N. lat. where vessels will have limited to no opportunity in the nearshore or the Non-Trawl RCA due to quillback rockfish constraints. However, the majority of the nearshore fishery activity occurs in state waters and is outside the scope of this action. The change in shortspine thornyhead management to a coastwide stock is expected to benefit non-trawl vessels, particularly north of 34° 27' N. lat., as compared to No Action because status quo allocations would result in little to no fishing opportunity for non-trawl vessels.

With regards to the shorebased IFQ fishery, 134 (of 162) quota share (QS) accounts and 101 vessel accounts (of 126) reported as being owned by small entities in 2023. The 134 QS owners that reported as small entities owned 74 percent of all QS issued at the start of 2023 (88 percent of the non-whiting QPs). Of the 161 trawl-endorsed LEPs (not endorsed as a CP), 150 are owned by 124 entities that self-reported as small. Impacts to shorebased IFQ participants are expected to coincide with changes in allocations for IFQ species. While some allocations are expected to increase, decreases in shortspine thornyhead and canary rockfish will likely result in negative impacts to small entities.

For the at-sea sector, all ten Catcher-Processer (CP) permits are owned by large entities and for Mothership (MS) permits, five of six are owned by large entities. Mothership Catcher Vessels (MSCV) endorsed permits account for 34 of the 161 trawl endorsed permits and 27 are owned by 27 small entities. At-sea fisheries are mostly impacted by the whiting allocation.

In addition to small businesses, the RFA recognizes and defines other kinds of small entities. These entities are included within the discussion above under shorebased IFQ impacts. A small governmental jurisdiction is any government or district with a population of less than 50,000 persons. According to the public IFQ Account database as of May 15, 2024, the City of Monterey owns quota shares of ten species. The U.S. Census estimates the population to be 29,571 as of July 1, 2022, so is considered a small governmental jurisdiction by the RFA standard above. The City of Monterey received 0.1 percent of the non-whiting quota pounds issued for 2023 according to the public IFQ Account database.

A small organization is any not-for-profit enterprise that is independently owned and operated and not dominant in its field (5 U.S.C. § 601). A nonprofit organization is determined to be "not dominant in its field" if it is considered "small" under SBA size standards. Environmental, conservation, or professional organizations (NAICS 813312, 813920) are considered not dominant

in their field (small for the purposes of NMFS rulemaking) if they have combined annual receipts of $15 million or less. Other organizations (NAICS 813319, 813410, 813910, 813930, 813940, 813990) are considered not dominant in their fields with combined annual receipts of $7.5 million or less. Five not-for-profit organizations own quota share in the catch share program and will thus be impacted by the trawl sector allocation under this rule. Collectively, the five small not-for-profit organizations received 7.1 percent of the non-whiting quota pounds issued in 2023. Non-profit entities owning limited entry trawl permits will be impacted by this rule.

A small trust, estate, and agency account (NAICS 525920) is defined at 13 C.F.R. § 121.201 as having annual receipts of less than $32.5 million (including affiliates). Ten personal or family trusts/estates owned quota share permits and will thus potentially be impacted by the trawl sector allocation under this proposed rule. All of these are assumed to be smaller than the size standard above. Collectively, these ten small entities owned ten quota share permits and received 4.3 percent of the non-whiting quota pounds issued for 2023.

Approximately eight non-whiting quota share permits owned by six entities are estimated, based on holdings of first receiver site licenses, to be primarily engaged in seafood "product preparation and packaging." According to the size standard defined above, three of the six entities that own QS accounts are considered small. Some small processing entities also own groundfish permits, which will be regulated by this rule.

All three states have an active charter for-hire/Commercial Passenger Fishing Vessels (CPFV) or charter boat fishery engaged in recreational groundfish fishing. The most recent estimated numbers of active vessels that took at least one groundfish trip is 357 and are shown in Table 1 as reported in Agenda Item F.6, Attachment 2, June 2024 –New Management Measure 9E

Table 1. Number of Charter/Commercial Passenger Fishing Vessels (CPFV) with at least one groundfish trip by state in 2023. Source Groundfish Management Team.

State	Number CPFV/Charter Boats
Washington	34
Oregon[11]	69
California	254
Sum	**357**

These businesses may be impacted by the Proposed Action, though many of them likely exclusively operate in state waters, outside the scope of this action. If affected, they would be impacted by changes in recreational catch guidelines for groundfish off their respective states.

In California, non-trawl commercial fishery operations north of 37° 07′ N. lat. will likely be more impacted than those south of 37° 07′ N. lat. due to the non-trawl management measures associated with the quillback rebuilding plan. Vessels operating in the southern area are expected to have similar opportunities under the Proposed Action as under preferred management measures. Recreational fishery operations (i.e., commercial passenger fishing vessels/charter vessels) will likely be more impacted north of 36° N. lat. than those south of 36° N. lat. for the same reasons.

[11] There is not an Oregon license or tracking of "six pack" or party fishing vessel businesses.

Similarly, CPFVs in the southern area are expected to have similar opportunities as those proposed under the preferred management measures.

The recreational sector may benefit from the proposed new management measure to require a descending devices on board fishing vessel. Use of descending devices is known to reduce discard mortality which may lead to potential increases in opportunity.

In Oregon, reductions in the black rockfish ACL is expected to constrain the nearshore groundfish fishery and may be a driver of the recreational and commercial nearshore season. Recreational fishing businesses may offset this potential loss and benefit from additional fishing opportunity to target and retain a limit of sablefish, in addition to the limit groundfish, and in addition to Pacific halibut, on the same trip during the longleader gear fishery. Commercial fisheries may be able to shift to deeper water stocks to offset potential impacts from nearshore restrictions.

In Washington, reductions in the canary rockfish ACLs are expected to constrain the fishery and result in sub-bag limits. Canary rockfish is a core part of the portfolio of charter operations and therefore may result in negative impacts to small entities off Washington.

7.4 An explanation of the criteria used to evaluate whether the rule will impose "significant" economic effects.

NMFS considers two criteria in determining the significance of adverse regulatory effects, disproportionality, and profitability.

Disproportionality This criterion compares the effect of the regulatory action between small and large entities. These regulations related to harvest specifications, with inter and intra-sector allocations largely fixed within the PCGFMP framework, are not impacted by biennial determination of ACLs. Management measures are created for each commercial and state recreational fishery independently; with the majority of groundfish participants made up of exclusively small entities. Within the trawl sector, small entities could be at a competitive disadvantage if QP availability for key species such as canary or shortspine thornyhead results in QP prices increasing. Larger entities may be able to outbid those entities in order to prosecute various fishing strategies, including whiting. For the non-trawl commercial sector (OA and LEFG), where there are some large entities participating in the LEFG sector, it is likely that smaller entities will be impacted to a greater extent than larger entities given opportunities are declining for all non-sablefish species. Sablefish allocation increases are likely to result in no disproportionate impacts for those directed fisheries between small and large entities.

Profitability: There are no major compliance costs to entities associated with this rule anticipated for the 2025-2026 biennium. However, some new costs would be associated with the directed OA permit registration and the purchase of descending devices for recreational vessels that currently do not have one. Overall, this rule is expected to have a negative impact on profitability within the groundfish fishery given that fishing costs in general are expected to remain the same (or increase with inflation) while opportunity is expected to decline overall due to decreases in 80 percent of ACLs compared to No Action. However, the ACL for the most profitable stock, sablefish, increases by over 200 percent. A subset of the fishery targets this stock and the profits from that stock may mask the overall decrease in profitability due to the reduction in ACLs overall.

7.5 A description of, and an explanation of the basis for, assumptions used.

Data used to inform this analysis come primarily from PacFIN, and RecFIN, which includes data provided by the states of Oregon, California, and Washington on commercial and recreational fishing trips and landings. Other data sources include the California Passenger Fishing Vessel survey, the West Coast Region permit database, and the West Coast Region Individual Fishing Quota Account public database. The number of entities predicted to be impacted is generally based on the level of participation in the previous year (2023) and, as noted above, is in some cases likely to be an overestimate of the true number of entities likely to be impacted if current trends continue. However, it is possible that as environmental or management conditions change in other fisheries this will impact the level of participation in the groundfish fishery beyond what is predicted here.

7.6 Reporting and recordkeeping requirements

The Proposed Action would require vessels participating in the directed OA sector to obtain a permit, which is a new requirement. There are no other new reporting or recordkeeping requirements associated with this action.

7.7 Relevant Federal rules that may duplicate, overlap, or conflict with the proposed rule:

There are no Federal rules that duplicate, overlap, or conflict with the proposed rule.

7.8 A description of any significant alternatives to the proposed rule that accomplish the stated objectives of applicable statutes and that minimize any significant economic impact of the proposed rule on small entities

The Alternatives are specified and analyzed above in Chapter 2: Alternatives and Chapter 4: Environment / Environmental Consequences. The economic impact of these measures are detailed at Chapter 4.5 and in Chapter 6: Regulatory Impact Review above.

This rule is not expected to result in adverse impacts on small entities. The Council did consider alternatives to the Proposed Action, which would have had a lower level of benefits to small entities. The Council did not consider alternatives that would have had greater benefits to small entities, as these would not have met several primary objectives of the rule (prevent overfishing, rebuild overfished stocks, ensure conservation). Under No Action, the 2024 harvest specifications for all groundfish stocks would remain in place. Under Alternative 1, default HCRs and associated routine management measures would be implemented, using BSIA, for most stocks and stock complexes. The Council considered alternative specifications to the default HCRs for Dover sole, rex sole, shortspine thornyhead, and California quillback rockfish. In each case, the Council selected the HCR that resulted in the maximum benefits to small directly regulated entities (no large entities are affected by alternatives for these nearshore species). Routine management measures are adjusted according to harvest specifications, which also impact the new management measures available for implementation

7.9 Certification statement by the head of the agency

agency finds per 5 U.S.C. § 605 (the RFA) that "the proposed rule, if promulgated, will not have a significant economic impact on a substantial number of small entities." The agency requests

comments on the decision to certify this rule based on the conclusions laid out in the analysis above.

8. Magnuson-Stevens Act National Standards, Fishery Impact Statement and Executive Order 13175 Analyses and Considerations

Magnuson-Stevens Act National Standards

This document includes an analysis of the 2025-26 Pacific coast groundfish harvest specifications and management measures action alternatives considered by the Pacific Fishery Management Council (Council) in relation to the 10 National Standards as contained in the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act [hereafter 'MSA"]), and a brief discussion of how each alternative is consistent with the National Standards, where applicable. In recommending a preferred alternative, the Council must consider how to balance the national standards.

National Standard 1 — Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.

MSA section 303(a)(3) requires that each Fishery Management Plan (FMP) include an estimate of maximum sustainable yield (MSY) and optimum yield (OY) for the fishery. OY is the quantity of fish that will provide the greatest overall benefit to the U.S., particularly with respect to food production and recreational opportunities, and taking into account the protection of marine ecosystems. OY is prescribed as such on the basis of the MSY from the fishery as reduced by any relevant economic, social, or ecological factors; and in the case of an overfished fishery, provides for rebuilding to a level consistent with producing the MSY in such fishery. The final preferred alternative (FPA) recommended by the Council (i.e., Alternative 1 for most stocks and Alternative 2 for some stocks) is consistent with the OY harvest management framework described in Chapter 4 of the Pacific Coast Groundfish Fishery Management Plan (PCGFMP or FMP). The PCGFMP Chapter 4 describes OY as "a decisional mechanism for resolving the Magnuson Stevens Act's multiple purposes and policies, implementing an FMP's objectives and balancing the various interests that comprise the national welfare." The OYs are based on MSY or MSY as reduced in consideration of social, economic, or ecological factors.

The harvest control rules (HCRs) proposed in the Council's FPA for the 2025-26 management cycle balance the stock conservation mandate in the MSA and the socioeconomic mandate in National Standard 1 to provide the greatest overall benefit to the U.S., with respect to achieving OY while managing fishery resources consistent with the National Standard 1 Guidelines. The Council selected as their FPA, default HCRs from the previous management cycle for all stocks and stock complexes except for rex sole, shortspine thornyhead, Dover sole, and California quillback rockfish.

For rex sole, the final preferred Alternative 2 allows for slightly higher harvest relative to the default HCR Alternative 1, and both are still predicted to maintain a healthy stock biomass in the next 10-year projection period. The less precautionary HCR under the final preferred Alternative

2 would balance the need for potential future expansion in the groundfish trawl fleet, while still maintaining a healthy stock status. The recent 2023 rex sole assessment results demonstrated an increase in biomass and neither Alternative generates conservation concerns.

For shortspine thornyhead, the recent 2023 assessment estimated the stock to be in the precautionary zone and, after a slow decline, both Alternatives allow for the stock to begin slowly rebounding over the next 10 years (2025-2034). The final preferred Alternative 2 would follow a similar trajectory as Alternative 1, but does not return the stock to a healthy status within the same projection period. Alternative 1 only reaches healthy status in the last projected year (2034). However, the final preferred Alternative 2 does follow the same trend as the default Alternative 1, while allowing for higher harvest specifications with slight increases over time. Alternative 2 is preferred because shortspine thornyhead is important to both the groundfish trawl and non-trawl fleets and because, with anticipated increases to sablefish catch limits, which is co-caught with Dover sole and thornyheads, there may be expanded effort.

For Dover sole, the final preferred Alternative 2 provides an option for allowable harvest that keeps the stock in healthy status based on updated biomass estimates. The default HCR (Alternative 1), with a constant allowable catch, exceeds the Acceptable Biological Catch (ABC) and therefore does not meet the principle of National Standard 1.

New assessments for rex sole and shortspine thornyhead and updated catch projections for Dover sole informed the final preferred harvest specifications for the 2025-26 management cycle. The relative abundance and scale of the shortspine thornyhead and Dover sole populations has decreased relative to status quo and preferred management measures for these species reflect the conservation needs for these species, as inferred from these new assessments.

The 2021 stock assessment for California quillback rockfish and the associated 2023 Rebuilding Analysis (see Appendix 1) were used to inform alternative rebuilding strategies and harvest specification options considered by the Council for this stock. This stock was also removed from the Nearshore Rockfish Complexes to ensure precision in management and tracking of mortality (among other metrics), which will assist in achieving sustainable management.

Under the Alternatives considered for this stock, trade-offs need to be considered carefully under National Standard 1. The final preferred Alternative 2 would rebuild the stock by 2060, which is well within the statutory maximum time to rebuild (T_{MAX} = 2071), as well as allow for some level of harvest and access to co-occurring stocks. Harvest opportunities are important even during the rebuilding period, due to the severe restrictions and impacts that the constricting harvest specifications in 2025-26 will have on other groundfish fisheries. Although Alternative 4, which provides for no California quillback rockfish fishing mortality, would rebuild the stock in the shortest timeline, it would also have disastrous short-term economic consequences for fishing communities and be generally untenable, as some mortality is expected to occur in other fisheries. Thus, Alternative 4 would not meet the needs of fishing communities consistent with the MSA nor would it properly balance conservation while achieving OY under National Standard 1.

National Standard 2 — Conservation and management measures shall be based upon the best scientific information available.

The best scientific information available (BSIA) standard applies to the following areas relative to this proposed action: stock assessments, rebuilding analyses, and methods for determining management reference points (overfishing limit [OFL], acceptable biological catch [ABC], annual catch limit [ACL], etc.). These areas form the basis for determining harvest levels and the evaluation of socioeconomic impacts. All decisions made as part of the 2025-26 process were consistent with the Regional BSIA Framework Policy, developed in response to NMFS Policy Directive 01-101-10. Harvest specifications for 2025 and 2026 were updated and based on default or alternative HCRs analyzed in this document. As evidenced by the analyses and comment provided by the Council's numerous advisory panels, including the Scientific and Statistical Committee (SSC), and the committee reports submitted in preparation for and at Council meetings, these values reflect the application of the BSIA to current harvest management policies.

The harvest specifications considered under the action (the Alternatives, including the Final Preferred Alternatives) are based on the most recent stock assessments, rebuilding analyses, and other scientific products, such as catch-only updates. All of these were developed through the peer review stock assessment review (STAR) process and all of these assessments were determined to be BSIA by the SSC and the National Marine Fisheries Service (NMFS), before these results were used to decide harvest specifications and management measures for 2025-26.

The Groundfish Stock Assessment and Fishery Evaluation (SAFE) document will be updated to summarize the basis for the alternative harvest specifications considered by the Council and will reference the stock assessments, rebuilding analyses, and other scientific information that was used to develop the 2025-26 harvest specifications and management measures. The SAFE document also describes the methods that were used to determine reference points for harvest specifications (OFL, ABC, ACL, etc.) for the Pacific Coast groundfish stocks and stock complexes.

The process to determine stock assessment priorities for Pacific Coast groundfish utilizes a matrix of factors designed by the NMFS Northwest Fisheries Science Center (NWFSC), following national NMFS guidance on best practices for making such decisions. This process has been judged by NMFS to be BSIA.

Socioeconomics are a critical component to fishery management. The NWFSC has developed a model application, called the Input-Output Model for Pacific Coast Fisheries (IOPAC), for estimating personal income impacts of commercial fishing on the West Coast. The Council considered the IOPAC results in their decision making process when considering the socioeconomic impacts to fishing communities relative to the alternatives.

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

The Council develops and designates management units for groundfish, which include stocks, stock complexes, or geographic subdivisions thereof within its jurisdiction in the West Coast EEZ. Groundfish ACLs are set for these management units. The Groundfish SAFE (2024) document details the process by which ACLs for each management unit are developed. Some West Coast groundfish stocks have a broader distribution than the West Coast EEZ and are therefore managed by multiple countries and management entities. For example, Pacific whiting is managed under an

international treaty agreement with Canada and the harvest specifications for this stock are developed outside of this action.

The PCGFMP has a list of the 90-plus managed groundfish species to which it pertains. Stock units for the majority of these species have not been defined. Amendment 31 to the PCGFMP defined 20 stocks of 14 of the groundfish species managed by the Council under the FMP. Subsequent processes are underway to define stock units for all remaining managed species in the FMP. These stocks and species are managed through the Council process.

Several species are defined as multiple stocks under the FMP, e.g., copper rockfish, vermilion rockfish, etc. These stocks are managed as a coastwide unit within rockfish complexes. The exception is quillback rockfish. This species is defined as three stocks: California, Oregon, and Washington stocks. Oregon and Washington stocks are managed as a single unit in the Nearshore rockfish complex north of 40°10′ N. lat. The California stock of quillback rockfish will be managed as a single unit as its status is overfished. Under the FPA, the Council recommended managing the stock as a single unit, i.e., California only, in order to facilitate improved monitoring of the stock and to ensure accurate tracking of removals.

The remainder of managed species listed in the FMP have not been officially defined as stocks; thus, in the near term, until they are defined, these species are managed as single coastwide units (e.g., yelloweye rockfish) or within complexes, which may have areal delineations. The rockfish complexes are delineated at north of and south of 40°10′ N lat.; however, the complexes are managed as a unit and states are in close coordination in terms of management, where complexes extend across state boundaries. The Other Fish and Other Flatfish Complexes are managed as a single coastwide unit.

Under the FPA, the Council recommended removing the management line at 34°27′ N lat. for shortspine thornyhead in order to improve management for the stock and to reflect the coastwide stock definition as adopted under Amendment 31. This change would create a single coastwide ACL for shortspine thornyhead, replacing the area-specific ACLs under the present allocation structure. Thus, the measure would allow the Council to manage the stock as a single coastwide unit.

National Standard 4 — Conservation and management measures shall not discriminate between residents of different states. If it becomes necessary to allocate or assign fishing privileges among various United States fishermen, such allocation shall be; (A) fair and equitable to all such fishermen, (B) reasonably calculated to promote conservation, and (C) carried out in such a manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.

Fishery sector allocations are intended to provide improved utilization of target stocks by reducing the stranding of available yield in a sector's allocation, and thus to address potential inequities. Allocation decisions are made through the Council process, which facilitates substantial participation by state representatives and the public. Allocation proposals are brought forward when alternatives are crafted through cooperative efforts between fishery managers and the public, taking into account the needs of fishing communities and the biological aspects of a given stock.

Emphasis is placed on equitable division, while simultaneously considering and achieving conservation goals.

In the trawl sector, fishery participants who belong to the individual fishing quota (IFQ) sector will generally receive the same percentage of a sector allocation biennium to biennium. The non-trawl sector operates under trip limits and no single entity is granted a percentage; therefore, the distribution of the allocation is under a common pool and all participants have equal opportunity to harvest the allocation. There are no formal groundfish allocations to the recreational fisheries as they share the non-trawl allocation.

During this biennial harvest specifications process, the Council considered modifications to the biennial trawl/non-trawl allocations for canary rockfish, widow rockfish and petrale sole. The Council recommended reducing the non-trawl allocation of the widow rockfish biennial allocation to better reflect the needs of the trawl sector as their FPA. The non-trawl sector has had low attainment since the 2020-21 biennium. The Council considered allocation changes to canary rockfish and petrale sole, though recommended status quo allocations percentages as FPA.

This action considered alternative HCRs for Dover sole, rex sole, and shortspine thornyhead in the EEZ off the U.S. West Coast. Under the FPA for harvest specifications, the Council adopted Alternative 2 HCRs for these stocks, which resulted in decreases to the Dover sole and shortspine thornyhead ACLs and an increase to the rex sole ACL as compared to No Action. Dover sole and shortspine thornyhead are managed as single stocks; whereas, rex sole is managed in the Other Flatfish Complex. Dover sole and rex sole (via the Other Flatfish Complex) are formally allocated to the trawl and non-trawl sectors; whereas, shortspine thornyhead is a biennial allocation.

The Council did not recommend changing the Dover sole and rex sole (Other Flatfish Complex) allocations. Both are predominantly landed by the trawl sector and the status quo allocation structure recommended by the Council is reflective of this finding.

As FPA, the Council adopted a new management measure to change the formal Amendment 21 allocation of shortspine thornyhead to a biennial allocation by removing the existing north and south of 34°27′ N. lat. management line, which requires recalculation of the allocation percentages for the trawl/non-trawl sectors. Since at least the 2015-16 biennium, the shortspine thornyhead stock south of 34°27′ N. lat. has been highly underutilized (< 10 percent, per year) by the trawl and non-trawl sectors. The trawl sector lands the majority of this stock north of 34°27′ N. lat.; whereas, the non-trawl sector lands the majority of shortspine thornyhead south of 34°27′ N. lat., which is reflected in the allocation percentages. The Council previously set the allocation of this stock through Amendment 21. The new management measure of removing the 34°27′ N. lat. management line is expected to result in improved utilization of the resource and benefit communities. The Council will have the opportunity each biennium to evaluate the allocation of shortspine thornyhead to the components of the fishery in order to maximize yield. This allocation structure modification is expected to address changes to the available yield and improve equity between fishermen and sectors. The proposed measures to modify these allocations do not discriminate between residents of different states.

This action also considers a rebuilding plan for California quillback rockfish in the EEZ off of California. This stock is managed as a single stock and is not allocated to the fishery sectors. The

non-trawl sector lands approximately 25 percent of catch; whereas, the recreational fishery lands approximately 75 percent of catch. The trawl sector rarely encounters California quillback rockfish. The Council has determined that allocation of California quillback rockfish, either to trawl/non trawl sectors, or within the non-trawl sector, is not necessary due to the limited encounters with or incidental catch within the trawl sector.

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

Management measures were designed to offer increased opportunity to the resource as well as increase overall attainments of stocks, thus allowing participants to attain OY through efficient distribution of the resource among the user groups. This design should allow for efficient access to the resource as well as potentially allow for increased utilization by the various sectors as well as allow for ecosystem needs to be met. Routine management measures have been previously analyzed in prior MSA analyses associated with the harvest specification and management measure processes.

The final preferred California quillback rockfish rebuilding strategy recommended by the Council would reduce the ACL compared to the previous biennium. The Council adopted Alternative 2, the ABC rule from the rebuilding analysis, as FPA. California quillback rockfish are important to the non-trawl commercial sector, notably in the live fish fishery, and the recreational fishery. Alternative 2 has a 50 percent probability of rebuilding the stock by 2060, i.e., eleven years before Tmax and an expected 73.6 percent probability of rebuilding by 2071 (Tmax). California quillback rockfish are expected to be managed as single stock in the EEZ off of California, per the Council's FPA to remove it from the Nearshore rockfish complexes. This stock cannot be solely targeted, as California quillback rockfish co-occur with other rockfishes. In order to reduce impacts to California quillback rockfish, but address the needs of the larger fishery, and also follow BSIA (which indicates this stock is overfished), the Council adopted a suite of commercial and recreational fishery management measures as FPA, which include time/area closures in the recreational fishery, modified trip limits in the commercial non-trawl fishery for co-occurring species, and the use of specific gear/depth limits in the area where California quillback rockfish is commonly encountered in the commercial non-trawl fishery. Both the commercial and recreational fishery in California are subject to a zero retention provision for this stock. In total, these measures are designed to reduce California quillback rockfish mortality, to the extent practicable, while taking into account the needs of fishing communities. These measures are expected to assist in stabilizing fishing communities in the face of uncertainty regarding future management actions on this species (i.e., avoid disastrous short-term economic impacts), as well as to achieve rebuilding of the current biomass of California quillback rockfish by Ttarget (2060).

The Alternative 2 harvest specification is juxtaposed to Alternative 4, or F = 0, which is analyzed in the California Quillback Rockfish Rebuilding Plan (see Appendix 1). An F = 0 strategy requires zero fishery mortality. This strategy is predicted to rebuild the stock by 2045, 26 years before Tmax, and 15 years before Alternative 2, with a 73.6 percent probability of rebuilding by 2045 and a 99.9 percent probability of rebuilding by 2071 (Tmax). Given the uncertainty of the distribution of California quillback rockfish in the EEZ, it is difficult to predict where and when encounters could occur in groundfish fisheries. While the end of its range is placed just off of Ventura,

California (i.e., Anacapa Passage, see Love et al, 2002), there are historical catches of quillback south of this location. Therefore, to ensure zero fishing mortality in the groundfish fishery, the conservative approach to achieving this objective would be a complete groundfish fishery closure off of California. The F = 0 strategy, which would rebuild the stock in the shortest time period, would have devastating socioeconomic impacts on fishing communities in California. The Council concluded that the Alternative 4 rebuilding strategy would not result in the efficient utilization of fishery resources, nor would it meet the needs of fishing communities.

The Council reduced the biennial allocation of widow rockfish to the non-trawl sector by 25 percent under the FPA. The allocation structure was 400 metric tons (mt) to non-trawl and the remainder of the ACL to the trawl sector. Fishery landings data demonstrated the non-trawl sector has been under-utilizing the allocation since it was increased in the 2021-2022 biennium, landing approximately 6 percent of the allocation annually. The widow rockfish resource is primarily utilized by the trawl sector, which lands, on average, over 90 percent of their allocation annually. The 2025-26 widow rockfish ACL decreases by nearly 11 percent from the previous biennium. The realignment of the allocation is likely to improve the efficiency of trawl sector utilization and concomitantly is not expected to decrease the utilization of widow rockfish by the non-trawl sector.

The Council adopted the Alternative 2 HCR for Dover sole, which is lower than the Alternative 1 status quo HCR (a static 50,000 mt). The Alternative 1 HCR would result in an ACL greater than the ABC and is, therefore, not in alignment with National Standard 1 or National Standard 2. The Council adopted no changes to the Dover sole trawl/non-trawl allocation.

Rex sole is managed under the Other Flatfish Complex, which is allocated to the trawl/non-trawl sectors. The Council adopted the Alternative 2 HCR for rex sole, which is an increase from the previous biennium, and also subsequently increases the Other Flatfish Complex ACL. The Council adopted the Alternative 2 HCR as it increases yield available to the fishery and may provide additional opportunity for fishermen. The Council did not adopt any allocation changes to this complex.

In this action, multiple new management measures are under consideration. The new management measures that affect utilization and efficient use of the resource are discussed. The new permit program for the directed open access (OA) sector would allow for improved understanding of the directed OA fishery. Enumerating the participants in this fishery is highly uncertain at present. This measure would improve the Council's ability to efficiently manage this fishery and the ability of NMFS to estimate directed OA catch and effort. The measure to require descending devices aboard recreational fishing vessels in the EEZ should create a more efficient use of the resource in the sense that it is expected to improve survivability of fish released at sea which could mean a lower overall mortality for the stock

The Council adopted the Alternative 2 HCR for shortspine thornyhead as FPA, which results in a reduction to the ACL when compared to the previous biennium. This stock is an important component to the commercial groundfish fishery sectors on the West Coast. Trawl and non-trawl sectors utilize this stock at different rates. The Council adopted modifications to the shortspine thornyhead allocation strategy as their FPA. The Amendment 21 allocation structure disproportionately impacts the non-trawl sector north of 34°27′ N. lat., which is limited by its current allocation, because the allocations for the trawl and non-trawl sectors south of 34°27′ N.

lat. are historically under-utilized. The revision to the allocation structure would remove the management line and create a coastwide ACL. The proposed revisions create a coastwide trawl/non-trawl allocation structure. The resulting structure allows for modest increases in allocations to both trawl and non-trawl for this stock when compared to the Amendment 21 two-area allocation structure. The allocation modifications are expected to improve the stability of the fishery and balance both conservation goals and the needs of fishing communities. Overall, these measures are predicted to increase attainment of the primary targets in the affected fishery sectors and none have economic allocation as their sole purpose. The Council also has the opportunity to reevaluate allocations each biennium.

National Standard 6 — Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches.

The measures in this analysis reflect the flexibility of the Council to address the improving status of the fishery yet still meet conservation goals. The harvest specifications and management measures proposed in this analysis reflect differences in catch and, in particular, bycatch of overfished species. The Council is able to monitor the fishery for indications of overages and apply measures to ensure ACLs are achieved, but not exceeded, through routine inseason action. The management measures in this analysis do not appreciably change this framework, but rather reflect the status of stocks managed in the FMP. Inseason actions taken by the Council can include temporal adjustments, spatial adjustments, as well as catch control mechanisms (i.e., trip limits) that are specific to an area and/or fishery. Routine management measures have been analyzed in previous EAs/EISs and other relevant analytical documents. The following examines the new management measures for the 2025-26 biennium that allow for variation and contingencies in managing the West Coast groundfish fisheries.

The BSIA (i.e., the most recent stock assessment) for the California quillback rockfish stock indicates the stock is overfished. The Council is managing using BSIA by adopting a rebuilding plan. The Council proactively adopted inseason adjustments to the commercial fishery management measures in September (for the remainder of 2023) and November 2023 (for 2024) and inseason adjustments for the recreational fishery in March 2024. The objective of these management measures was to minimize, if not eliminate, California quillback rockfish mortality to the extent practicable in acknowledgement of the status of the stock. These same management measures for California quillback rockfish were adopted as preferred for the 2025-26 biennium. The measures impact both the commercial and recreational fisheries by restricting access to depths and areas where California quillback rockfish are predominantly found and by reducing bag and trip limits to zero. All changes to California quillback rockfish management measures are designed to reduce overall mortality through flexible management options.

National Standard 7 — Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.

Development of the Alternatives was achieved through coordinated effort of West Coast fishery managers, enforcement consultants, and other stakeholders over the course of a calendar year at six Council meetings between June 2023 and June 2024. The Alternatives in this analysis were developed to reduce the overall burden on fishery participants and to achieve management objectives and priorities among the three West Coast states. In general, coordination between

managers, enforcement, and other stakeholders reduces duplication in action or effort and, therefore, reduces costs. The implications of the alternatives are evaluated in this analysis.

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

The 2015 *Final Environmental Impact Statement for Pacific Coast Groundfish Harvest Specifications and Management Measures for 2015-2016 and Biennial Periods Thereafter, and Amendment 24 to the Pacific Coast Groundfish Fishery Management Plan* (2015 EIS) evaluated both the long-term and short-term impacts of alternative harvest management policies on West Coast fishing communities. The short-term impacts of the current proposed actions are variable and highly linked to the specific fishery. In the commercial non-trawl and recreational fisheries in the EEZ off Washington and Oregon, coastwide trawl, and at-sea whiting do not differ substantially in context or intensity from the impacts disclosed in the 2015 EIS. These effects were taken into account by adopting the FPA. Target species catch estimates for each alternative are projected based on the management measures. The catch estimates provide the base information for estimating ex-vessel revenue and personal income impacts at the community level (with the port group area as the unit of analysis for community impacts).

The short-term impacts for commercial non-trawl fisheries, notably the nearshore OA fishery, and the recreational fishery in the EEZ off of California are substantially different in context and intensity from the impacts disclosed in the 2015 EIS. The primary driver of this change is the overfished status of California quillback rockfish. However, as noted throughout this document, the actual impacts are difficult to discern as roughly 85 percent of fishing mortality of California quillback rockfish occurs in state waters, outside the scope of this action. A rebuilding plan has been developed, which details the potential impacts to fishing communities. Overall, the impacts under the FPA do not significantly vary from the current, 2024, management of the fishery. The FPA proposes to continue the management measures used in 2024 for this biennium (2025-26).

The management measures selected as part of the FPA work to maximize positive economic impacts on the communities under current conditions and could improve fishery participation over time. The preferred management measures may require, in some instances, fishermen to modify their fishing strategies to avoid bycatch of co-occurring species with reduced ACLs. This behavioral change may reduce attainment in the commercial fishery for some stocks but also improve attainment of other stocks. The preferred management measures were developed with the goal to maintain, if not improve, stability of the fishery and thus fishing communities.

The California quillback rockfish rebuilding plan (Appendix 1) provides detailed analyses of the socioeconomic impacts on commercial and recreational fishing communities in California. The Council adopted the rebuilding parameters to balance the needs of fishing communities and also achieve the goal of rebuilding the stock in the shortest amount of time. California fishing communities, notably those north of Monterey Bay, will be impacted as access to the nearshore

fishery will be heavily restricted. However, fisheries on the continental shelf have been underattained for decades due to area closures, specifically the Non-Trawl RCA. The deeper portion of the Non-Trawl RCA off California (i.e., between 125/100 fm to 75 fm) was opened via Amendment 32 to the PCGFMP. Starting in 2024, commercial fishermen can access these areas with any gear type. Additionally, 2023-24 harvest specification and management measures action authorized the use of specific midwater gear designed to reduce impacts on bottom-dwelling overfished stocks inside of the Non-Trawl RCA. In the EEZ off of California, the preferred management measures do not substantially differ from those in place in 2024. While the California quillback rockfish stock had not been declared overfished in 2023, the Council recommended a series of management measures to reduce impact to the stock. These measures started with reduced trip/bag limits at the beginning of 2023 (when compared to the 2021-22 biennium) and subsequently were adjusted in late 2023 to no retention and time/area closures in the commercial and recreational fishery for California quillback rockfish and a host of co-occurring stocks. Therefore, much of the negative economic impact due to reduced fishing opportunity to limit mortality of quillback rockfish has already occurred and the fishing opportunities under the Preferred Alternative are not substantially different than what is currently in place. Secondarily, the sablefish stock ACL has increased by nearly 200 percent from the last biennium. This abundance could provide additional opportunities to fishermen displaced from nearshore closures specified in the rebuilding plan management measures. The Preferred Alternative therefore may help stabilize the fishery as economic uncertainty regarding the management measures may be reduced.

West Coast fishing communities depend on a diverse portfolio of commercial and recreational fisheries to support year-round operations. The proposed California quillback rockfish rebuilding plan considers impacts to recreational and commercial fisheries in order to account for the needs of fishing communities, which provide services to, and otherwise benefit from, these fisheries. The increase in rex sole ACLs is expected to provide positive economic benefits to the fishery. In the case of Dover sole, the Council adopted an HCR that results in an ACL that is lower than the 2023-24 biennium, which will align with the tenets of National Standard 1 and National Standard 2. Regarding shortspine thornyhead, the new management measure to revise the formal Amendment 21 allocation structure to a biennial allocation structure was adopted in light of the reduced ACLs. The merging of the current split of ACLs to a single coastwide ACL is expected to provide more flexibility in terms of fishing opportunity and thus reflect the needs of the fishing communities and provide positive benefits overall.

The new management measure to create a federal directed OA permit requirement would allow for a better understanding of the impacts of management measures on this fleet and the communities it is based in. At present, the lack of understanding of the character and participation of this fleet is detrimental to understanding the impact this fishery has on the groundfish resource. The permit program should improve understanding of the fishing practices of directed OA vessels that fish in the EEZ, thus allowing WCGOP to better tailor observer coverage. Improved understanding of the impacts from this fleet is expected to provide increased certainty in terms of the estimates used by assessors and managers alike.

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

Minimizing bycatch, of overfished species and other sensitive species such as canary rockfish, is an important component of the action. Routine management measures are designed to reduce incidental bycatch of rebuilding or constraining species, including but not limited to, yelloweye rockfish, cowcod, California quillback rockfish, and bronzespotted rockfish. These routine management measures consist of a mixture of non-retention, trip limits, gear specifications, and depth/time based area closures.

The new management measure to require a descending device aboard all recreational vessels fishing in EEZ addresses bycatch by establishing methods to reduce mortality. Use of a descending device has been shown to reduce discard mortality by returning the fish to depth. In a mixed stock fishery, such as groundfish, target and non-target species co-occur and are caught with the same fishing methods, which is the case for the overfished stocks of yelloweye rockfish and California quillback rockfish. Similarly, different size and age classes often co-occur as well. Under this new management measure, recreational anglers could discard unwanted species with a lower likelihood of mortality. Many of the targeted groundfish are subject to barotrauma and, in brief, cannot return on their own to depth or return slowly to depth, which increases the risks of predation. Descending devices can effectively return discarded fish to depth, thus increasing the probability of their survival compared to surface release.

National Standard 10 — Conservation and management measures shall, to the extent practicable, promote the safety of human life at sea.

The routine measures have been designed to promote safety at sea and have been previously analyzed in the 2015 EIS. This section focuses on relevant new management measures that further promote safety at sea. Overall, the new management measures analyzed, and recommended to NMFS for implementation, as part of the 2025-26 harvest specifications were designed to improve operational flexibility. These measures, as described below, should improve spatiotemporal opportunity for fishermen to access fishery resources. The proposed management measures do not decrease safety at sea when compared to No Action, which is the continuation of current, 2024 management. While the changes to ACLs and trip limits proposed in the 2025-26 harvest specifications may encourage additional effort for certain target species, it is not expected to change how the overall groundfish fishery operates at present. Meaning, commercial and recreational groundfish fishermen are likely to retain species and/or tonnage on the same schedule as in previous years. This may allow fishermen to spread out trips over good weather periods, rather than be constrained to poor weather periods in order to attain limits.

The new management measure to modify federal continuous transit provisions for California recreational vessels would allow recreational vessels fishing in the "offshore" fishery (i.e., the months where anglers are restricted to depths greater than or equal to a designated fathom line) to anchor overnight and/or stop to fish for non-groundfish species inside the seasonal Recreational RCA. The ability to stop and anchor in federal waters overnight could reduce the motivation to transit while tired or during unfavorable weather conditions, which could decrease the likelihood of accidents at sea. Accordingly, this measure offers more flexibility to anglers and may promote better fishing practices, thus increasing safety at sea.

The California quillback rockfish rebuilding plan considers depth and time closures, as well as area restrictions. These measures are not expected to decrease safety at sea. Closing nearshore

areas where California quillback rockfish are present may result in more vessels venturing further offshore to target deeper water groundfish species; however, recreational anglers may choose instead to target non-groundfish and/or state managed species in the nearshore areas. It is assumed that vessels will self-select based on sea-worthiness whether they would participate in an offshore fishery.

Fishery Impact Statement

Section 303(a)(9) of the MSA requires that a fishery impact statement be prepared for each FMP or FMP amendment. A fishery impact statement is required to assess, specify, and analyze the likely effects, if any, including the cumulative conservation, economic, and social impacts, of the conservation and management measures on, and possible mitigation measures for (a) participants in the fisheries and fishing communities affected by the plan amendment; (b) participants in the fisheries conducted in adjacent areas under the authority of another Council; and (c) the safety of human life at sea, including whether and to what extent such measures may affect the safety of participants in the fishery.

The EA/RIR prepared for this plan amendment constitutes the fishery impact statement. The likely effects of the Proposed Action are analyzed and described throughout the EA/RIR. The effects on participants in the fisheries and fishing communities are analyzed in the RIR (Section 6 of this Analysis). That analysis finds that on a coastwide basis effects of the Proposed Action on participants and fishing communities are positive for commercial fisheries and neutral for recreational fisheries. The effects of the proposed action on safety of human life at sea are evaluated above under National Standard 10. Based on the information reported in this section, there is no need to update the Fishery Impact Statement included in the PCGFMP.

The current proposed actions are unlikely to result in adverse impacts on essential fish habitat (EFH) outside those disclosed in Section 4.1.4 in the 2019 *Environmental Impact Statement for Amendment 28 to the Pacific Coast Groundfish Fishery Management Plan* (2019 EIS). The 2019 EIS, which analyzed Amendment 28 impacts, describes the impacts of the ongoing groundfish management program on EFH, consistent with the EFH assessment requirements of 50 CFR 600.920 (e)(3).

The Proposed Action affects the groundfish fisheries in the EEZ off the West Coast, which are under the jurisdiction of the Council. Impacts on participants in fisheries conducted in adjacent areas under the jurisdiction of other Councils are not anticipated as a result of this action.

Executive Order 13175

EO 13175 is intended to ensure regular and meaningful consultation and collaboration with Tribal officials in the development of federal policies that have Tribal implications, to strengthen the U.S. government-to-government relationships with Indian Tribes, and to reduce the imposition of unfunded mandates upon Indian Tribes. The Secretary recognizes the sovereign status and comanager role of Indian Tribes over shared federal and Tribal fishery resources. In section 302(b)(5), the MSA reserves a seat on the Council for a representative of an Indian Tribe with federally recognized fishing rights from California, Oregon, Washington, or Idaho.

The U.S. government formally recognizes the four Washington coastal Tribes (Makah, Quileute, Hoh, and Quinault) that have treaty rights to fish for groundfish. In general terms, the quantification of those rights is 50 percent of the harvestable surplus of groundfish available in the Tribes' usual and accustomed fishing areas (described at 50 CFR 660.324). Each of the treaty Tribes has the discretion to administer its fisheries and to establish its own policies to achieve program objectives.

9. Lists

9.1 Persons and Agencies Consulted for this Document

- Pacific Fishery Management Council (PFMC) and Contractors
- National Marine Fisheries Service (NMFS)
    - Regional Office
    - NOAA General Counsel Northwest
    - Northwest Fisheries Science Center
    - Southwest Fisheries Science Center
    - Contractors
- Groundfish Management Team, including representatives of:
    - California Department of Fish and Wildlife (CDFW)
    - Oregon Department of Fish and Wildlife (ODFW)
    - Washington Department of Fish and Wildlife (WDFW)

9.2 Tiered NEPA Documents

National Marine Fisheries Service is the corporate author for these documents.

Harvest Specifications and Management Measures for 2015-2016 and Biennial Periods Thereafter: Includes the Reorganization of Groundfish Stock Complexes, Designation of Ecosystem Component Species and Amendment 24 to the Pacific Coast Groundfish Fishery Management Plan to Establish a Process for Determining Default Harvest Specifications, Final Environmental Impact Statement. 2015. https://repository.library.noaa.gov/view/noaa/12461.

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Appendix 1: California Quillback Rockfish Rebuilding Plan Analysis

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Executive Summary

The California stock of quillback rockfish (*Sebastes maliger*; hereinafter "California quillback rockfish") status was determined as overfished by the Secretary of Commerce in December 2023. In March 2024, the Council adopted the California quillback rockfish rebuilding analysis which specified the following rebuilding parameters: TMIN = 2045, TMAX = 2071, mean generation time of 26 years. The majority of the fishery mortality for California quillback rockfish occurs in state waters, outside the scope of this action. This rebuilding plan is only in effect in the EEZ. It is unknown whether the California Department of Fish and Wildlife (CDFW) will take similar action in state waters. Whether or not state fishing activity is reduced will influence the likelihood of achieving rebuilding.

In April 2024, the Council adopted the acceptable biological catch (ABC) Rule rebuilding strategy (i.e., Alternative 2) as their preliminary preferred alternative (PPA). This rebuilding plan analysis examines Alternative 2 in comparison to Alternative 4, or "F = 0". The ABC rule allows for annual catch limits (ACLs) of 1.3 mt and 1.5 mt for 2025 and 2026, respectively, and increases as the stock rebuilds; whereas, the F = 0 strategy has an ACL of 0 mt until the stock is rebuilt.

Alternative Rebuilding Strategies

Alternative 2 The Council is considering two California quillback rockfish rebuilding strategies in this document, Alternative 2 (the ABC Rule) and Alternative 4 (F = 0). Alternative 2 (PPA), the "ABC rule" rebuilding strategy, sets ACL equal to the ABC with management risk tolerance (P* = 0.45) and the scientific uncertainty (time-varying sigma) reduction applied to the overfishing limit (OFL). Alternative 2 rebuilds the stock by 2060 with 73.6 percent probability of rebuilding by 2071,$T_{MAX.}$ (Table ES 1).

Alternative 4 (F = 0) represents a harvest strategy that achieves zero fishing mortality. The stock has a median time of rebuilding the stock in the minimum amount of time, i.e., by 2045 with 99.9 percent probability of rebuilding by 2071 (T_{target}) and a 99.9 percent probability of rebuilding by 2071 (T_{MAX}) (Table ES 1). The stock is removed from the nearshore rockfish complexes north and south of 40°10' N lat. for purposes of rebuilding

Table ES 1. Alternative 2025 and 2026 harvest specifications (mt) and harvest control rules (HCR) for California quillback rockfish.

Alternative	2025			2026			Harvest Control Rule
	OFL (mt)	ABC (mt)	ACL (mt)	OFL (mt)	ABC (mt)	ACL (mt)	
Alternative 2 *Preliminary Preferred*	1.52	1.30	1.30	1.77	1.50	1.50	ABC (P*=0.45), ACL (ABC rule); Median time to rebuild: T_{TARGET} 2060

Alternative	2025			2026			Harvest Control Rule
	OFL (mt)	ABC (mt)	ACL (mt)	OFL (mt)	ABC (mt)	ACL (mt)	
Alternative 4	1.52	1.30	0	1.81	1.54	0	ABC (F = 0), ACL (SPR=1); Median time to rebuild: T_{TARGET} 2045

The Council considered but removed Alternative 1 and Alternative 3 from further consideration in the California Quillback Rockfish Rebuilding Plan Analysis. Alternative 1 would rebuild the stock by T_{MAX}, 2071; however, the Council rejected Alternative 1 as, when compared to Alternative 2, Alternative 1 delays rebuilding by two years and with a lower probability of rebuilding (69.4 percent) by T_{MAX}. Alternative 3 was not selected for further consideration because it failed to meet technical and legal requirements. Additionally, the No Action Alternative could not be considered for implementation as this harvest specification does not take rebuilding into consideration.

Alternative 3 is where the ABC value is the result of a 2025 OFL of 8.41 with a category 3 buffer using a P*=0.40 to obtain to ABC = 5.06 mt (Agenda Item E.2.a. Supplemental CDFW Report 2, November 2023). The harvest specification values in Alternative 3 are beyond the scope of that found in the 2023 rebuilding analysis, represent harvest levels beyond what would appear biologically reasonable for a rebuilding population, and do not meet the Magnuson-Stevens Fishery Conservation and Management Act (MSA) rebuilding requirements. Thus, Alternative 3 was not selected for further consideration.

Additionally, the No Action alternative, which reflects harvest specifications and management measures that were in place for the 2023-24 biennium, was not adopted. No Action does not reflect the best scientific information available (BSIA) and does not take the stock's status of overfished into account. Thus, this alternative is not consistent with the MSA

Impacts of the Alternatives on the Stock

The projected rebuilding probabilities under all alternatives are shown above in Table ES 1 (based on values in Table 3; Langseth, 2023). In brief, Alternative 2 represents a 73.6 percent probability of rebuilding the stock by 2071 and Alternative 4 represents a 99.9 percent probability by 2071. Probabilities represent the proportion of rebuilding analysis simulations that reach the target spawning output by the specified year. Both alternatives rebuild the stock, the primary difference between the two is Alternative 4 rebuilds the stock approximately 15 years faster than Alternative 2.

California quillback rockfish are caught in non-groundfish incidental fisheries that are outside of the Pacific Fishery Management Council's (Council) and the National Marine Fisheries Services' (NMFS) purview. This potentially affects the timeline for rebuilding because the assumption of zero mortality would be violated each year incidental mortality in non-groundfish fisheries occurs.

As a general note, California quillback rockfish inhabit nearshore waters, with the majority of fishing mortality occurring in State waters (0-3 nautical miles from shore). Per 16 U.S.C. 1851(a)(3), the Council and NMFS are required to manage stocks throughout their range. The Council and NMFS only have the authority to implement fishery management regulations in

Federal waters, and the State of California has discretion to implement management complementary to Federal action or other management actions in its State waters. Although mortality of quillback rockfish off California in both Federal (3-200 nm) and State waters would be accounted for up to the ACL, this rebuilding plan would be in effect only in the EEZ. Therefore, analysis of the effects of the management measures contained in this rebuilding plan will be limited to the portion of the stock's range found in the EEZ. Whether similar rebuilding measures are enacted in State waters by the State of California is outside the scope of this action. However, because this stock straddles state and federal jurisdictional boundaries, whether or not rebuilding can be achieved in the proposed timeline depends on the State of California implementing management in its waters to complement this Federal action.

Impacts of the Alternatives

Regardless of the rebuilding strategy the Council ultimately adopts for California quillback rockfish, reductions in groundfish fishery opportunities in many California coastal communities will likely ensue in the 2025-2026 biennium and beyond and likely be economically, financially, and socially disruptive with long-lasting impacts (e.g., loss of infrastructure). As noted above, the actual impacts of this rebuilding action are constrained to the portion of fisheries activity that occurs in the EEZ, where quillback rockfish is co-occurring with other target species; which is a small part of this stock's range based on commercial and recreational fishing activity data as proxy. Whether or not the State of California will implement complementary management actions that similarly restrict fishing activity in State waters is unknown and is outside the scope of the impacts considered here. Commercial and recreational fishing activities in California yield well over a billion dollars annually in impacts to communities (NMFS, 2024). Rebuilding measures are likely to compound the impacts already being experienced by these communities and groundfish participants as they have faced recent declines and changes in other fisheries (e.g., Federal disaster declarations for salmon, red sea urchin, Pacific sardine in California, and delayed/shortened Dungeness crab seasons).

The social and economic differences between the two rebuilding alternatives evaluated are hard to quantify because the future impacts are uncertain for three major reasons. First, the response of the stock to rebuilding efforts and the time needed for rebuilding is uncertain. Second, there is uncertainty in this stock's response to management measures and other future changes to the fishery and/or ecosystem. The third major source of uncertainty is fishery participant behavior.

This uncertainty is further complicated by California's diverse coastline and the many ports along the coast with variable infrastructure, ranging from heavily industrialized to small, localized ports. However, a diverse selection of ports along the California coast with both commercial and recreational infrastructure, and that are known to be ports of historical importance to fishing, were analyzed to evaluate rebuilding impacts. California quillback rockfish commercial fishery landings and ex-vessel revenue make up a small portion of each port complex's total revenue generated by rockfish for the entire groundfish management group. Nevertheless, based on the analysis, the Council and NMFS determined that ports would see reduced profits under Alternative 2 or could be required to forgo profits of all groundfish fisheries under Alternative 4, in order to reduce California quillback rockfish mortality to zero.

In the commercial groundfish fishery, California quillback is primarily caught by the Open Access (OA), Limited Entry Fixed Gear (LEFG), and the Nearshore sectors. However, the majority of the nearshore sector activity generally occurs within State waters and is therefore not part of this action. Due to difficulties separating fishing activity in that sector between State and Federal waters, we are unable to differentiate the likely impacts of the rebuilding action in the nearshore fishery. Accordingly, the actual impact of implementing the alternative rebuilding strategies analyzed here could be more than reported, if, for example, California did not adopt complementary management measures. The LEFG, OA, and nearshore recreational fisheries were negatively impacted by Federal and State management measures (trip limits, time/area closures, etc.) put in place in September 2023 to reduce impacts to California quillback rockfish. These measures were continued into 2024 and are expected to have similar impacts, as 2023, to these fisheries. These three non-trawl sectors will continue to be impacted in 2025 and beyond if the Council adopts Alternative 2, and to a greater extent, if the Council adopts Alternative 4. Alternative 4 would likely result in the prohibition of all groundfish fishing along the California coast, and thus by significantly limiting opportunities in other fisheries, it could require participants to find alternative sources of income. It is uncertain whether participants who leave the fishery would ever re-enter (be it before or after California quillback rockfish is declared rebuilt), especially as the future opportunities in salmon, crab, and other interlinked fisheries remain uncertain. Under Alternative 2, the trawl fishery would likely not be restricted relative to California quillback rockfish, but it would be impacted under Alternative 4. Historically, this fishery has limited catches of California quillback rockfish, with zero catch in many years, but not all. Therefore, in order to achieve the F = 0 strategy in Alternative 4, the Council would need to place restrictions on the trawl fishery off of California.

Historically, California quillback rockfish mortality has been higher in the recreational groundfish sector than in the commercial sectors, and for anglers, the groundfish fishery, particularly rockfish, has provided a consistent source for fishing opportunity. The management measures under Alternative 2 are proposed to be the same as in 2024 (see Agenda Item F.6, Attachment 2, June 2024 for detail), which allows for some fishing under strict time/area/depth restrictions. Alternative 4 would result in negative impact to the fishery as it would close all recreational fishing in the EEZ off of California. While Alternative 2 would continue to implement fishign restrictions on recreational anglers, it is not as restrictive as Alternative 4.

Short Term Community Impacts (2025-26 Biennium)

Alternative 2 maintains some groundfish opportunity for the 2025-26 biennium under restrictions implemented in 2023 and continued for 2024. These restrictions have already reduced commercial landings and ex-vessel revenue, and similar impacts could be anticipated in the next biennium. In contrast, Alternative 4 would likely require full groundfish fishery closures in Federal waters off California, and thus would result in disastrous short-term economic impacts to impacted fishing communities. It is important to note that the likelihood of short-term economic and social impacts to local fishing communities is also dependent on the State's decision to implement complementary management measures.

Alternative 2

Under Alternative 2, management measures for California quillback rockfish would be limited to the commercial non-trawl and recreational fisheries as these fisheries generate the vast majority of impacts to this stock. Management measures implemented under Alternative 2 would resemble measures that were implemented in 2024 to minimize California quillback rockfish encounters, which are described in more detail below, and additional inseason action may be needed if limits are exceeded or projected to be exceeded. Impacts would predominantly affect federal fixed gear vessels between 42° N. lat. and 37° 07′ N. lat. and would not impact trawl vessels. Fixed gear vessels operating in the Individual Fishing Quota (IFQ) fishery (i.e., "gear switchers") would be impacted by the area-based restrictions under Alternative 2, because they are subject to the non-trawl Rockfish Conservation Area (RCA) management measures. Non-trawl commercial fisheries south of 37° 07′ N. lat. would be held to a 0 lbs. trip limit for California quillback rockfish, but area-based trip limits and depth restrictions are not expected to be implemented.

The 2024 commercial management measures to minimize California quillback rockfish impacts imposed gear type requirements[12] for non-trawl vessels targeting groundfish, when fishing shoreward of 75 fathoms north of 37° 07′ N. lat., thereby concentrating non-trawl commercial effort onto the continental shelf. Continuation of this change in gear type means that, in many cases, in order to continue fishing in Federal waters shoreward of 75 fathoms, fishery participants would have to deploy a new gear type. It is reasonable to assume that there would be a learning curve that might negatively impact profits within this fishery until participants learn the gear. In addition, commercial vessels fishing outside of State waters must have a vessel monitoring system (VMS), which could represent a new cost for vessels that only previously fished in State waters. For those vessels that were historically fishing shoreward of 75 fathoms, and who are unable to adopt the new gear requirement, fuel costs and encounters with inclement weather would likely increase as those vessels are forced to fish farther offshore. While OA vessels have generally fished shallower than LEFG vessels in the past, these measures may concentrate LEFG and OA vessels into the same area. These impacts would be expected to continue into 2025 and beyond under the Alternative 2 ABC rule rebuilding strategy.

Compared to Alternative 4, however, Alternative 2 allows commercial vessels to continue fishing and maintains some level of co-occurring target stock utilization as California quillback rockfish rebuilds. Fishery participants would not lose all sources of groundfish revenue, and thus there is the potential for shoreside infrastructure to remain intact and stable, which would better ensure that there would be buyers and processors ready to receive the benefits of a rebuilt stock by the end of the rebuilding period.

The economics of recreational fishing impacts from the alternative California quillback rockfish rebuilding strategies are difficult to estimate. However, in the most general sense a reduction in overall fishing effort is likely to result in negative economic impacts to revenue in local communities, through reductions in goods and services provided to recreational anglers (e.g., launch fees, fuel, lodging, etc.). For recreational fisheries, Alternative 2 would maintain the depth restrictions and a zero (0) California quillback rockfish sub-bag limit adopted for 2024. Similar to the commercial fishery, while Alternative 2 imposes some restrictions to minimize California quillback rockfish mortality, it also allows anglers to continue fishing for other target species and thus does not entirely eliminate all opportunity. Thus, Alternative 2 provides some economic

[12] Legal non-bottom contact hook-and-line gear are allowed in the non-trawl RCA (50 CFR 660.330(b)(3)).

benefits to ports by providing nearshore opportunities in critical summer months when the bulk of groundfish effort occurs.

Alternative 4

Under Alternative 4, all directed groundfish fishing sectors in California would be impacted to accomplish the California quillback rockfish rebuilding strategy. Alternative 4 would likely prohibit all commercial groundfish fishing in Federal waters off California at all depths. Likewise, this alternative would fully close recreational groundfish fishing in all marine areas at all depths in Federal waters off the State. The economic impact to communities due to a recreational groundfish closure is difficult to estimate; however, based on Fisheries Economics of the United States, 2022 (NMFS 2023) it is reasonable to assume the impacts would be substantial Statewide. Some communities may be more or less impacted than others. But, these complete and/or near-complete closures of Federal groundfish fisheries would have devastating impacts to fishery participants and coastal communities in California. For example, a complete closure of the commercial groundfish fishery off California under Alternative 4 could result in a potential yearly loss to California port communities of almost $18 million dollars in ex-vessel revenue when compared to average landings from 2023-24 (Table ES 2). However, because much of this fishery is in State waters, the actual impact of the Federal action would only be a portion of that. Moreover, the management measures used to reduce the 10-year California quillback rockfish average yearly mortality in this area, which is currently 2 mt, to zero (0), would come at the potential loss of the catch of 1,841 mt of all other rockfish, or 6,314 mt of all other groundfish, per year (Table ES 2). Due to data difficulties (i.e., the data does not easily discern between State and Federal waters activity), these summaries include both State and Federal waters fishery activity, and therefore overestimate the likely impacts of this Federal action alternative. The likely long-term impacts of the alternatives, including infrastructure loss, are discussed in the following section.

Table ES 2. . Average yearly landings and ex-vessel revenue of California quillback rockfish compared to all rockfish landings (including cabezon, greenling, California scorpionfish, and lingcod) and all groundfish landings for 2014-2023. Source PacFIN 4/24/24

Area	CA Quillback Rockfish (mt)	Rockfish (mt)	Groundfish (mt)	Groundfish Ex-Vessel Revenue (USD)
42° to 40° 10' N. lat.	1.33	620	2,921	$4,851,445
40° 10' to 37° 07' N. lat	0.92	793	2,162	$5,124,627
40° 10' to 37° 07' N. lat	0.92	793	2,162	$5,124,627
37° 07' N. lat. to the US Mexico Border	<0.01	427	1,230	$7,777,678
Total	**2.25**	**1,841**	**6,314**	**$17,753,750**

< [value] indicates a confidential value due to data limitations.

Long Term Community Impacts

California has many ports with variable infrastructure, ranging from heavily industrialized (e.g., Los Angeles harbor) to small, localized ports (e.g., Shelter Cove). For a variety of California ports, engagement and reliance scores are given for both commercial and recreational fisheries using United States Census Bureau data. For many ports off of California, fishery engagement is medium to high, while fishery reliance is low (both commercial and recreational). This is most likely driven

by the high population density within those areas and the existence of a variety of industries in those ports (i.e., low reliance); meanwhile, the total number of fishing vessels and number of landings into those ports are generally high (i.e., high engagement) compared to ports off of Oregon and Washington, where a small number of large-volume landings are more common. This means that, while the economies in some California communities may be able to adapt to the long-term potential loss of commercial fishing engagement, a large number of participants and buyers in the fishery could be severely impacted long-term by fishing restrictions under the alternatives in this rebuilding plan, particularly under Alternative 4. Additionally, with the long-term potential loss of recreational engagement under the alternatives, a large number of businesses, patrons, and private anglers could be impacted long-term. It is important to note, however, that the likelihood of long-term economic and social impacts to California fishing communities is also dependent on the State's decision to implement management measures complementary to Federal rebuilding strategies.

Alternative 2 would maintain some groundfish opportunity but at the cost of more time under the rebuilding restrictions, recognizing that given the small stock size and recent mortality trends of California quillback rockfish, it is not likely that all restrictions would be removed when the stock is rebuilt. Alternative 4 rebuilds California quillback rockfish faster than the Alternative 2 timeline. However, it is likely that more participants might be required to leave the fisheries, and more shoreside infrastructure may be lost under Alternative 4 than under Alternative 2, due to the large scale of the resulting closures in space and target species. Based on ad hoc conversations with commercial fishing industry members, it is unlikely that fishery participants who have taken a hiatus from fishing would re-enter the fishery once California quillback rockfish is rebuilt. Depending on the port community, when fishery participants leave, there is also a likelihood that infrastructure (e.g., ice houses, processors) would permanently leave these communities. Moreover, under either course of action (Alternative 2 or Alternative 4), once the California quillback rockfish stock is rebuilt, regulatory restrictions for California quillback rockfish would likely continue, as the predicted rebuilt stock B_{MSY} is expected to be lower than past California quillback rockfish mortality allocations prior to 2023. Based on this information, even when rebuilt, some groundfish fisheries are unlikely to be restored to levels typical of the years before the California quillback rockfish stock was declared overfished.

Below, long-term impacts to commercial port complexes and recreational management areas (MA) under each of the two HCR alternatives (Alternative 2 and Alternative 4) are described in more detail.

Alternative 2

Commercial Port Complexes

Alternative 2 management measures are likely to mirror those implemented for 2024, which have already inflicted adverse economic impacts to California fishery participants and port economies. Those impacts are likely to continue into the future beyond the 2025-26 biennium, but it is difficult to predict long-term management measures throughout the entire rebuilding period as the ACL slowly increases. Alternative 2 would predominantly impact Federal fixed gear vessels in the long-term, as the vast majority of commercial mortality of California quillback rockfish comes from those fisheries. Alternative 2 better meets the needs of fishing communities in the short term by providing some fishing opportunities now, with a gradual increase in fishing opportunity

throughout the rebuilding time frame (which is projected to be approximately 15 years longer than that of Alternative 4). This short-term benefit would come at the cost of access to co-occurring stocks in Federal waters in the 2045-2060 time frame, however, compared to Alternative 4. In other words, Federal fishery participants restricted by Alternative 2 management measures would not likely realize the benefits of a rebuilt stock until much later under Alternative 2, compared to Alternative 4.

Additionally, under Alternative 2, the long-term Federal nearshore restrictions could force some fixed gear vessels out of the groundfish fishery entirely, if those vessels are unable to learn and utilize a new gear type, or if the costs of fuel and the risk of inclement weather serve as barriers to a spatial effort shift toward offshore areas. Alternative 2 management measures could also shift effort from northern areas subject to California quillback rockfish restrictions into Federal waters off the Central and Southern California coast. This effort shift, in conjunction with the opening of the Cowcod Conservation Areas through Amendment 32 to the Pacific Coast Groundfish Fishery Management Plan (FMP), and the opening of the Non-Trawl RCA seaward of 75 fathoms, could concentrate effort south of 37° 07' N. lat., which may create unintended impacts that may need to be addressed using existing inseason management measures to control effort (e.g., trip limits, area closures, etc.).

Recreational Management Areas

Opportunity in nearshore waters close to coastal reefs is the primary driver of recreational groundfish effort and the social and economic benefits of recreational groundfish fishing in California. From 2013-2024, just over 71 percent of bottomfish trips took place within 3 miles of the coast. While this fishing activity is outside the scope of this action, if there are closures of state waters by CDFW, some of this activity may shift to the EEZ. Therefore, the impact of this rebuilding plan on California recreational fisheries is limited to approximately 29 percent of the overall effort. Statewide, recreational fishery engagement and reliance vary. Overall, reliance on recreational fishing is low for most ports in California, whereas, engagement leans towards medium to medium high. Under the Alternative 2 some of the smaller communities (e.g., Crescent City, Fort Bragg, Bodega Bay, etc.) may be impacted by the proposed recreational season structure more so than other areas.

Under Alternative 2, each recreational fishery MA has a different season and depth structure, reflecting historical California quillback rockfish catch and angler effort for bottomfish. Management measures to achieve Alternative 2 include an “offshore only” season, which would require anglers to fish seaward of the 50 fathom RCA line. “Offshore-only” depth restrictions are effective at reducing recreational mortality of California quillback rockfish. However, because of localized variations in bathymetry, the presence or absence of rocky reefs outside of 50 fathoms, and the proximity of the 50-fathom line to shore, a season structure which restricts anglers to fishing grounds seaward of 50 fathoms would likely reduce effort as many private recreational vessels cannot access or fish the grounds beyond 50 fathoms safely. The majority of MAs contain a number of smaller launch sites smaller vessels are the most effective means to access local reefs. Overall, decreases in fishing effort would have a negative economic impact to revenue in local communities, through reductions in goods and services provided to recreational anglers (e.g., launch fees, fuel, lodging, etc.). However, alternative fishing target opportunities (e.g., salmon,

Pacific halibut) could offset some of these negative impacts due to groundfish effort reductions, at times when those fisheries are not restricted as well.

Alternative 4

Commercial Port Complexes

Under Alternative 4, it is likely all directed commercial groundfish fishing in the EEZ off of California would be prohibited. Due to the uncertainty around the true range of the California quillback rockfish stock, with references saying that the geographic range extends southward in California to Anacapa Island (34° N. lat.) and that California quillback rockfish can be found deeper than 75 fathoms (Love et al., 2002), extending the area and/or depth closures for the stock beyond the current 2024 restrictions would need to be considered by the Council to achieve F = 0. Management measures for the entire Federal groundfish fishery would also need to be enacted to reduce mortality of California quillback rockfish to zero. As a result, Alternative 4 would have substantial adverse economic impacts to all commercial and recreational groundfish sectors in California. Further, it is unlikely that an F = 0 scenario would be reached even with Alternative 4 in this rebuilding plan, given the historical mortality of California quillback rockfish in other non-groundfish fisheries outside the jurisdiction of the Council and NMFS.

Loss of the Federal groundfish fishery in California would likely reduce, and potential result in devastating impacts to, coastal fishing infrastructure (e.g., processors, port services, etc.) linked to groundfish. Given the timeline to rebuild this stock, it is foreseeable that other community interests would likely integrate into the port areas (i.e., industry replacement). Following rebuilding, port communities could select for a known economic return rather than re-establish an unknown economy from fisheries, which would result in the loss of historic fishing communities to development.

Fishing engagement and dependence, along with social vulnerability, can be an indicator of long-term community impacts from a complete loss of fishing in a port. The two port complexes in northern California, Crescent City and Eureka, have a medium and low dependency on the commercial fishing industry, respectively, and rate moderate to high on the social vulnerability scale. The three more northerly port complexes in Central California (area between 40° 10' and 37° 07' N. lat.), Fort Bragg, Bodega Bay, and San Francisco, have a medium and low dependency on the commercial fishing industry, respectively, and have high to low social vulnerability as latitude decreases (Table 9). These port complexes rely heavily on Dungeness crab, and to a lesser extent salmon and groundfish, with the expectation of Fort Bragg, which is unique as it derives more proportional ex-vessel revenue from groundfish than any other port besides Eureka. The five port complexes in the area between 37° 07' N. lat. and the U.S./Mexico Border, Monterey Bay, Morro Bay, Santa Barbara, Los Angeles, and San Diego, have a high to low dependency on the commercial fishing industry. They rate moderate to low on the social vulnerability scale, with the exception of Moss Landing and Los Angeles, which rate high to medium high. Due to rare encounters with quillback rockfish south of Point Conception, it is unclear whether impacts from a rebuilding plan will be experienced in all port complexes. However, to achieve F = 0, Federal recreational groundfish fisheries in Monterey Bay, Morro Bay, Santa Barbara, Los Angeles, and San Diego would likely be closed as well. Commercial catch of California quillback rockfish is extremely rare south of Point Conception, but not zero, therefore these ports may also need to be closed to commercial groundfish fishing along with more centrally located ports.

Recreational Management Areas

Under Alternative 4, all Federal marine areas would be closed to recreational groundfish fishing, with social and economic impacts commensurate with community dependence. For areas more reliant on bottomfish trip types, the impact could be greater compared to ports with more diverse targets. Businesses that are centered on marine recreational groundfish fisheries (e.g., tackle shops, charter boats, etc.) would likely see adverse economic impacts, and businesses (e.g., hotels, restaurants, etc.) that are linked to marine recreational groundfish fisheries could be negatively impacted, as well. In the long term, as the stock recovers, it is uncertain what fisheries, areas, etc., could reopen.

As noted above, fishing engagement and dependence, along with social vulnerability, can be an indicator of long-term community impacts from a complete loss of groundfish fishing. A low reliance rating suggests significant social and economic impacts to these communities may not result from regulatory changes. These management/port areas may be more diversified, in terms of other industries available to residents, and thus could potentially withstand impacts from recreational fishery regulatory changes (including closures). In northern California, the ports of Crescent City and Eureka were identified as having high and medium high social vulnerability, respectively. Both exhibit medium recreational engagement; whereas, Crescent City displays medium reliance on recreational fisheries and Eureka has low reliance. The Mendocino MA encompasses the major ports of Shelter Cove and Fort Bragg, with several rural ports (e.g., Albion). Shelter Cove and Fort Bragg were identified as having medium social vulnerability and medium reliance on groundfish in the recreational fisheries. Within the San Francisco MA, the major ports of Bodega Bay and San Francisco are both identified as having low social vulnerability, while they diverge relative to recreational engagement and reliance. Bodega Bay scores low and medium high, respectively, with San Francisco scoring the opposite. This area is unique in that San Francisco Bay offers additional fishing alternatives when other fisheries are closed or when weather is inclement. The Central MA encompasses a number of major recreational ports, including Santa Cruz, Monterey, Avila Beach, and Morro Bay, plus rural landings. Except for Moss Landing, these ports have low social vulnerability and low reliance on recreational fishing. The community reliance on recreational fishing in the Southern MA is generally low. However, Oxnard and Los Angeles, have medium high vulnerability. This MA also represents the largest population center in California and a far greater amount of boat-based effort is exerted in this MA, than in MAs north of Point Conception.

1. Introduction

This document constitutes the analysis in support of the rebuilding plan for the California stock of quillback rockfish (hereinafter "California quillback rockfish"). The status California quillback rockfish (*Sebastes maliger*) was determined as overfished by the Secretary of Commerce (Agenda Item F.2, Attachment 2, March 2024) according to the "applicable minimum stock size threshold" (MSST) as described in Section 4.5 of the Pacific Coast Groundfish Fishery Management Plan (hereinafter FMP). In brief, that section describes that the term "overfished" is where a stock's abundance is below its overfished threshold, or MSST. The default value of this threshold is 25 percent of the estimated unfished spawning output level for non-flatfish stocks or 50 percent of the level that would produce maximum sustainable yield (B_{MSY}), if known. The FMP defines a proxy value for B_{MSY} of 40 percent of unfished spawning output for non-flatfish stocks. The 2021 assessment (Langseth et al, 2021) estimated the California quillback rockfish population to be at 14 percent of the unexploited equilibrium spawning output at the start of 2021 (Figure 1). Per the Magnuson-Stevens Fishery Conservation and Management Act (MSA) Section 304(e)(3), the Council is required to prepare and implement an FMP Amendment specifying the rebuilding plan for California quillback rockfish.

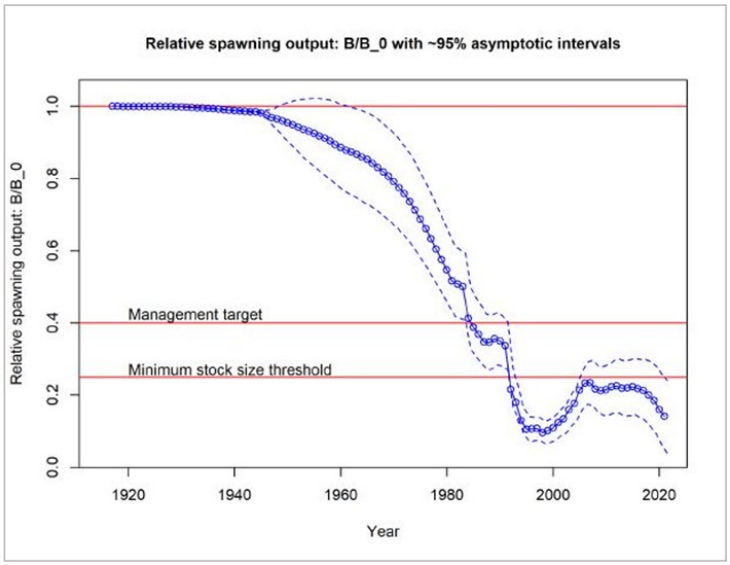

Figure 1. Estimated time series of relative spawning output from Langseth et al., 2021, Figure 24.

1.1 Stock Rebuilding Plans

The FMP discusses stock rebuilding plans at §4.6.3, which is incorporated by reference. Briefly, for a stock that is overfished, the rebuilding plan will specify a time period for ending the overfished condition and rebuilding the stock. Overfishing restrictions and recovery benefits should be fairly and equitably allocated among sectors of the fishery..

1.2 Requirements for Rebuilding Plans

National Standard Guidelines specify how rebuilding should occur and, in particular, establish constraints on Council action (see 50 CFR 600.310(j)). Rebuilding should bring stocks back to a population size that can support MSY (B_{MSY}). A rebuilding plan must specify a target year (T_{TARGET}) based on the time required for the stock to reach B_{MSY}. This target is bounded by a lower limit (T_{MIN}) defined as the time needed for rebuilding in the absence of fishing (i.e., F = 0). Rebuilding plans for stocks with a T_{MIN} less than ten years must have a target less than or equal to ten years. If, as is the case with most of the groundfish stocks considered in this amendment, the biology of a particular species dictates a T_{MIN} of ten years or greater, then the maximum allowable rebuilding time, T_{MAX}, is the rebuilding time in the absence of fishing (T_{MIN}) plus "one mean generation time." Mean generation time is a measure of the time required for a female to produce a reproductively-active female offspring (Pielou, 1977; and especially Restrepo et al., 1998) calculated as the mean age of the net maternity function (product of survivorship and fecundity at age). The MSA states the rebuilding time should be as short as possible, taking into account the status and biology of the overfished stocks and the needs of fishing communities (Sec. 304(e)(A)(i)). In most cases, because of the biology of the stocks and the needs of fishing communities, the rebuilding time, or the target year, will be greater than the minimum rebuilding time (T_{MIN}).

1.3 Contents of Rebuilding Plans

This document follows the detailed contents of a rebuilding plan section in the FMP § 4.6.3.2 and is incorporated by reference.

1.4 History of Action

Quillback rockfish was assessed in 2021 using a length-based data-moderate method, which is included by reference (Langseth et al., 2021). The Scientific and Statistical Committee (SSC) reviewed the assessment in June 2021 and endorsed it as the best scientific information available (BSIA) and suitable to inform management (Agenda Item G.5.a, Supplemental SSC Report 1, June 2021). The SSC noted the estimated stock size of California quillback rockfish to be below the MSST (Agenda Item G.5.a Supplemental SSC Report 1, June 2021), indicating it is overfished. A rebuilding analysis was conducted and submitted to the Council at the September 2021 meeting under Agenda Item G.5, Attachment 10, June 2021 and recommended by the SSC (Agenda Item C.6.a Supplemental SSC Report 1, September 2021). The Council referred the assessment to the Groundfish Subcommittee (GFSC) of the SSC for further review in September 2021. The SSC determined the results of the rebuilding analysis, per the recommendations of the GFSC, to be technically correct (Agenda Item E.2.a. Supplemental SSC Report 1, November 2021). The Council then adopted the stock assessment and the rebuilding analysis at their November 2021 meeting.

The next step was for NMFS to determine the status of quillback rockfish based on the stock assessment results. In March 2021, the Council was informed by NMFS that it needed to correct the FMP to define stocks of managed groundfish species (Agenda Item E.3.a, NMFS Report 1, March 2022). Briefly, the FMP at that time did not define stocks of managed species. Therefore, the status of California quillback rockfish could not be determined until the stock was defined in the FMP, which Amendment 31 accomplished.

Despite not being declared overfished, the Council took precautionary measures to reduce impacts on California quillback rockfish for the 2023-24 biennium. The Council adopted Alternative 1, HCR is ACL < ABC (P* = 0.45), SPR = 0.55, for the California quillback rockfish harvest specifications at their June 2022 meeting, under Agenda Item F.6., as their final preferred alternative (FPA) (refer to Informational Report 2, September 2022). As quillback rockfish was not yet deemed State-specific stocks (see Amendment 31), it remained in the nearshore rockfish complexes north and south of 40° 10′ N. lat. The California assessment was used to develop harvest specifications for the species contribution to the stock complexes using the aforementioned HCR. However, to specify the California contribution to the complexes, the harvest specification, 49.6 percent of the OFL from the assessment was apportioned from 42° to 40°10' N lat. and 50.4 percent of the OFL from the assessment was apportion south of 40°10' N lat. These apportionment ratios were based on the estimated average 2002-2020 total catch by area. Additionally, for waters off of California, the Council implemented an annual catch target (ACT) set equal to the combined Statewide ACL contributions to the nearshore rockfish (Table 1). The Council also adopted a 75 lbs. bimonthly trip limit for the fixed gear commercial fishery and a 1 fish bag limit for the recreational fishery. These harvest specifications and management measures are detailed in Informational Report 2, September 2022.

Table 1. The 2023-24 estimated and summed No Action California quillback rockfish contributions (ACL contribution SPR 0.55 < ABC P* = 0.45) and ACTs (ACT = ACL contribution) to the nearshore rockfish complexes north and south of 40° 10′ N. lat.

Specification a/	**2023 (mt)**	**2024 (mt)**
OFL	2.11	2.32
ABC	1.85	2.01
ACL Contribution	1.76	1.93
ACT	1.76	1.93

Amendment 31 defined quillback rockfish as State-specific stocks off of Washington, Oregon, and California, which allowed NMFS to determine the status of these stock units. In December 2023, the status of California quillback rockfish was determined to be overfished (Agenda Item F.2, Attachment 2, March 2024).

At the September 2023 meeting, the Council was informed by the California Department of Fish and Wildlife (CDFW) that the 2023 California quillback rockfish ACT was exceeded (Agenda Item G.8.a, CDFW Report 1, September 2023) and that California had implemented actions to reduce impacts to the stock (Agenda Item G.8.a, Supplemental CDFW Report 2, September 2023). Following analysis by the Groundfish Management Team (GMT; Agenda Item G.8.a, Supplemental Report 5, September 2023), the Council adopted inseason actions for Federal waters off of California that were consistent to CDFW actions (Agenda Item G.8.a, Supplemental Report 5, September 2023). In brief, these actions reduced the commercial trip limit and recreational bag limit to zero. Further, recreational groundfish fishing shoreward of the 50 fathom non-trawl rockfish conservation area (RCA) was prohibited and area-based gear-specific trip limit restrictions were placed on the fixed gear commercial fishery.

In September 2023, under Agenda Item G.6 Initial Harvest Specifications and Management Measures Actions for 2025-26, the Council expressed concerns regarding the assumed removals for 2023 and 2024 applied in the updated rebuilding analysis. The GMT's recommended removal assumption for 2024 in the rebuilding analysis was 10.62 mt, which was based on the 2023 Groundfish Multiyear Report (GEMM, Agenda Item G.1.b, NWFSC Report 1, September 2023; Agenda Item E.2.a, Supplemental GMT Report 2, November 2023). The methodology used to develop this value is described in Agenda Item E.2, Supplemental GMT Report 1, November 2023. At that time, additional inseason actions were being considered in response to the ACT being exceeded for California quillback rockfish – actions that were expected to reduce mortality for the remainder of 2023 and for 2024. Given these concerns, CDFW recommended a removal assumption of 6.32 mt in 2024 (Agenda Item G.6, Supplemental CDFW Report 1, September 2023). In response, the Council recommended the Northwest Fishery Science Center (NWFSC) complete an alternate run of the rebuilding analysis using an alternate quillback rockfish removal assumption based on expected inseason actions, i.e., the CDFW removal assumption.

In November 2023, the Council reviewed the draft 2023 California quillback rockfish rebuilding analysis, with the alternate rebuilding removal assumption (i.e., the CDFW removal assumptions) included as a separate appendix (Agenda Item E.2, Attachment 1, November 2023). The SSC endorsed the rebuilding analysis as BSIA and concurred with the GFSC that the analysis was conducted in accordance with the Terms of Reference (TOR) for Groundfish Rebuilding Analysis (Agenda Item E.2.a, Supplemental SSC Report 1, November 2023). However, the SSC did not make recommendations on the removal assumptions. The Council postponed adoption of the 2023 rebuilding analysis (based on the 2021 assessment) and requested an additional SSC review of the public comments submitted by Dr. Ray Hilborn and Dr. Mark Maunder [via a letter submitted by J.T. Hobbs] regarding the 2021 stock assessment.

Also in November 2023, as part of developing the range of 2025-26 harvest specifications and management measures, CDFW recommended the Council consider managing California quillback rockfish contributions to the nearshore rockfish complexes north and south of 40° 10′ N. lat. with a 2025 OFL specification of 8.41 mt and a category 3 buffer using a P*=0.40 to obtain an ABC of 5.06 mt [ABC = 8.41*0.602 = 5.06] (Agenda Item E.2, Supplemental CDFW Report 2, November 2023). CDFW recommended this be added to the range of HCRs) considered for the 2025-26 biennium. Thus, a range of four action alternatives[13] for the 2025-26 California quillback rockfish OFL, ABC, and ACL values were adopted for overwinter analysis

- Alternative 1 - ACL SPR = 0.55 < ABC P* 0.45,
- Alternative 2 - the ABC rule, P* 0.45,
- Alternative 3 - CDFW alternative, and
- Alternative 4 - F = 0.

In November 2023, the Council adopted inseason adjustments by extending the duration of several measures implemented through the September 2023 (G.8.a. Supplemental GMT Report 2, September 2023) inseason action, with the goal of minimizing the mortality of California quillback rockfish (detailed in E.9.a, Supplemental GMT Report 1, November 2023) in limited entry (LE)

[13] Table 5 and 4, Agenda Item E.2, Attachment 1, November 2023 and Agenda Item E.2.a, Supplemental CDFW Report 2, November 2023

and open access (OA) groundfish fisheries in 2024. The majority of the management measures implemented through the 2023 inseason actions are for the area between 42° N. latitude and 36° N. latitude, between the depths of 30 and 50 fathoms, where California quillback rockfish are most abundant. In November 2023, the inseason action expanded the RCA to include all Federal waters shoreward of 75 fathoms. Based on analysis conducted by the GMT at the November 2023 meeting (E.9.a. Supplemental GMT Report 1, November 2023), the Council recommended revising some of the measures implemented through the September 2023 inseason action to reduce discard mortality of California quillback rockfish, while further narrowing the scope of restrictions and minimizing the economic impact to fishing communities to the extent possible (88 FR 90127, January 1, 2024). Additionally, on November 8, 2023, NMFS approved Amendment 31 to the PCGFMP, which defined California quillback rockfish as a stock in need of conservation and management (November 16, 2024; 88 FR 78677).

In December 2023, NMFS determined that the 2021 California quillback rockfish stock assessment and the 2023 rebuilding analysis are BSIA. Also in December 2023, NMFS determined that California quillback rockfish is overfished and notified the Council via letter of the necessity to develop a rebuilding plan (Agenda Item F.2, Attachment 2, March 2024).

In January 2024, the SSC GFSC conducted a review of the public comments submitted by Dr. Ray Hilborn and Dr. Mark Maunder, as requested by the Council in November. A Terms of Reference (TOR) was specifically developed for this review meeting to provide the Council with further guidance on using the existing 2021 assessment of California quillback rockfish and corresponding 2023 rebuilding analysis for decision-making. This additional GFSC review of public comment did not raise new information that either had not been considered by the GFSC and SSC during its past reviews, or which suggested that the approach taken by the stock assessment team did not follow the TOR and accepted practices guidelines, or which indicated that there were data that could have been included in the assessment at the time it was conducted that were not considered (SSC GFSC report, March 2024).

At the March 2024 Council meeting, the GFSC and the SSC again recommended use of the 2021 stock assessment and adoption of the 2023 rebuilding analysis for California quillback rockfish as BSIA (Agenda Item F.7.a, Supplemental SSC Report 1, March 2024). The Council adopted the 2023 rebuilding analysis for California quillback rockfish, as described in Agenda Item F.2, Attachment 1, March 2024, with the original GMT removal assumptions. The Council also affirmed the range of 2025-26 harvest specifications to be included in the rebuilding analysis, based on the range developed in November (see Table 1 in Agenda Item E.7.a, Supplemental GMT Report 1 November 2023).

In April 2024, the Council adopted the ABC rule (Alternative 2) as PPA for the California quillback rockfish rebuilding strategy and removed the default HCR (Alternative 1) and the California Department of Fish and Wildlife (CDFW) proposal (Alternative 3) from further analysis.. Alternative 2 was adopted by the Council as FPA in June 2024 because it provides slightly more fishing opportunity, and thus reduces impacts on fishing communities (even if minimally), without negatively impacting the Council's or the MSA's rebuilding goals.

2. Alternatives

2.1 Rebuilding Analysis

A draft California quillback rockfish rebuilding analysis was prepared in 2023 (Langseth, 2023) to examine a range of alternative rebuilding strategies and inform harvest specification decision-making, which is incorporated by reference. Based on the rebuilding analysis, California quillback rockfish are unable to rebuild within 10 years. T_{MAX} is the maximum time allowed for rebuilding, and is calculated as the T_{MIN} plus the mean generation time for stocks that require more than 10 years to rebuild. Mean generation time is the estimated time it takes a spawning female to be replaced by a spawning female in the next generation. For long-lived rockfish, the mean generation time plus T_{MIN} can provide an extended period to achieve rebuilding. The adopted California quillback rockfish rebuilding analysis specified resulting rebuilding parameters (T_{MIN} = 2045, T_{MAX} = 2071, mean generation time of 26 years). In the rebuilding analysis, a P* = 0.45 was used to generate harvest specifications. The use of this P* was the default for quillback rockfish, as specified 2015 "Harvest Specifications and Management Measures for 2015-2016 and Biennial Periods Thereafter Environmental Impact Statement (hereinafter "2015 EIS", PMFC 2015) That document noted that ACLs for most species are determined based on the ACLs being set equal to the ABCs with a P* value of 0.45. The Council for both the 2023-24 and the 2025-26 biennia did not request analyses of different P* values for this stock. As such, the P* remained as the default 0.45).

2.2 Rebuilding Options

At the April 2024 meeting, the Council adopted the following rebuilding plan harvest specifications for analysis, as described in Agenda Item F.2, Supplemental Revised Attachment 1, April 2024. The analyses for these alternatives are detailed above in Agenda Item F.5, Attachment 2, April 2024 which is incorporated by reference, though summarized here.

- **Alternative 2**: the "ABC rule" rebuilding strategy, in which the ACL is set equal to the ABC given a selected management risk tolerance (P* = 0.45) and time-varying scientific uncertainty (sigma = 1.0) reduction applied to the OFL
- **Alternative 4:** F = 0, i.e., no fishing mortality

The rebuilding analysis assumes these HCRs persist through the course of rebuilding the California quillback rockfish population. However, long-term management strategies for California quillback rockfish may be revisited during each biennial management cycle undertaken by the Council. The T_{TARGET} indicates the rebuilding target year in which the stock would be rebuilt and is associated with each potential rebuilding strategy for consideration by the Council. The target year for rebuilding (T_{TARGET}) must fall between T_{MIN} and T_{MAX}.

As a general note, Quillback rockfish inhabit nearshore waters, with the majority of fishing mortality occurring in State waters (0-3 nautical miles from shore). Per 16 U.S.C. 1851(a)(3), the Council and NMFS are required to manage stocks throughout their range. The Council and NMFS only have the authority to implement fishery management regulations in Federal waters, and the

State of California has discretion to implement management complementary to Federal action or other management actions in its State waters. Thus, this rebuilding plan would be in effect only in the EEZ, even though mortality of quillback rockfish off California in both Federal (3-200 nm) and State waters would be counted towards the ACL. Whether similar rebuilding measures are enacted in State waters by the State of California is outside the scope of this action. However, because this is a trans-boundary stock, whether or not rebuilding can be achieved in the proposed timeline depends on the State of California implementing management in its waters to complement this Federal action.

2.3 Alternatives Considered But Not Analyzed Further.

The Council requested analysis of a range of rebuilding strategies for policy consideration as part of the 2025-26 groundfish harvest specifications and management measure process (Agenda Item F.6, Attachment 2, June 2024). The requested rebuilding strategies were Alternatives 1 through 4, with Alternative 1 as the default HCR and Alternatives 2 and 4 as the Alternatives described above (i.e., ABC rule and F = 0). Alternative 3 included harvest specifications that were proposed by CDFW (Agenda Item E.2.a, Supplemental CDFW Report 2 Nov 2023).

Alternative 1 for California quillback rockfish represents the default HCR when taking into account BSIA and the status of the stock. Alternative 1 is projected to rebuild the stock with a 50 percent probability by 2062, within the statutory maximum time to rebuild of 2071 (T_{MAX}) and represents a 69.4 percent probability of rebuilding by 2071 (T_{MAX}). Alternative 1 under default HCR would have a slightly lower probability of rebuilding (69.4 percent) within the required timeline, compared to Alternative 2 (73.6 percent) with the ABC rule. Alternative 1 would also take two years longer (2062) for the stock to reach the target rebuilding level, compared to Alternative 2 (2060). Thus, in April 2024, the Council did not select Alternative 1 for further consideration. Additionally, the Council noted that overall trends represented by Alternative 1 (default) and Alternative 2 (ABC rule) harvest control rules were functionally identical, in that they did not deviate until well into the rebuilding period.

Alternative 3 harvest specifications for California quillback rockfish were proposed by CDFW during the November 2023 Council meeting. The Alternative 3 ABC value was the result of a 2025 OFL of 8.41 mt with a category 3 sigma=2.0 and a P*=0.40 applied to obtain an ABC = 5.06 mt [ABC = 8.41*0.602 = 5.06]. The harvest specification values in Alternative 3 were greater than those estimated in the adopted 2023 rebuilding analysis and represented harvest levels beyond what would appear biologically reasonable for a rebuilding population, and as such did not meet the MSA rebuilding requirements. Lastly, Alternative 3 was proposed for analysis prior to the Council officially adopting the 2023 rebuilding analysis. Thus, in April 2024, the Council did not select Alternative 3 for further consideration.

Additionally, No Action for the purposes of this rebuilding plan is the 2023-24 harvest specifications and management measures. No Action does not represent BSIA. Under No Action, the most recent scientific information has not been applied to the HCR per Amendment 24 to the FMP. Therefore, No Action is untenable for adoption. Further, No Action is not a rebuilding strategy, does not take the stock's status of overfished into account, and would not remove California quillback rockfish from the complex. Accordingly, this alternative is not consistent with the MSA and was not adopted for further analysis by the Council

2.4 Comparison of Rebuilding Strategies

The California quillback rockfish rebuilding analysis (Langseth, 2023) compares rebuilding strategies in Table 2 of that document. The Council considered a No Action and four harvest specification alternatives for California quillback rockfish. The Council, as discussed below, adopted Alternative 2 as their PPA and removed Alternative 1 and Alternative 3 from consideration as a final rebuilding strategy. This rebuilding plan analysis therefore examines Alternative 2 (PPA) and Alternative 4 in detail, while providing some information on the Council's prior comparison of Alternatives 1, 2 and 4 in Table 2 below.

No Action is not a tenable option, as it does not represent BSIA or take into account the stock's status. Alternative 1 represents the default HCR and uses the rebuilding strategy of SPR = 0.55, ACL<ABC, P* = 0.45. Alternative 1 comports to the SPR = 0.55 rebuilding strategy, represents the stock as defined, and represents a management strategy for California quillback rockfish as a single stock. Therefore, for purposes of this rebuilding analysis Alternative 1 was considered the most comparable to Alternative 2 and Alternative 4.

Table 2. California quillback rockfish harvest specifications for OFL and ACL resulting from rebuilding strategies based on Langseth (2023) given the assumed removals for 2021-2024.

	Harvest Control Rule a/		
	Alternative 1	**Alternative 2**	**Alternative 4**
	SPR 0.55	ABC Rule (P*=0.45)	F = 0 (i.e., no fishing mortality)
2021 assumed removals (mt)	*15.58*	*15.58*	*15.58*
2022 assumed removals (mt)	*18.11*	*18.11*	*18.11*
2023 assumed removals (mt)	*11.12*	*11.12*	*11.12*
2024 assumed removals (mt)	*10.62*	*10.62*	*10.62*
2025 OFL/ACL (mt)	1.52/1.26	1.52/1.30	1.52/0
2026 OFL/ACL (mt)	1.77/1.47	1.77/1.50	1.81/0
SPR	0.55	-	1.0
T_{TARGET}	2062	2060	2045
T_{MAX}	2071	2071	2071
Probability of recovery by T_{MAX}	0.694	0.736	0.999

a/ Alternative 3 is not included in this table because it was not part of the range included in the rebuilding analysis.

Under an Alternative 1 strategy, California quillback has a 50 percent probability of rebuilding (i.e., Ttarget) of 2062, with an expected 69.4 percent probability of rebuilding by 2071 (Tmax). The ACLs in 2025-26 under Alternative 1 are marginally less than those under Alternative 2 only differing in the hundred decimal position (e.g., 2025 Alt. 1 ACL = 1.26 mt versus Alt. 2 ACL = 1.30 mt). Across the rebuilding period, Alternative 1 is projected to rebuild the stock two years before Alternative 2;however, the probability that Alternative 1 rebuilds by Tmax is 69.4 percent, slightly lower than the projected probability associated with Alternative 2 of 73.6 percent. Overall, there is no substantive difference between these two Alternatives in terms of management and

harvest specifications, thus a meaningful comparison between these two alternatives is limited because of their similarities. For example, the resulting difference in impacts to communities, both short and long term, between Alternatives 1 and 2 are negligibleTherefore, this rebuilding plan analysis compares only Alternative 2 and Alternative 4 in detail.

Alternative 2 is described as the "ABC rule" rebuilding strategy, which is where the ACL is set equal to the ABC based on a pre-specified management risk tolerance (P*) and the scientific uncertainty (sigma) reducing the ABC from the overfishing limit (OFL). This calculation applies the ABC harvest rate with category 2 time-varying sigma = 1.0 and a P* = 0.45. The ABC rule has a 50 percent probability of rebuilding the stock by 2060 (Figure 2) , within the statutory maximum time to rebuild of 2071 (Tmax). The ABC rule rebuilding strategy allows for minimal harvest during rebuilding (Figure 3) and represents the strategy that is closest to the maximum time to rebuild. The Alternative 2 ABC rule has an expected 73.6 percent probability of rebuilding by 2071 (Tmax) (Figure 4).

Alternative 4 is set at F = 0, which assumes no fishing mortality, has a 50 percent probability of rebuilding the stock by 2045 and a 99.9 percent probability of rebuilding by 2071 (Tmax, Figure 5). This Alternative rebuilds the stock on the fastest schedule; however, it assumes that there would be no mortality in any fishery, groundfish or otherwise.

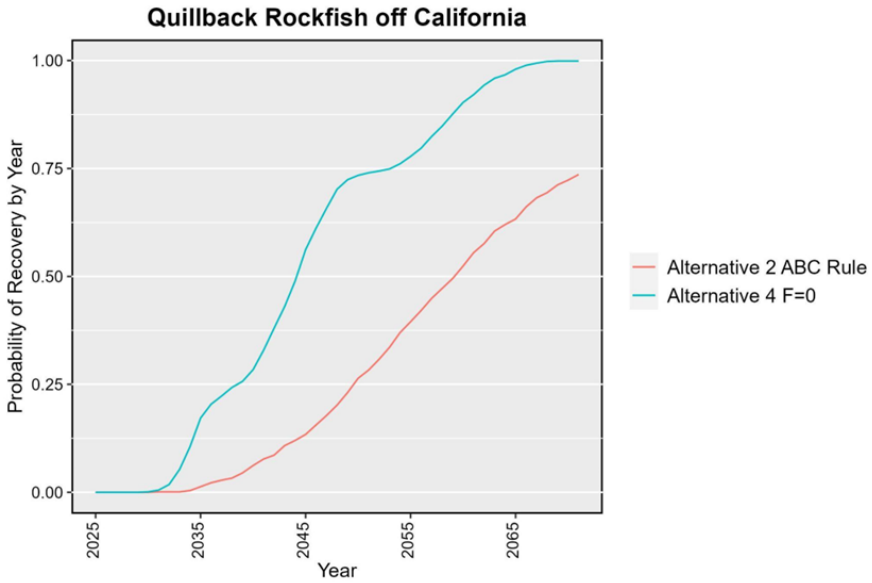

Figure 2. Projected probability of recovery by year of California quillback rockfish under each rebuilding strategy; Alternative 2 ABC rule and Alternative 4 with no fishing mortality (F = 0). Probabilities represent the proportion of simulations that reach the target spawning output (i.e., recovery) by the specified year

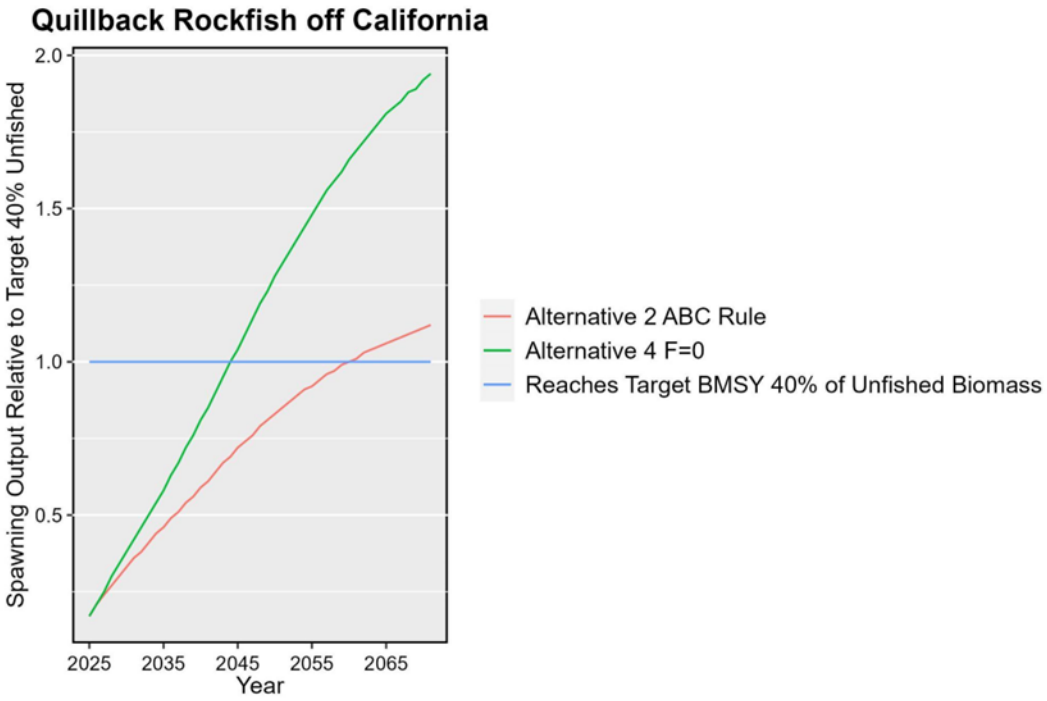

Figure 3. Projected spawning output relative to the target 40 percent unfished spawning output (i.e., value 1 = reached target), of California quillback rockfish under each rebuilding strategy; Alternative 2 ABC rule and Alternative 4 with no fishing mortality (F = 0).

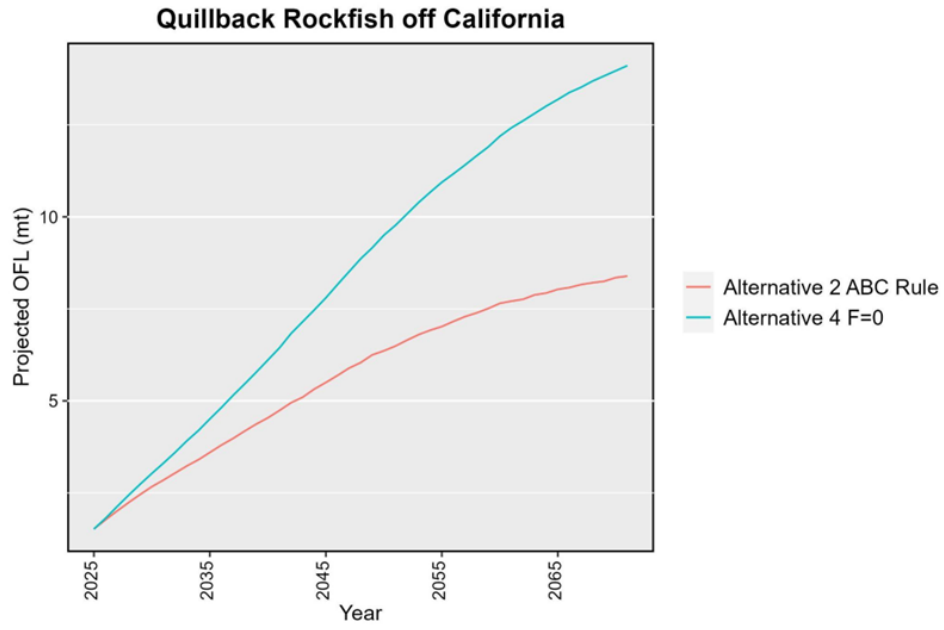

Figure 4. Projected overfishing limit (OFL; mt) of California quillback rockfish under each rebuilding strategy; Alternative 2 ABC rule and Alternative 4 with no fishing mortality (F = 0).

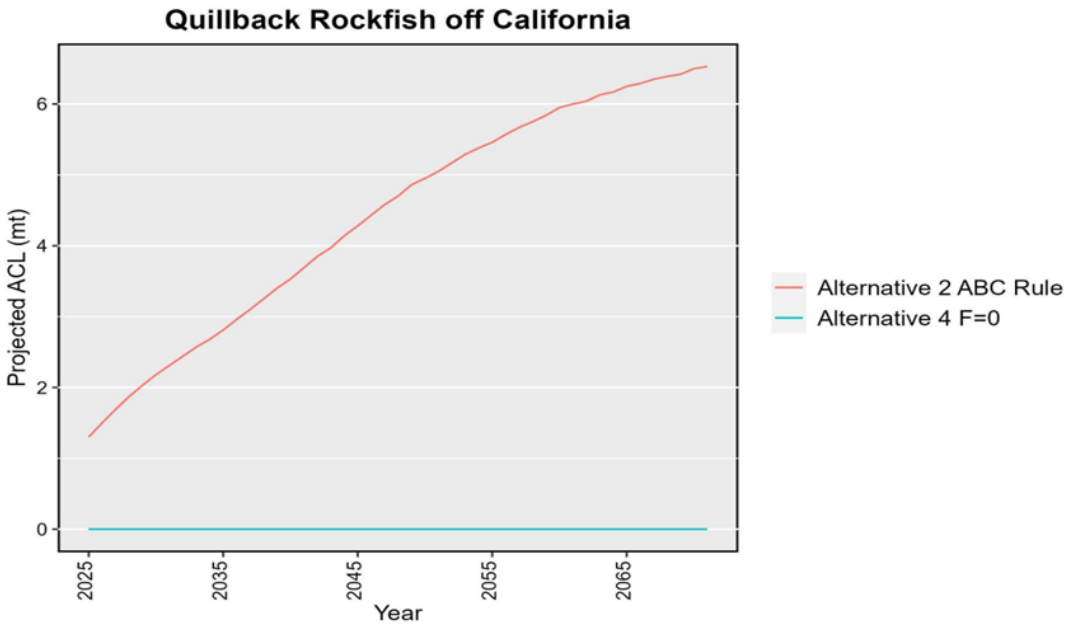

Figure 5. Projected annual catch limit (ACL; mt) of California quillback rockfish under each rebuilding strategy; Alternative 2 ABC rule and Alternative 4 with no fishing mortality (F = 0).

2.5 Alternatives Considered But Not Analyzed Further.

The Council requested analysis of a range of rebuilding strategies for consideration as part of the 2025-26 groundfish harvest specifications and management measure process (Agenda Item F.5, Attachment 2, April 2024). The requested rebuilding strategies were Alternatives 1 through 4, with Alternative 1 as the default HCR and Alternatives 2 and 4 as the Alternatives described above (i.e., ABC rule and F = 0). Alternative 3 included harvest specifications that were proposed by CDFW (Agenda Item E.2.a, Supplemental CDFW Report 2 Nov 2023).

Alternative 1 represented the default HCR, as used in the 2023-24 management cycle, with a SPR = 0.55 to determine the ACL. Alternative 1 is projected to rebuild the stock with a 50 percent probability by 2062, within the statutory maximum time to rebuild of 2071 (T_{MAX}) and represents a 69.4 percent probability of rebuilding by 2071 (T_{MAX}).

Overall trends represented by Alternative 1 (default) and Alternative 2 (ABC rule) harvest control rules were functionally identical in that they did not deviate until well into the rebuilding period. Alternative 1 under default HCR would have a slightly lower probability of rebuilding (69.4 percent) within the required timeline, compared to Alternative 2 (73.6 percent) with the ABC rule. Alternative 1 would also take two years longer (2062) for the stock to reach the target rebuilding level, compared to Alternative 2 (2060). Thus, in April 2024, the Council did not select Alternative 1 for further consideration.

Alternative 3 harvest specifications for California quillback rockfish were proposed by CDFW during the November 2023 Council meeting. The Alternative 3 ABC value was the result of a 2025 OFL of 8.41 mt with a category 3 sigma = 2.0 and a P* = 0.40 applied to obtain an ABC = 5.06 mt [ABC = 8.41*0.602 = 5.06]. The harvest specification values in Alternative 3 were greater than

those estimated in the adopted 2023 rebuilding analysis, so would be inconsistent with SSC recommendations, and represented harvest levels beyond what would appear biologically reasonable for a rebuilding population, and as such did not meet the MSA rebuilding requirements. Lastly, Alternative 3 was proposed for analysis prior to the Council officially adopting the 2023 rebuilding analysis. Thus, in April 2024, the Council did not select Alternative 3 for further consideration.

3. Stock Status and Biology

3.1 Biology

The biology and population dynamics of quillback rockfish are described in several documents, including the Groundfish Stock Assessment and Fishery Evaluation (SAFE) report (PFMC, 2022), the 2021 assessment (Langseth et al., 2021), and Amendment 31 (PFMC, 2023). These reports are incorporated by reference.

Quillback rockfish is a long-lived nearshore rockfish, which can live up to 95 years and is late to mature (Yamanako and Lacko, 2001; Love et al., 2002). The range of this species is from Kodiak Island, Alaska to Anacapa Island, California, though it is most common from southeast Alaska to central California (Love et al., 2002). Off of California, adult quillback rockfish are generally found in waters between 20-50 fathoms in nearshore kelp forests and rocky habitat (Love et al., 2002; Love, 2011).

In 2010, a productivity and susceptibility analysis conducted at a coastwide scale estimated quillback rockfish to have a vulnerability of major concern (V = 2.22, Cope et al., 2011). This analysis calculated species-specific vulnerability scores based on two dimensions: productivity characterized by life history and susceptibility characterized by how the stock is likely affected by fisheries.

3.2 Assessment

Quillback rockfish was first assessed in 2010 using Depletion-Based Stock Reduction Analysis (DB-SRA) to provide estimates of coastwide OFLs (Dick and MacCall, 2010). The coastwide OFL was then apportioned to each management area based on the proportion of historical catches north and south of 40° 10′ N. lat. It is important to note, the application of DB-SRA did not estimate a stock status, but rather assumed that depletion at that time was distributed around the management target (i.e., 40 percent of unfished spawning output). The 2010 assessment found there was a 52 percent probability that quillback rockfish was experiencing overfishing, as recent coastwide catches were greater than the estimated median coastwide OFL estimate from that analysis (Dick and MacCall, 2010).

The 2021 assessment of California quillback rockfish used a length-based data-moderate methodology (Langseth et al., 2021). This assessment was a single-sex model that included two fishing fleets (a recreational fleet and a commercial fleet), externally estimated biological relationships (length-weight, length-at-age, natural mortality, fecundity, and maturity), estimated asymptotic selectivity for each fishing fleet, assumed a Beverton-Holt stock recruitment relationship with fixed productivity (i.e., steepness of 0.72), and estimated annual recruitment deviations (Agenda Item G.5.a, Supplemental SSC Report 1, June 2021). Assumed biological parameters are provided below in Table 3. There was substantial uncertainty in the California model given sensitivity to assumed mortality parameters and the limited data in California. The assessment was assigned a category 2 designation (i.e., sigma = 1.0). The assessment of California

quillback rockfish estimated 2021 depletion (i.e., fraction of unfished spawning output) of 14 percent, below the MSST for rockfish (25 percent).

The SSC reviewed the 2021 assessment and endorsed it as BSIA for use in management and the Council adopted the assessment after considering several discussions presented in SSC statements and GFSC reports that are reflected in the record for Council meetings in June 2021 (Agenda Item G.5.a Supplemental SSC Report 1), September 2021 (Agenda Item C.6.a Supplemental SSC Report 1), and November 2021 (Agenda Item E.2.a Supplemental SSC Report 1). Those reports characterize the SSC's conclusions about the assumptions, strengths, and limitations of the 2021 assessment. An additional review meeting conducted in January 2024 also clarifies SSC conclusions (SSC GFSC report, March 2024).

Table 3. Summary of key parameters in the 2021 California quillback rockfish stock assessment.

Parameter	Value	Estimated or Fixed
Natural mortality yr^{-1}	0.057	Fixed
Length at age (cm)		
von Bertalanffy k yr^{-1}	0.199	Fixed
Asymptotic length (cm)	43.04	Fixed
Weight at length (kg)		
Coefficient	1.963 e-05	Fixed
Exponent	3.016	Fixed
Maturity at length (cm)		
Inflection (cm)	29.23	Fixed
Slope	-0.80	Fixed
Fecundity at length (cm)		
Inflection	3.93e-07	Fixed
Slope	3.702	Fixed
Stock-recruitment		
$Ln(R_0)$	3.17	Estimated
Steepness (h)	0.72	Fixed
Variation in Recruitment (σ_R)	0.60	Fixed
Recruitment deviations	Annual deviations from the stock-recruitment curve	Estimated
Start Year for Early Deviations	1940	Fixed
Start Year for Main Deviations	1978	Fixed
End year for Deviations	2017	Fixed
Maximum Bias Adjustment	0.35	Fixed

3.3 Model sensitivity to stock-recruit steepness

The steepness of the stock-recruitment relationship, which determines the productivity of a fish population, is one of the key parameters for understanding the dynamics of the stock and determining projected rebuilding. The stock-recruit steepness represents the proportion of average unfished recruitment achieved at 20 percent of unfished spawning output and ranges from 0.2 to 1.0 (the higher value indicates the higher productivity of the stock). Reliable estimation of this parameter is dependent on long, contrasting time-series of stock-recruit data that are often not available (Hilborn and Walters, 1992; Conn et al., 2010). To date, the majority of groundfish assessments lack sufficient data to estimate steepness reliably, resulting in the parameter being fixed at an assumed value. Similar to other groundfish assessments, the assessment of California quillback rockfish was unable to reliably estimate this parameter due to the short time-series of data, which are primarily available after the estimated large declines in spawning output, and due to the continuous downward trajectory of the stock abundance. Therefore, steepness in the assessment model was fixed at the value of 0.72, which is the mean of the rockfish prior defined in the groundfish stock assessment TOR (applicable version to 2021 assessment; December 2020).

The impact to the assumed value of steepness was explored in the 2021 assessment through analysis of model sensitivity to alternative values, and through likelihood profile analyses. The likelihood profile for steepness from the 2021 assessment for California quillback rockfish is shown in Figure 7. The estimated negative log-likelihood declines indicate improved fits to the data with increasing values of steepness with the best fit to the data found with a value of 1.0, which is considered to be implausible for a slow-growing rockfish, implying that this parameter is unable to be estimated given the available data. The change in the estimated fraction of unfished spawning output across a range of steepness values is shown in Figure7.

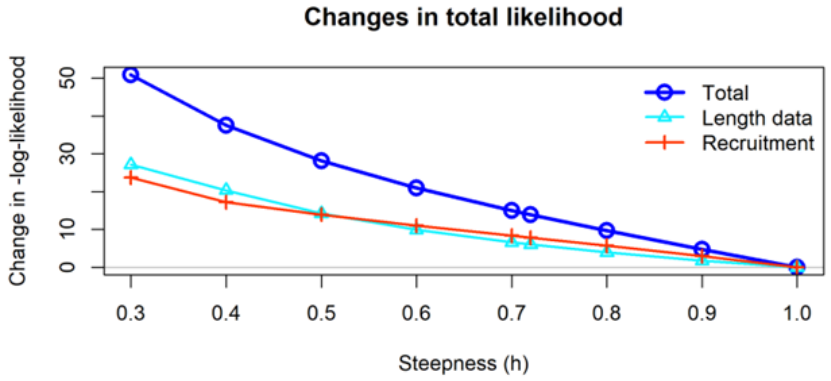

Figure 6. Negative log-likelihood profile in total and for each data type over the range of steepness from 0.3 to 1.0 by increments of 0.1 (from Langseth et al., 2021).

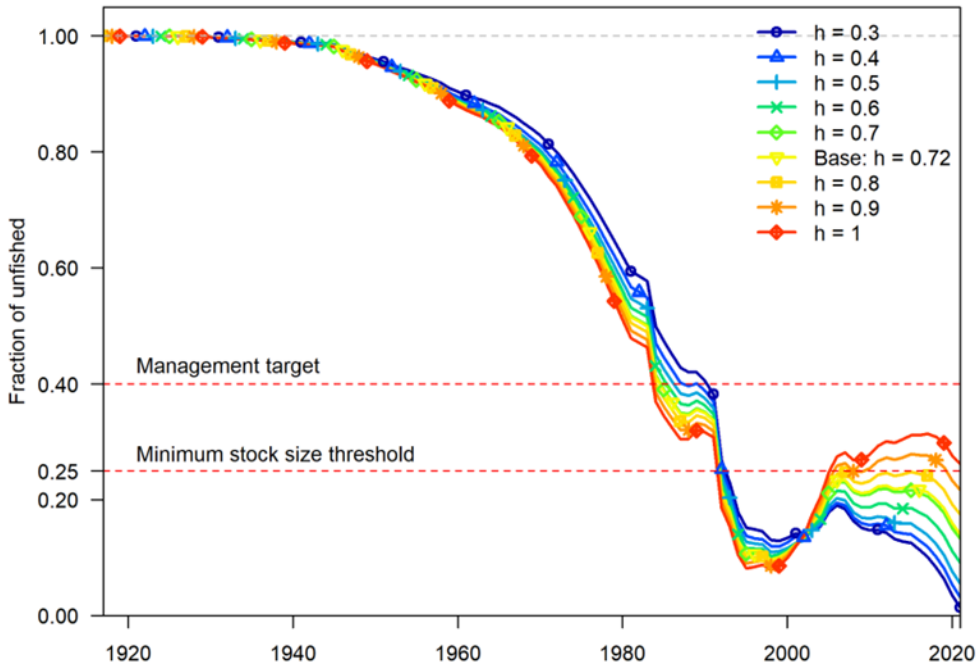

Figure 7. Time series of the estimated fraction of unfished spawning output associated with values of steepness ranging from 0.3 to 1.0 by increments of 0.1 (from Langseth et al., 2021).

Similar to steepness, natural mortality is often difficult to estimate based on available data and is often fixed within groundfish assessments. Quillback rockfish are a long-lived rockfish that are thought to live up to 95 years of age (Yamanako and Lacko, 2001; Love et al., 2002). Across the U.S. West Coast there are limited age data for quillback rockfish with the majority of these samples being collected in recent years, well after the peaks of high historical catches. Natural mortality was fixed in the model based on literature values of a maximum age of 95, resulting in an assumed natural mortality of 0.057 yr^{-1}. A likelihood profile and model sensitivities over natural mortality values were conducted in the 2021 assessment (Langseth et al., 2021). The likelihood profile over natural mortality supported higher values (i.e., a lower maximum age, **Error! Reference source not found.**). This information is being informed primarily by the length data and the estimates of annual recruitments, which would be expected to contain limited data on natural mortality, particularly compared to age data which were not included in the base model. The estimated fraction unfished was also highly sensitive to assumptions about natural mortality (Figure 10).

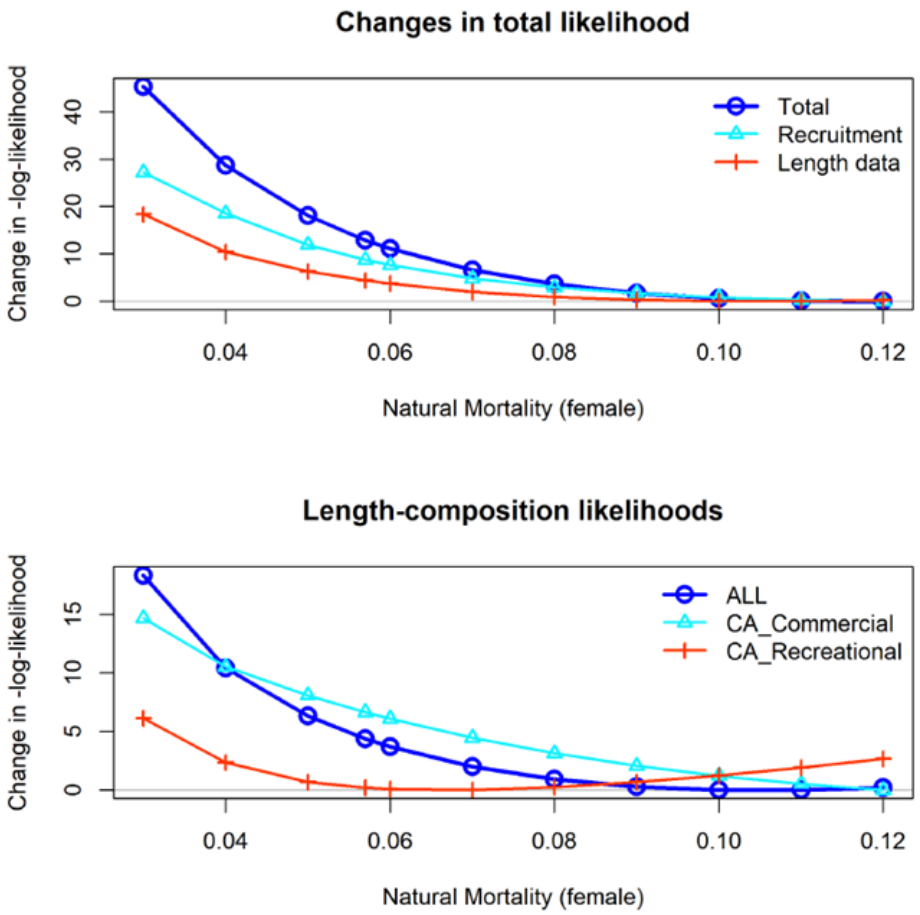

Figure 8. Negative log-likelihood profile in total and for each data type over a range of natural mortality values (from Langseth et al., 2021).

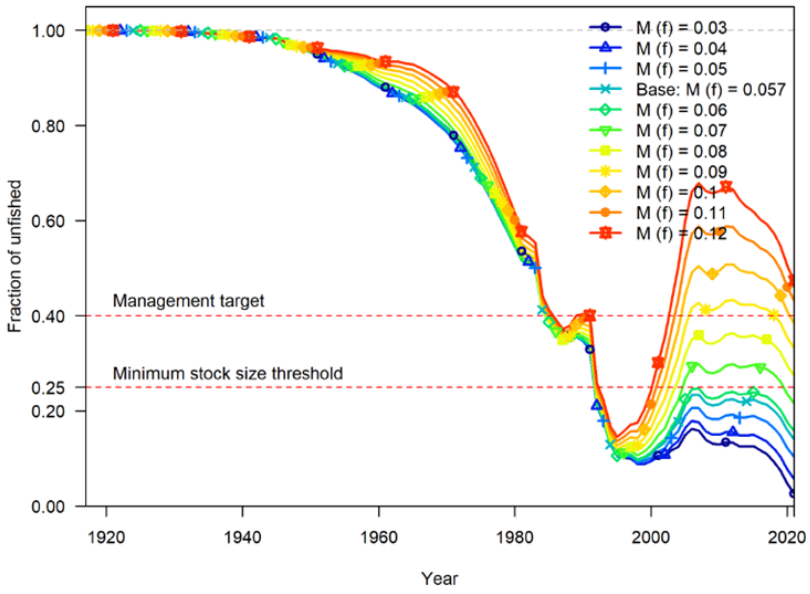

Figure 9. Time series of the estimated fraction of unfished spawning output associated with a range of natural mortality values (from Langseth et al., 2021).

3.4 Projected rebuilding probabilities

The projected rebuilding probabilities under all alternatives are shown below in Table 4 (based on values in Table 3; Langseth, 2023). In brief, Alternative 2 represents a 73.6 percent probability of rebuilding the stock by 2060 and Alternative 4 represents a 99.9 percent probability by 2045. Probabilities represent the proportion of rebuilding analysis simulations that reach the target spawning output by the specified year. Both alternatives rebuild the stock, but Alternative 4 rebuilds the stock approximately 15 years faster than Alternative 2.

Table 4. Rebuilding strategies for Alternative 2 and Alternative 4 showing Ttarget, Tmax, and rebuilding probability by Tmax.

	Alternative 2	**Alternative 4**
Rebuilding Strategy	ABC Rule	F = 0
T_{target}	2060	2045
T_{max}	2071	2071
Rebuilding probability	73.6%	99.9%

3.5 Aging error

The 2021 assessment of California quillback rockfish did not include ages in the model; hence, aging error was not defined within the assessment.

3.6 Research

The stock assessment for California quillback rockfish (Langseth et al., 2021) provided the following research recommendations:

- At the time of the assessment due to issues in California data in Pacific Fisheries Information Network (PacFIN) (i.e., condition code) length samples landed live vs. dead from the commercial fleet were unable to be identified. The ability to examine sample sizes and lengths from each type of landings would allow for future assessments to account for a greater range of commercial fishing behavior.
- Improved understanding of where recreational fishing is commonly occurring (areas and depths) and the range of sizes available by depth would better inform the selectivity form.
- Age data were predominantly from Oregon and Washington waters. Collecting length and otolith samples from recreational and commercial catches in California would result in samples from the entire U.S. West Coast informing growth. Otoliths from the West Coast Groundfish Bottom Trawl survey would also help inform growth; however, the survey has limited observations of quillback rockfish in California since they are commonly found at or around untrawlable habitat (e.g., rocky reefs). Otoliths collected in California that were identified and aged during model reviews were insufficient to robustly estimate a separate California specific length-age relationship given the limited sample size of young quillback rockfish. More data, particularly of young and old fish, are needed to be able to robustly estimate a California-specific growth curve and confirm whether growth of quillback rockfish differs between California and Washington and Oregon.

- Recruitment patterns showed lower than average recruitment in the 2000s. Additional data to support such patterns in recruitment would provide additional support for model estimates. Catches of quillback rockfish were particularly high in a few years for both the recreational and commercial fleet. Better understanding the factors contributing to these high catches as well as potential resolutions, should they be needed, would aid in ensuring catch time series are accurate.
- The SSC Groundfish Subcommittee also identified the following future work topics based on the additional Council requested January 2024 review meeting, as presented to the Council under the SSC items for the March 2024 Council meeting:
- The prior for *h* (i.e., steepness) should be revisited given the results of recent assessments and recent advancements in methods for constructing *h* priors, such as the approach developed by Marc Mangel (e.g., Mangel et al., 2010).
- The next assessment of quillback rockfish in California should explore the development of a recreational and/or California Collaborative Fisheries Research Program survey-based index of abundance, comparable to those developed in recent assessments for vermilion rockfish, copper rockfish, and other nearshore rockfish species.
- Research should be conducted to assess what constitutes "too uncertain" given the default of returning to the last assessment, especially in the context of assessments for which there are no previous full or data-moderate assessments.
- It was noted that turning off the sum-to-zero constraint on penalty in Stock Synthesis increases the value of terminal year depletion within the assessment for California quillback rockfish. The SSC should consider this matter when revising the groundfish stock assessment review Terms of Reference and Accepted Practices Guidelines documents.
- It was noted that the estimated variances for some recruitment deviations exceeded the value of $sigma_R$, which is unusual (though has occasionally been seen in other assessments) and unexpected, and may indicate model misspecification. This issue was recommended for further exploration and could be a diagnostic for future data-moderate assessments.

4. Management of Quillback Rockfish

4.1 Harvest Specifications

4.1.1 Management Background

In prior biennial harvest specifications and management measure cycles, quillback rockfish was managed under the Nearshore Rockfish complexes north and south of 40° 10′ N. lat. Off of California, the northern component was from 42° N. lat. to 40° 10′ N. lat. and the southern component was from 40° 10′ N. lat. to the U.S./Mexico border. Stock complexes have multiple stocks that contribute their harvest specifications to calculate a single OFL/ACL for the complex. These complexes are managed to the complex harvest specification and, in general, not to individual component stock specifications. For 2025 and beyond, the Council recommended removing the California quillback rockfish stock from the nearshore rockfish complexes and managing it to the stock-specific OFL/ABC/ACL to facilitate precision in management and tracking of mortality, which will assist in sustainable management under rebuilding.

4.1.2 Considerations related to the Council's selected P* value

P* is shorthand for probability of overfishing. As applied in the context of evaluating and setting catch limits, P* is an expression of management risk, which is applied to the sigma to generate the ABC, and is a Council overfishing risk tolerance policy decision. This policy decision, with respect to the P*, is well described in the SAFE (2024) see Section 2.8.2.1 and the FMP (Chapter 4), which are incorporated by reference. In brief, in cases where scientific uncertainty exists associated with estimating an OFL, sigma (σ) is quantified by the SSC, the percentage reduction that defines the scientific uncertainty buffer and the ABC is then determined by translating the estimated σ to a range of probability of overfishing (P*) values. Each P* value is then mapped to its corresponding buffer fraction. The Council then determines the preferred level of risk aversion by selecting an appropriate P* value, accordingly. In cases where the P* approach is used, the upper limit of P* values considered will be 0.45, as estimated OFLs are median estimates. There is a 50% probability that the OFL is overestimated; therefore, a P* = 0.5 equates to no scientific uncertainty or, in other words, the ABC is set equal to the OFL. Quillback rockfish has been managed with a P* = 0.45 since the 2015-16 biennium; noting that prior to this biennium (2025-26) California quillback rockfish was not defined as State-specific stock, but rather considered a de facto coastwide stock with a single OFL/ABC contribution to the complexes. For the 2023-24 biennium, the Council recognized that the 2021 California quillback rockfish assessment (Langset et al, 2021) estimated that California quillback rockfish were depleted below the minimum stock size threshold (MSST), and thus would potentially require population rebuilding if/when a California-specific stock was adopted by the Council. In lieu of putting a stock definition in place for the 2023-24 biennium, the Council opted to proactively apply a lower spawning potential rate (SPR) when developing quillback rockfish HCRs, than the default specified for rockfish species within the FMP. This was aimed at balancing the needs of the fishing community and the potential future need for a formal rebuilding plan once quillback rockfish was defined as a stock(s). The California portion of quillback rockfish therefore remained in the Nearshore Rockfish Complexes for the 2023-24 biennium

In balancing competing needs, the Council considered three alternatives to set ACLs for quillback rockfish off of California for the 2023-24 biennium. Under all alternatives, the Council only considered a P* = 0.45. The P* = 0.45 was applied to the sigma of 1.0 to generate the ABC for the California quillback rockfish component. This P* was the default for quillback rockfish as specified under Amendment 24 to the groundfish FMP, which is the upper limit for P* for any groundfish by the FMP. The Council adopted Alternative 1 as FPA for the 2023-24 biennium, which reflects a SPR of 0.55; a 2023 ACL contribution = 1.76 mt and a 2024 ACL contribution = 1.93 mt; and P* = 0.45. A P* = .45 was also used as default for this biennium (2025-26) per Amendment 24. At the June 2023 meeting, the Council adopted State-specific stock definitions for quillback rockfish as specified under Amendment 31 to the FMP. The status of the California stock was subsequently declared overfished in December 2023, as described elsewhere in this document. As discussed above, the Council considered No Action and four action alternatives as rebuilding strategies for California quillback rockfish. The Council considered P* = 0.45 for Alternatives 1, 2, and 4, consistent with the identification of a P* = 0.45 as both the default for rockfish in the FMP pursuant to Amendment 24 and the highest P* utilized to set catch limits for groundfish since the 2015-16 biennium. Alternative 3 specified a P* = 0.40. In discussion in November 2023, the Council noted that the use of P* = 0.40 rather than P* 0.45 reflects a measure of reduction from the OFL to account for perceived risk presented by the uncertainty associated with issues that have been identified with the California quillback rockfish assessment in the associated model parameters. However, as noted above, Alternative 3 was rejected by the Council from further consideration at their April 2024 meeting based on its nonalignment to the MSA and National Standards. The key facet to the Council decision to move forward with a P*0.45 is the most flexible when coupled with the rebuilding strategies to reduce impacts to California quillback overall and also take into account needs of fishing communities. This biennium, the Council was focused on rebuilding strategies in concert with contemplating their risk tolerance of overfishing while acknowledging the need to reduce impacts, to the extent practicable, of communities. A lower P* would further reduce the available harvestable amount and could increase negative impacts on communities.

Table 5 shows the estimated harvest specifications under Alternative 2 and Alternative 4 until 2034.

Table 5. Predicted OFL, ABC, and ACL values under Alternative 2 ABC Rule and Alternative 4 F = 0 rebuilding strategies through 2034

Year	Time-Varying Sigma Buffer[1]	Alternative 4, F = 0				Alternative 2, The ABC Rule		
		OFL (mt)	ABC (mt)	ACL (mt)		OFL (mt)	ABC (mt)	ACL (mt)
2021	-	2.34	-	15.58		2.34	-	15.58
2022	0.882	1.91	-	18.11		1.91	-	18.11
2023	0.874	1.41	-	11.12		1.41	-	11.12
2024	0.865	1.25		10.62		1.25	-	10.62
2025	0.857	1.52	1.30	0		1.52	1.30	1.30
2026	0.849	1.81	1.54	0		1.77	1.50	1.50

Year	Time-Varying Sigma Buffer[1]	Alternative 4, F = 0				Alternative 2, The ABC Rule		
		OFL (mt)	ABC (mt)	ACL (mt)		OFL (mt)	ABC (mt)	ACL (mt)
2027	0.841	2.13	1.79	0		2.01	1.69	1.69
2028	0.833	2.44	2.03	0		2.24	1.87	1.87
2029	0.826	2.74	2.26	0		2.46	2.03	2.03
2030	0.818	3.03	2.48	0		2.67	2.18	2.18
2031	0.810	3.31	2.68	0		2.85	2.31	2.31
2032	0.803	3.6	2.89	0		3.04	2.44	2.44
2033	0.795	3.91	3.11	0		3.23	2.57	2.57
2034	0.788	4.19	3.30	0		3.4	2.68	2.68

4.2 Fishery Mortality

Quillback rockfish inhabits nearshore waters, with the majority of fishing mortality taken in State waters. Historically, California quillback rockfish mortality has been higher in the recreational sector than in the commercial sectors (Table 6, Figure 10)Prior to the overfished declaration, California quillback rockfish were targeted and retained by a small group of commercial limited entry State issued deeper nearshore permittees. Commercial open access and limited entry participants without a deeper nearshore permit also incidentally encounter quillback rockfish while targeting other species and must discard that catch at sea (Agenda Item G.8.a, Supplemental GMT Report 2, September 2023, Agenda Item G.8.a, Supplemental GMT Report 5, September 2023, Agenda Item E.9.a, Supplemental GMT Report 1, November 2023).

This rebuilding plan is specific to the groundfish FMP and can only restrict targeted groundfish fisheries in the EEZ (Table 6) [14]. Based on fishery dependent observations records (commercial and recreational), the majority of California quillback rockfish mortality occurs in State waters and is not under the jurisdiction of the FMP, the Council, or NMFS. Additionally, historically there have been some small incidental catch from fisheries in the EEZ not managed under the FMP. These fisheries are not subject to the California quillback rockfish rebuilding plan. However, all California quillback rockfish mortality counts against the ACL. Meaning, mortality from non-groundfish fisheries would likely result in failure of the Alternative 4 F = 0 rebuilding strategy. These non-groundfish fisheries include, but are not limited to, State waters groundfish fisheries, directed Pacific halibut, open access California halibut, and pink shrimp trawl. Additionally, mortality from research is estimated. Figure 10 displays the same information as Table 6, but as

[14] These values were provided by the Fisheries Observation Program and were produced using the methods outlined in Somers et al. 2022b. These estimates are in a pre-review, pre-decisional state and should not be formally cited. They are to be considered provisional and do not represent any final determination or policy of NOAA or the Department of Commerce. Incidental open access (IOA) includes directed Pacific halibut, open access California halibut, pink shrimp trawl, and incidental mortality. Limited entry (LE) fixed gear hook and line includes both sablefish-endorsed and non-sablefish-endorsed sectors. Research mortality was not estimated by state, and coastwide values are shown here for reference.

an informational graphic.[15] Figure 11 shows the California quillback rockfish mortality by management area used to manage the nearshore rockfish complex.[16]

Table 6. Preliminary estimates of quillback rockfish mortality (mt) off California by sector, 2013-2022. Incidental open access (IOA) includes directed Pacific halibut, open access California halibut, pink shrimp trawl, and research. Note that research values represent coastwide estimates, and are not specific to California.

Year	Directed Groundfish Fisheries					Other		Total (mt)
	California Recreational (mt)	Shoreside Trawl (mt)	LE Fixed Gear - Hook & Line (mt)	Nearshore (mt)	OA Fixed Gear - Hook & Line (mt)	Coastwide Research (mt)	IOA (mt)	
2013	2.9	0	0	0.67	0	0.01	0	3.58
2014	2.53	0	0	0.45	0	0.03	0	3.01
2015	7.43	0	0	1.09	0.01	0.08	0	8.61
2016	8.48	0	0.03	0.96	0.02	0.17	0	9.66
2017	9.76	0	0.77	1.74	0.01	0.09	0.03	12.4
2018	10.11	0	0	2.62	0.01	0.04	0	12.78
2019	11.46	0	0	3.89	0	0.03	0.8	16.18
2020	7.8	0	0	4.1	0.12	0	0	12.02
2021	10.55	0	0	4.76	0	0.02	0.01	15.34
2022	9.23	0.01	0	1.86	6.75	0.06	0.01	17.92

[15] *Id.*
[16] *Id.*

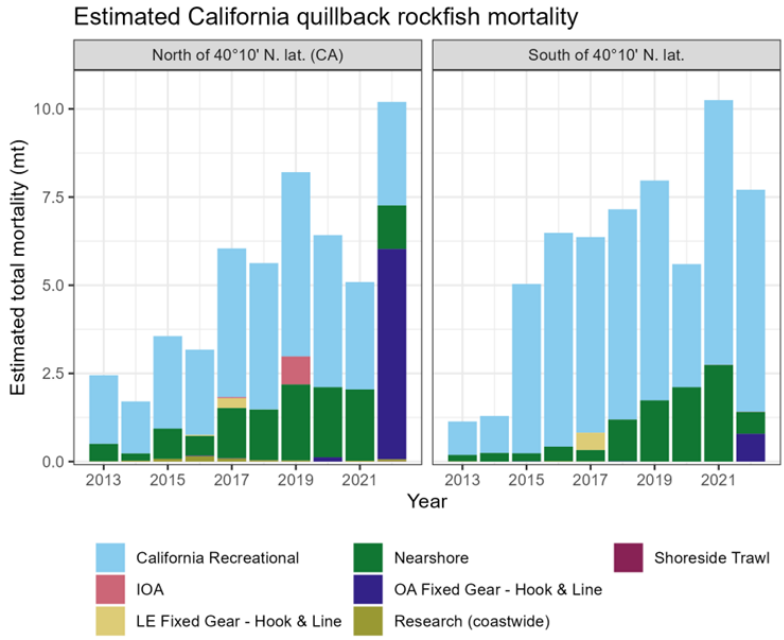

Figure 10. Preliminary estimates of California quillback rockfish mortality by sector from 2013-2022. Incidental open access (IOA) includes directed Pacific halibut, open access California halibut, pink shrimp trawl, and incidental mortality. Note that research values represent coastwide estimates, and are not specific to California.

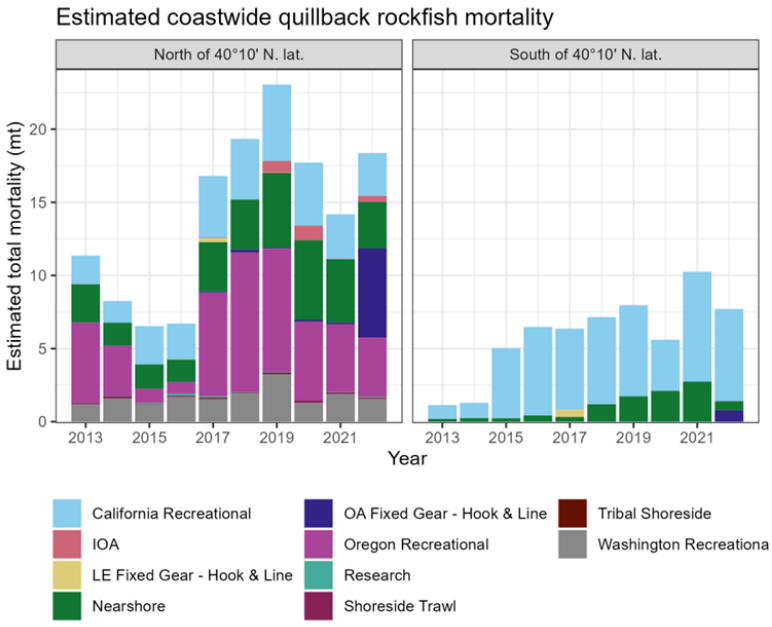

Figure 11. Estimated coastwide quillback rockfish fishing mortality north and south of 40° 10′ N. lat by sector from 2013-2022. Incidental open access (IOA) includes directed Pacific halibut, open access California halibut, pink shrimp trawl, and incidental mortality. Data from Somers et al. 2022b

4.3 Management of California Quillback Rockfish

Quillback rockfish is caught in both the commercial and recreational fisheries off of California. This rebuilding plan and the management measures proposed to achieve its goals are applicable to Federal waters only. While this stock is caught in both Federal and State waters, the proportion of catch/mortality by each area is unclear. However, based on known fishery dependent and independent information of California quillback rockfish, the majority of the stock's depth range is assumed to be in State waters (the majority of the fishing mortality of quillback rockfish occurs in State waters). As will be discussed below, waters less than 20 fathoms are predominantly in California's State waters and, therefore, under State control in terms of management measures. However, it is important to state upfront that all quillback rockfish mortality off of California, regardless of area, will count towards the ACL adopted by the Council under this rebuilding plan. Additionally, the likelihood of the impacts from rebuilding described here is dependent on the State's decision to implement complementary management or not.

4.4 Commercial Fisheries

4.4.1 History of California Quillback Rockfish Management in the Non-trawl Commercial Fishery

California quillback rockfish is predominantly caught in the commercial fixed gear groundfish fishery relative to all other commercial sectors. Routine management measures available to the Council to achieve management objectives for this fishery include trip limits, gear types, and the non-trawl RCA. Routine measures can be modified, as appropriate, within the season under the routine groundfish inseason management measure agenda item. Emergency action is also an option, but criteria at MSA section 305(c) must be met in order for the Council to consider this option.

Prior to the 2023-24 biennium, species specific management measures were not employed by the Council for this stock. At the beginning of the 2023-24 biennium, a quillback rockfish trip limit of 75 lbs. per two months, within the 2,000 lbs. per two months minor nearshore rockfish trip limit for the area between 42° - 40° 10′ N. lat. and south of 40° 10′ N. lat., was adopted by the Council (Informational Report 2, September 2022). The ACT for this stock was exceeded in the summer of 2023. As a result, CDFW took action to close areas in California State waters, and the Council took action to reduce all impacts on this stock in Federal waters at the September 2023 meeting. The Council adopted a suite of management depth/area based trip limit measures, which included reducing the trip limit for this stock to 0 lbs. per two months and established a commercial Non-Trawl RCA boundary for additional trip limits at 36° N. lat. . (Agenda Item G.8.a, Supplemental GMT Report 2, September 2023 and Agenda Item G.8.a, Supplemental GMT Report 5, September 2023).

At the November 2023 meeting, the Council recommended similar commercial fishery management measures be implemented for 2024 (Agenda Item E.9.a, Supplemental GMT Report 1, November 2023). In March 2024, the Council adjusted the shoreward boundary of the Non-Trawl RCA, between 36° N. lat. and 37° 07′ N. lat., from the 3 nautical mile (nm) line to 50 fathoms (fm). This modification was due to findings, as noted in F.8.a, Supplemental GMT Report 1 March 2024, that California quillback rockfish encounters between 36° N. lat. and 37° 07′ N. lat.

were rare throughout the analyzed time series. This finding suggested restoration of the fishery to this area was feasible and should have limited impacts on the stock.

4.4.2 Comparison of Proposed 2025-26 Commercial Management Measures

Detailed analysis and comparison of the proposed 2025-26 biennial management measures under all alternatives for the non-trawl fishery are in Chapter 5 in the Agenda Item F.6, Attachment 2, June 2024 and are incorporated by reference. The measures to achieve but not exceed ACLs generated via the rebuilding parameters for Alternative 2 (PPA) and Alternative 4 are summarized and compared below. Alternative 2, while less restrictive than Alternative 4, results in management measures which are very similar to those implemented in the latter half of 2023 and all of 2024. These measures are expected to keep mortality of California quillback rockfish within Alternative 2 harvest specifications.

Under Alternative 2, area-based depth restrictions coupled with specific trip limits and specific non-trawl gear types were adopted as PPA (see Chapter 5, Section 2.1.3). These measures are similar to those adopted by the Council in November 2023 (Agenda Item E.9.a, Supplemental GMT Report 1, November 2023). The objective of these measures is to reduce mortality in the non-trawl commercial fishery to ensure that the 2025 and 2026 Alternative 2 ACLs of 1.30 mt and 1.50 mt, respectively, are not exceeded. Alternative 2 management measures to reduce impacts on California quillback rockfish predominantly impact commercial Federal fixed gear vessels between 42° N. lat. and 37° 07′ N. lat. Non-trawl commercial fisheries south of 37° 07′ N. lat. must abide by a 0 lbs. trip limit for California quillback rockfish, but area based trip limits and depth restrictions are not as restrictive as north of this latitude. Under Alternative 2, management measures for California quillback rockfish would be limited to the commercial non-trawl and recreational fisheries, as these fisheries generate the vast majority of impacts to this stock. The management measures adopted as PPA would not restrict the trawl fishery in regard to California quillback rockfish, but gear switchers in the IFQ fishery would continue to be subject to non-trawl RCA restrictions.

The objective of Alternative 4 (Chapter 5, of Agenda Item F.6, Attachment 2, June 2024would be to reduce mortality of California quillback rockfish to zero in all Federal groundfish fisheries. Due to the uncertainty around the true range of this stock, with references saying the California quillback rockfish geographic range extends southward in California to Anacapa Island (34° N. lat.) and can be found deeper than 75 fathom (Love et al., 2002), extending the area or depth closure beyond the current 2024 restrictions would need to be considered by the Council to achieve F = 0. Management measures for the entire groundfish fishery would also need to be enacted to reduce mortality of California quillback rockfish to zero. Unlike Alternative 2, the trawl fishery, including the at-sea whiting sector, would also be impacted under Alternative 4. This fishery has limited catches of California quillback rockfish with zero catch in many years, but not all (e.g., there are historical records prior to 2014, Somers et al., 2023). Therefore, in order to achieve an F = 0 strategy, the Council would likely need to place restrictions on all Federal groundfish fisheries, including the trawl fishery. The extent of depth and gear restrictions off of California necessary to achieve zero mortality of quillback rockfish are unknown at this time, noting that some vessels generally operate much deeper than areas considered "nearshore" where quillback rockfish reside. However, the Council may wish to conservatively close all directed groundfish fishing in the EEZ off of California under Alternative 4. An important point to reiterate about Alternative 4 is

California quillback rockfish mortality could occur in other non-groundfish fisheries (e.g., salmon, coastal pelagic, etc.) that are not covered under this rebuilding plan.

The non-trawl fishery in California has been subject to a suite of management measures that took place in September 2023 (Agenda Item G.8.a, Supplemental GMT Report 2, September 2023 for the remainder of 2023 Agenda Item G.8.a, Supplemental GMT Report 5, September 2023) and in November 2023 (Agenda Item E.9.a, Supplemental GMT Report 1, November 2023) for 2024. In brief, these measures concentrate non-trawl commercial fishery effort north of 37° 07′ N. lat onto the continental shelf with specific gear type requirements (i.e., legal non-bottom contact hook-and-line gear are allowed in the non-trawl RCA (50 CFR 660.330(b)(3)) when targeting groundfish. This change in gear type means that in many cases; in order to continue fishing in Federal waters shoreward of 75 fathoms, fishery participants will have to learn a new gear type. It is reasonable to assume that there will be a learning curve that might inhibit profits within this fishery until participants learn the gear and find new fishing areas.

These changes in management between 42° and 36° N. lat. (until March 2024 when the line was amended to 37° 07′ N. lat. for commercial sectors) directly impact nearshore fishermen that fish in the EEZ, Open Access fishermen that target groundfish shoreward of the Non-trawl RCA in the EEZ, and any limited entry fishermen operating shoreward of the Non-trawl RCA in the EEZ. Currently under Federal management measures, the nearshore fishery will be impacted more than other fisheries. However, this action is only applicable to the EEZ, where only a small portion of nearshore fisheries occur. There is uncertainty around what management measures the State of California will take to manage the fisheries within State waters (including the nearshore fishery). The restrictions put into place in 2023 (No Action) and put forth for consideration under Alternative 2 have already severely impacted fishers on the water, as seen by a reduction of ex-vessel revenue and landings. Regulatory restrictions for California quillback rockfish may continue after the stock is rebuilt, as the predicted rebuilt stock B_{MSY} is expected to be lower than recent California quillback rockfish mortality. Based on this information, even when rebuilt, groundfish fisheries are unlikely to be restored to levels seen before the stock was declared overfished.

Alternative 4 closures would be more widespread than Alternative 2, and therefore would have fewer options to continue fishing, with no groundfish fishing likely taking place in order to achieve F = 0. Non-groundfish opportunities, such as Chinook/coho salmon and Dungeness crab, are already constrained and are unlikely to accommodate expansion resulting from lost groundfish opportunities, and they may not provide enough stable income to keep participants fishing. Therefore, under Alternative 4, although it would rebuild California quillback rockfish on a quicker timeline, it is likely that more participants might choose to leave fisheries (Option 2 described in Fuller et al., 2017) than under Alternative 2 because of the large spatial scale of closures. Alternative 2 does maintain some groundfish opportunity but at the cost of more time under restrictions. It also allows for more regulatory flexibility and adaptation as new information is found. Under both alternatives, once the California quillback rockfish stock is rebuilt, it is likely that there will continue to be restrictions to fishing operations, as the small, estimated stock size and consequently low expected ACLs (ACLs much lower that past California quillback rockfish mortality) even after the stock is rebuilt are unlikely to accommodate a full removal of restrictions. It is unlikely that fishery participants who have taken a hiatus from fishing would re-enter the fishery once California quillback rockfish is rebuilt. Depending on the port communities and when

fishery participants leave, there is also a likelihood that infrastructure (e.g., ice houses, processors) will permanently leave these communities.

4.4.3 Commercial Monitoring

PacFIN Fish Ticket Data

The majority of California quillback rockfish mortality from commercial fisheries is discarded at-sea, which means that fish ticket data on shoreside landings is not informative for tracking most mortality across all commercial sectors throughout the season.

West Coast Groundfish Observer Program

The West Coast Groundfish Observer Program (WCGOP) is the main source of information on at-sea discards in shore-based groundfish fisheries. From 2018 to 2022, coastwide WCGOP observer coverage has averaged about 39 percent in the limited entry fixed gear sablefish endorsed fishery, 3 percent in the limited entry fixed gear non-sablefish fishery, 5 percent in the non-nearshore open access fixed gear fishery, and 7 percent in the nearshore fixed gear fishery (Somers et al., 2023a). Fleet-wide discards are estimated annually using a ratio estimator for sectors without full observer/electronic monitoring coverage (Somers et al., 2023b). WCGOP data indicated that the OA fixed gear sector encountered and discarded California quillback rockfish at a higher rate in 2022 than in previous years, potentially driven by an increase in pole effort. In 2022, estimated OA fixed gear discards of California quillback rockfish increased from a previous three year average of 0.1 mt to 6.9 mt coastwide (Somers et al. 2023b).

Dockside sampling

The California Cooperative Groundfish Survey (CCGS) is a commercial market sampling program implemented in 1978. This program is designed primarily to collect species composition data for rockfish and secondarily to collect biological information such as length, sex, maturity, and age data to help manage the fishery. Over time this program grew to include other groups of groundfish including flatfish, roundfish, and non-groundfish such as California sheephead. The CCGS is conducted jointly by the Pacific States Marine Fisheries Commission (PSMFC), CDFW, and NMFS. Using the sampling scheme designed by Sen (1984), port samplers collect data from the landings at each of the seven defined port complexes. The data are entered into the CCGS catch database, termed CALCOM, managed by PSMFC. At the end of the year, port sampling data are applied to landing receipts to obtain the final estimates of species-specific landings for the State. In addition, the landing estimates are applied to the age and length data from the port samples to estimate age and length compositions of the commercial landings. For estimation purposes, port sampling is stratified by year, market category, port complex, gear group, quarter (1-4), and condition (live or dead). The annual landing estimates are then provided to PacFIN for inclusion in their system..

4.5 Recreational Fisheries

4.5.1 Historical Management of California Quillback Rockfish in the California Recreational Fishery

quillback rockfish mortality is predominantly driven by the California recreational groundfish fishery, primarily with hook and line gear. In the recreational fishery, this stock is caught in conjunction with other groundfish, particularly nearshore rockfish. The prevalence of this stock decreases from north to south; however, California quillback rockfish have been reported in recreational catch as far south as the Southern management area (Figure 12). The Council uses routine measures to mitigate catch of this stock, e.g., seasons, depth/area closures, and bag limits. Prior to 2022 there was no California quillback rockfish sub bag limit and anglers could take up to 10 quillback rockfish, (Agenda Item E.7.a Supplemental CDFW Report 2 November 2021). California manages recreational fisheries within five districts (Figure 12) bounded north and south by lines of latitude. Each district can have specific management measures, which may differ across districts (e.g., season length, sub-bag limits, etc.). The season structures and corresponding recreational catch estimates for quillback rockfish for 2012-2021 can be found in Agenda Item F.4.a Supplemental CDFW Report 3 April 2022. In 2022 a one (1) fish quillback rockfish sub-bag limit was instated following the results of the 2021 quillback rockfish data moderate stock assessment. Additionally, "all depth" fishing opportunities were allowed in 2023 with the hopes that anglers would spread out, and choose to fish in areas where quillback rockfish were not prevalent. However, this did not occur and anglers primarily targeted nearshore waters resulting in exceedance of the quillback rockfish OFL and inseason closures in 2023 (Agenda Item G.8.a Supplemental CDFW Report 2 September 2023). As part of the 2023-24 biennial groundfish management measures, the quillback rockfish sub-bag limit in California remained at one (1) fish; however, at the September 2023 Council meeting, the Council reduced the limit to a zero (0) quillback rockfish sub-bag limit for the remainder of 2023 as the ACT was exceeded. In March 2024, the Council adopted similar management measures for the remainder of 2024 (see Agenda Item F.8.a, Supplemental GMT Report 1, March 2024 and Agenda Item F.8.a, Supplemental CDFW Report 2, March 2024) which included depth restrictions and a zero (0) quillback rockfish sub-bag limit (Table 7).

Figure 12. Map of California showing the five groundfish management areas, noting Central is one management area, though divided by management measures at 36° N. lat. Source: CDFW.

Table 7. 2024 California recreational groundfish season structure after inseason actions

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Northern	Closed in EEZ			>50 fm	Closed in the EEZ					>50 fm	Closed in EEZ	>50 fm
Mendocino	Closed in EEZ			>50 fm	Closed in the EEZ					>50 fm	Closed in EEZ	>50 fm
San Francisco	Closed in EEZ			>50 fm	Closed in the EEZ					>50 fm	Closed in EEZ	>50 fm
Central N of 36°	Closed in EEZ			>50 fm	Closed in the EEZ					>50 fm	Closed in EEZ	>50 fm
Central S of 36°	Closed in EEZ			Open all depths			<50 fm			>50 fm		
Southern	Closed in EEZ			Open all depths			<50 fm			>50 fm		

4.5.2 Proposed 2025-26 Recreational Management Measures for California Quillback Rockfish

Detailed analysis and comparison analysis of the proposed 2025-26 biennial management measures for the recreational fishery under all alternatives are found in Chapter 8 in Agenda Item F.6, Attachment 2, June 2024 and are incorporated by reference. Alternative 2 (PPA) and Alternative 4 are compared below. In brief, comparatively, both Alternatives would allow for fishing, though with depth-based area restrictions. Alternative 2 management measures, while less restrictive than Alternative 4, are very similar to those implemented in the latter half of 2023 and all of 2024. The difference in management complexity between 2024 management measures and Alternative 2 is negligible. Alternative 2 is less likely to cause increased social and economic impacts on port communities relative to 2024 than Alternative 4.

The Council considered four recreational season structures proposed by CDFW, as shown in the Chapter 8 in Agenda Item F.6, Attachment 2, June 2024. They adopted Alternative 2, Option 4 (Table 7) as FPA, which is identical to 2024 inseason changes (Agenda Item F.8.a CDFW Supplemental Report 2, March 2024). This alternative would allow the recreational fishery to target groundfish, but under management measures that are designed to reduce impact to levels that would not exceed the ACL. Given the similarity of Alternative 2, Option 4 to the 2024 season structure, it could be expected that similar economic returns may occur.

Under Alternative 4, the objective is for no fishery related mortality (F = 0) for California quillback rockfish. In order to achieve no fishing mortality to California quillback rockfish, groundfish season structures would require a full-closure of the EEZ within all five Groundfish MAs (Table 8). Agenda Item F.8.a Supplemental GMT Report 1 March 2024 presented recreational quillback rockfish mortality for California between 2005-23. Even with the closure of the boat-based groundfish fishery, bycatch of California quillback rockfish is expected in non-groundfish fisheries (e.g., salmon, coastal pelagic, etc.), which are not covered under this rebuilding plan. Additionally, mortality in the State waters recreational groundfish fishery is not covered under this rebuilding plan.

Table 8. Potential California recreational fishery season structure under the Alternative 4 rebuilding strategy.

Management Area	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Northern	Jan 1 – Dec 31; Closed all depths											
Mendocino	Jan 1 – Dec 31; Closed all depths											
San Francisco	Jan 1 – Dec 31; Closed all depths											
Central	Jan 1 – Dec 31; Closed all depths											
Southern	Jan 1 – Dec 31; Closed all depths											

4.5.3 Recreational Monitoring

The California Recreational Fisheries Survey (CRFS) is a multi-part survey implemented in 2004. The CRFS Sampler Manual provides an explanation of the principles and goal of CRFS, detailed

instructions regarding sampling procedures and protocols, and the proper coding of all forms. The manual describes the history of the survey, general information, methods, the roles and responsibilities of supervisors, leads, and samplers, and much more.

The goal of CRFS is to produce, in a timely manner, marine recreational fishery data needed for sustainable management of California's marine resources. The fishery data produced are catch and effort estimates for marine recreational finfish fisheries. CRFS field sampling is conducted at over 500 publicly-accessible sites during daylight hours to gather catch and effort data. CRFS samplers intercept recreational anglers at the completion of their fishing trips to collect on-site data by conducting the survey. The Angler License Directory Telephone Survey (ALDTS) operates on a monthly basis. The data collected are used to estimate the total number of marine recreational fishing trips taken by license holders when field observations of effort are not feasible, such as night-time fishing and private-access sites

CRFS conducts four major angler surveys based on fishing mode, and each survey is different. A fishing mode is defined as the method of access to fisheries. The modes in CRFS are:

- MM – Man-made structure fishing
- BB – Beach and bank fishing
- PC – Party and charter boat fishing
- PR – Private and rental boat fishing

CDFW Groundfish Project tracks recreational groundfish mortality on a weekly and/or monthly basis to ensure that mortality remains within allowable limits. Several rockfish species of concern are tracked on a weekly basis using preliminary CRFS field reports. In 2024, the species tracked weekly included black rockfish, California quillback rockfish, copper rockfish, and yelloweye rockfish. Additional information can be found under California Recreational Fishery, No Action, Inseason Management Response in the Revised Draft 2025-26 Management Measure Analytical Document (Agenda Item F.5, Attachment 2, April 2024).

5. Community Dependence

Alternatives 2 and 4 are both likely to have pronounced impacts on groundfish fishing communities[17] in California. It is important to note, however, that the actual impacts from restrictions in the EEZ for quillback rebuilding are a small portion of the overall effects documented because the majority of fishing mortality for quillback rockfish occurs in State waters. And, due to the current monitoring and reporting structure that does not readily differentiate between catch in Federal waters versus State waters, we are unable to estimate impacts with precision in this regard.

In terms of differentiating between Alternatives 2 and 4, the alternatives differ mainly in how the impacts on groundfish fishing would be distributed among current and future fishing communities. Relative to Alternative 4, expected benefits of Alternative 2 accrue to current California fishing communities in the form of increased groundfish fishing opportunities in the period from the present to 2045[18]. During this period, groundfish harvesting opportunities in California under Alternative 2, while unknown, are expected to be higher than under Alternative 4. The expected costs of Alternative 2, relative to Alternative 4, come in the form of fewer groundfish fishing opportunities in the period 2045 - 2060. These costs are paid by future fishermen and fishing communities. During this period, the stock is projected to reach B_{MSY} under Alternative 4 and to be in rebuilding under Alternative 2. Therefore, it is assumed that harvesting opportunities in this period are higher under Alternative 4. These expectations are subject to a number of important uncertainties as articulated in Section 3.3.2 (biologic uncertainty regarding the realized speed of rebuilding and managerial uncertainty regarding specific future management actions). The key uncertainty affecting an economic comparison of the alternatives addressed in this section is the extent to which expected future benefits under Alternative 4 can be realized. This uncertainty is heavily influenced by the ability of California groundfish fishing communities to adapt to a 20 year moratorium on groundfish fishing and persist into the future. The community dependence section is an attempt to articulate the specific issues that influence how communities might adapt to loss of groundfish revenues, which heavily impacts the extent to which future benefits of rebuilding can be realized.

5.1 California Communities

California comprises 1,100 miles of diverse coastline. Marine fisheries in this State are diverse due to the differences of coastal geography, bathymetry, and variance in impact of the California current along the State. Commercial fisheries are spread along the coast and many fishermen have

[17] Although "fishing community" has often been defined in place-based terms under MSA National Standard 8 (see Clay and Olson, 2008), there is emerging recognition that "fishing community" encompasses communities of practice as well as communities of place. This section considers both fishing communities of place (geographically defined California communities where fishing occurs) and communities of practice (aggregations of fishery participants such as commercial and recreational fishermen as well as participants in the different sectors of the groundfish fishery)

[18] These expectations are discussed in Section 2 and 3. Section 2 establishes the expectation of rebuilding the stock by 2045 under Alternative 4 and by 2060 under Alternative 2. Section 3 establishes the expectation that Alternative 4 imposes a moratorium on groundfish fishing in California, while Alternative 2 allows for some groundfish fishing in the majority of groundfish sectors under some limited conditions.

a diverse portfolio of fishery participation, e.g., crab, groundfish, etc. Anecdotal evidence suggests that groundfish is considered the base fishery for many participants, as the resource is consistently available throughout the year, whereas salmon or crab are seasonal fisheries subject to wide fluctuations in numbers and regulatory controls. Recreational fishing is equally diverse. These anglers target groundfish, particularly rockfish, as this fishery has in the past provided a consistent source for fishing opportunity. Recreational Fisheries Information Network (RecFIN), the database for West Coast recreational data, estimates that well over a million recreational angler trips per year are taken from California ports. Commercial and recreational fishing activities yield well over a billion dollars annually in impacts to California communities (NMFS, 2024). The following sections examine community vulnerability and dependence on commercial and recreational fishing.

5.2 Summarized Vulnerability and Dependence of Select California Port Communities

California has many ports with variable infrastructure, ranging from heavily industrialized (e.g., Los Angeles harbor) to small, localized ports (e.g., Shelter Cove). This analysis examines a selection of ports along the California coast with both commercial and recreational infrastructure that are also known to be ports of historical importance to fishing. These port areas are analyzed using the Community Social Vulnerability Index (CSVI), which is a measure of generalized social and economic vulnerability at the community scale. CSVI is derived from U.S. Census Bureau data (demographics, personal disruption, poverty, housing characteristics, housing disruption, labor force structure, etc.; see Jepson and Colburn, 2013) in communities that depend on commercial fishing (page 33, Agenda Item H.1.a CCIEA Team Report 1, March 2024). Recreational and Commercial Fishing Reliance measures a community's dependence on commercial and recreational fishing. These index values are constructed using similar methods as those used to construct the CSVI. Construction of these index values is discussed in Breslow et al. (2014), The 2023-2024 California Current Ecosystem Status Report, and Jepson and Colburn (2013). Commercial fishing engagement is calculated using counts of permits, number of fish dealers, and volume of fish landed commercially in each community. Like the CSVI, this index is calculated at the geographic level of Census Designated Place (CDP), which means there are several hundred West Coast communities for which this index value is calculated. The index value is generally higher in CDPs that overlap with a commercial fishing port (such as Crescent City, Eureka, or Santa Barbara, CA) and are generally lower in CDPs which are proximate to, but not co-located with, a major fishing port (such as Scotts Valley, Moss Beach, or San Rafael, CA). Commercial fishing reliance is a population weighted measure of dependence that scales the commercial fishing engagement index by population. Recreational fishing engagement and reliance is calculated similar to commercial engagement/reliance using counts of charter licenses and permits.

Table 9 reliance, and recreational and commercial fishing engagement for the ports selected for this analysis. The meanings of these values will be expanded in sections below. For many ports off California, fishery engagement is medium to high while fishery reliance is low (both commercial and recreational). This is most likely driven by the high population density and existence of a variety of industries in those ports (i.e., low reliance), while the total number of vessels and number of landings into those ports are generally high (i.e., high engagement) compared to ports off of Oregon and Washington where a small number of large-volume landings are more common. This means that, while the economies in those communities may be able to

adapt to the loss of commercial fishing engagement, a large number of participants and buyers in the fishery will be impacted by fishing restrictions under this rebuilding plan. With the loss of recreational engagement, a large number of businesses, patrons, and private anglers will be impacted.

Table 9. Vulnerability and dependence in California fishing communities for 2021.

Name	CSVI	Commercial Engagement	Commercial Reliance	Recreational Engagement	Recreational Reliance	Recreational District
Crescent City	High	High	Medium	Medium	Medium	Northern
Eureka	Medium High	High	Low	Medium	Low	Northern
Shelter Cove	Medium High	Medium	Medium	Low	Low	Northern
Fort Bragg	High	High	Medium	Medium	Medium	Mendocino
Bodega Bay	Low	High	Medium	Low	Medium High	Mendocino
San Francisco	Low	High	Low	High	Low	San Francisco
Half Moon Bay	Low	High	Medium	Low	Low	San Francisco
Santa Cruz	Low	High	Low	Medium	Low	Central N. 36
Moss Landing	High	High	High	Medium	Low	Central N. 36
Monterey	Low	High	Low	Medium High	Low	Central N. 36
Avila Beach	Low	Medium	Medium	Low	Medium High	Central S. 36
Morro Bay	Low	High	Medium	Medium	Low	Central S. 36
Santa Barbara	Low	High	Low	High	Low	Southern
Oxnard	Medium High	High	Low	High	Low	Southern
Los Angeles	Medium High	High	Low	High	Low	Southern
Newport Beach	Low	Medium	Low	High	Low	Southern
San Diego	Low	High	Low	High	Low	Southern

(Source: Karma Norman/NWFSC Human Dimensions Program, see discussion of indicators above).

5.3 Commercial Communities

Reductions in groundfish fishery opportunities in many California coastal communities will likely be financially detrimental, socially disruptive and may have long-lasting impacts (e.g., loss of

infrastructure). This is likely to compound the impacts already being experienced by these communities as they have faced recent declines and changes in other fisheries. For example, in the past five years, there have been multiple Federal fisheries disaster declarations for salmon fisheries, red sea urchin, and Pacific sardine in the State of California (Table 10)

Table 10.Federal disaster declarations for marine fisheries off of California in the last ten years. (Source: NOAA Fishery Disaster Declaration)

Fishery	Declaration Year(s)
California Sacramento River Fall Chinook and Klamath River Chinook Salmon Fisheries	2024 a/
California Sacramento River Fall Chinook, Klamath River Fall Chinook Ocean and Inland Salmon Fisheries, 2023	2023
Resighini Rancheria Tribe Klamath River & Ocean Salmon, 2023	2023 a/
Oregon and California Klamath River Fall Chinook Salmon Fishery, 2016 and 2017	2016/2017
California Red Sea Urchin Fishery	2016, 2017, 2018, & 2019
California Pacific Sardine Fishery	2015, 2016, 2017, 2018, & 2019
California Dungeness Crab and Rock Crab	2015 & 2016

a/pending

In addition, recent Dungeness crab seasons have been delayed and shortened, potentially decreasing opportunities for groundfish participants affected by existing California quillback rockfish related management measures to rely on this already-volatile fishery. Based on the figures Figure 13 and Figure 14 (R3 and R4, respectively, from Agenda Item I.1.a, IEA Team Report 2, March 2021), the groundfish fishery contributes to the network of fishing participation in Crescent City, Eureka, Fort Bragg, Monterey, Morro Bay and Los Angeles to varying degrees. Groundfish has been called the "glue," income stabilizer, or bridge fishery that keeps communities together because of the potential year-round stability it provides participants when salmon or crab seasons are closed or shortened. It remains uncertain the degree to which the 2023 and 2024 closure of salmon fishing in California will shift participants into the groundfish fishery, even if this fishery is reduced by management restrictions in association with California quillback rockfish. Alternative 4 would suspend all groundfish fishing between 42° N. lat. and 34° N. lat., and with limited opportunities in other fisheries, it might force more participants to find alternative sources of income and not rely on their network of fishing participation. Additionally, these existing participation networks might not be indicative of fishing communities future flexibility, because Alternatives 2 and 4 might lead to consolidation of fisheries. It is also uncertain whether participants who leave the fishery will ever re-enter (be it before or after California quillback rockfish is declared rebuilt). In addition, the future opportunities in salmon, crab, and other interlinked fisheries remain uncertain.

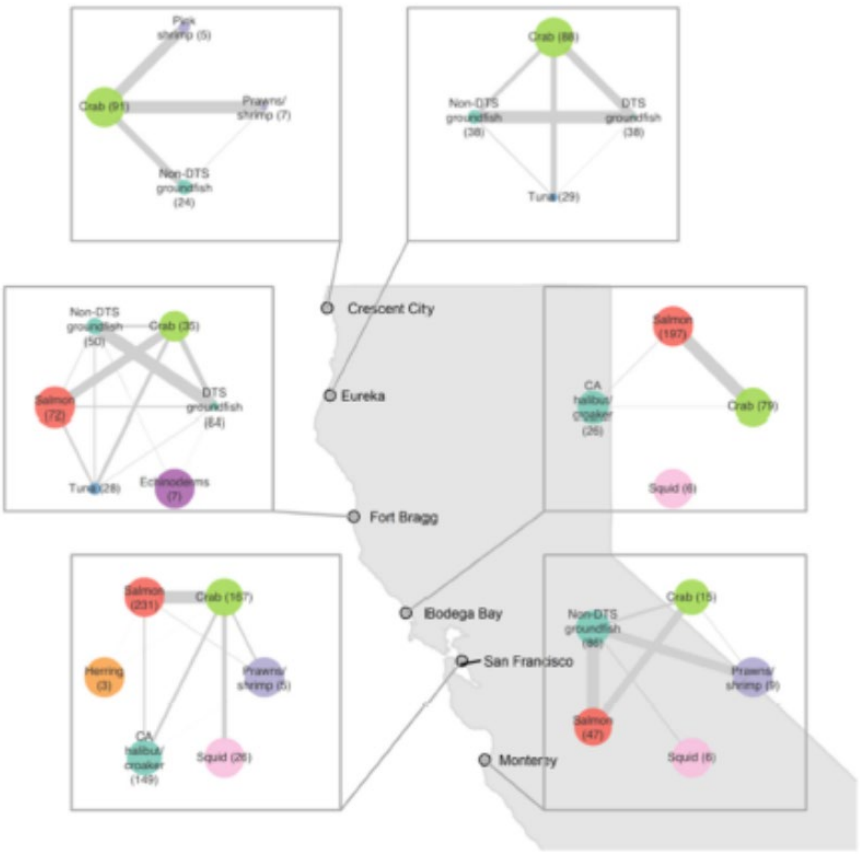

Figure 13. Figure R.3 from Agenda Item I.1.a, IEA Team Report 2, March 2021. Fisheries participation networks for IO-PAC port groups in Northern and Central California based on November 2019-September 2020 landings receipts. Node size is proportional to revenue from a given fishery; numbers in parentheses are number of vessels participating in a node. The thickness of lines ("edges") is proportional to the number of vessels participating in the pair of fisheries connected by the edges.

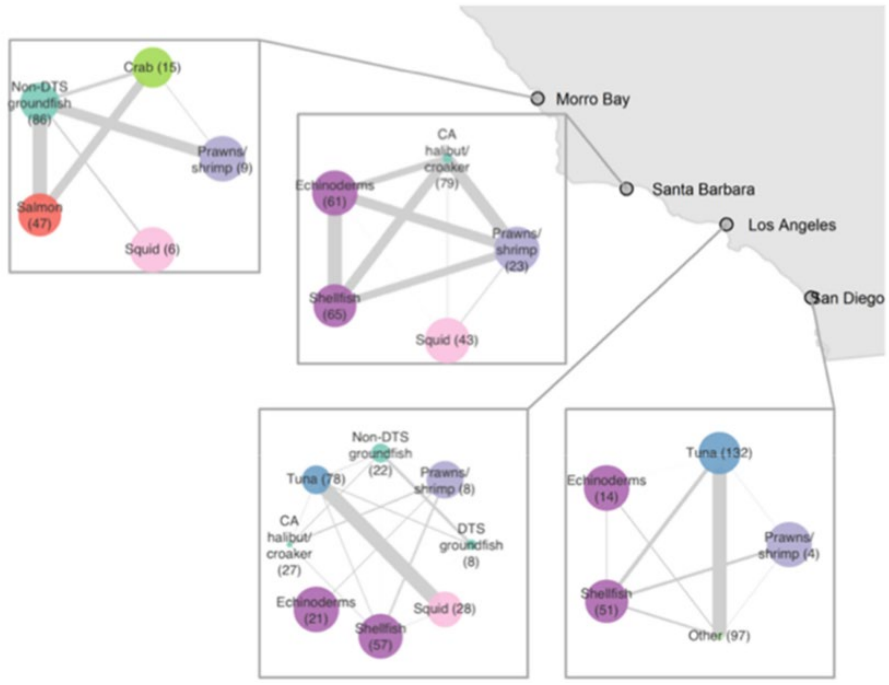

Figure 14. Figure R.4 from Agenda Item I.1.a, IEA Team Report 2, March 2021. Fisheries participation networks for IO-PAC port groups in Southern California based on November 2019- September 2020 landings receipts. Node size is proportional to revenue from a given fishery; numbers in parentheses are number of vessels participating in a node. The thickness of lines ("edges") is proportional to the number of vessels participating in the pair of fisheries connected by the edges.

Although California quillback rockfish are a contributing economic component to individuals participating in the nearshore fishery, and to a greater extent the nearshore live fish fishery, the total California quillback rockfish landings and ex-vessel revenue make up a small portion of each port complex's total revenue generated by rockfish (including cabezon, greenling, California scorpionfish, and lingcod) or the entire groundfish management group (Table 11 and Table 12). Although California quillback rockfish landings are a small portion of each port's portfolio, under Alternative 4 each port would be required to forgo the profits of all groundfish to reduce California quillback rockfish mortality to zero, because there is a possibility that any directed groundfish sector may encounter California quillback rockfish incidentally. For example, each year Eureka could forgo approximately $4 million to prevent the mortality of 0.4 mt of quillback rockfish. The extent to which quillback rockfish contribute to each port's overall landings and ex-vessel revenue of groundfish varies and will be analyzed in each respective section below.

Table 11. Average landings of California quillback rockfish compared to all rockfish landings (including cabezon, greenling, California scorpionfish, and lingcod) and all groundfish landings for 2014-2023. Source PacFIN 4/24/24

Port Group	Quillback Rockfish (mt) a/	All Rockfish (mt)	All Groundfish (mt)
Crescent City	0.95	70.73	190.57
Eureka	0.38	549.57	2730.86
Fort Bragg	0.90	625.74	1662.39
Bodega Bay	<0.01	19.19	62.65

Port Group	Quillback Rockfish (mt) a/	All Rockfish (mt)	All Groundfish (mt)
San Francisco	0.02	148.30	436.99
Monterey	0.00	121.64	417.68
Morro Bay	<0.01	138.73	374.22
Santa Barbara	--	116.38	291.77
Los Angeles	--	25.11	66.95
San Diego	--	25.47	79.68

a/ 0.00" indicate a non-zero rounding sum, "–" indicate no data.
< [value] indicates a confidential value due to data limitations.

Table 12.Average ex-vessel revenue from California quillback rockfish compared to revenue from all rockfish landings (including cabezon, greenling, California scorpionfish and lingcod) and all groundfish landings for 2014-2023. Source PacFIN 4/24/24

Port Group	Quillback Rockfish USD ($) a/	All Rockfish USD ($)	All Groundfish USD ($)
Crescent City	8,862	337,382	650,918
Eureka	2,796	747,816	4,200,527
Fort Bragg	11,779	1,097,311	3,483,528
Bodega Bay	<40	109,547	424,802
San Francisco	283	364,305	1,216,297
Monterey	36	639,014	1,588,203
Morro Bay	<10	1,485,596	2,574,326
Santa Barbara	–	1,494,419	2,558,643
Los Angeles	–	221,619	478,430
San Diego	–	245,876	578,077

a/ 0.00" indicate a non-zero rounding sum, "–" indicate no data.
< [value] indicates a confidential value due to data limitations.

The LEFG, OA, and Nearshore sectors were most negatively impacted by the management measures put in place in 2023 to prevent commercial California quillback rockfish mortality from exceeding the harvest limits. Those management measures have already greatly limited access in the commercial groundfish fishery (Agenda Item G.8.a, Supplemental GMT Report 2, September 2023, Agenda Item G.8.a, Supplemental GMT Report 5, September 2023, and Agenda Item E.9.a, Supplemental GMT Report 1, November 2023 hereinafter links are referred to as No Action). Those management measures have already greatly limited access in the commercial groundfish fishery These sectors will continue to be impacted if the Council adopts Alternative 2, and to a greater extent, if the Council adopts Alternative 4, because the majority of commercial impact to protect California quillback rockfish is concentrated on these sectors. Within the LEFG (excluding sablefish endorsed landings), OA, and Nearshore sectors Figure 15, Figure 16, and Figure 17displays each port complex's total commercial groundfish landings, number of vessels that made landings, and ex-vessel revenue from groundfish landings by year from 2014 to 2023. These figures highlight the relative scale of landings, participation, and revenue across port complexes, with the largest concentration of groundfish landings and revenue generally occurring in the port

complexes of Monterey, Morro Bay, and Santa Barbara. In some years, landings and revenue in the Fort Bragg port complex was comparable or greater than those of the three previously mentioned ports, and prior to 2020, participation was also comparable. In 2020, there was a reduction across most port complexes (likely due to COVID-19) and each port complex has begun to rebound since then. The landings, number of participants, and ex-vessel revenue across port complexes are variable and will be addressed in the following sections.

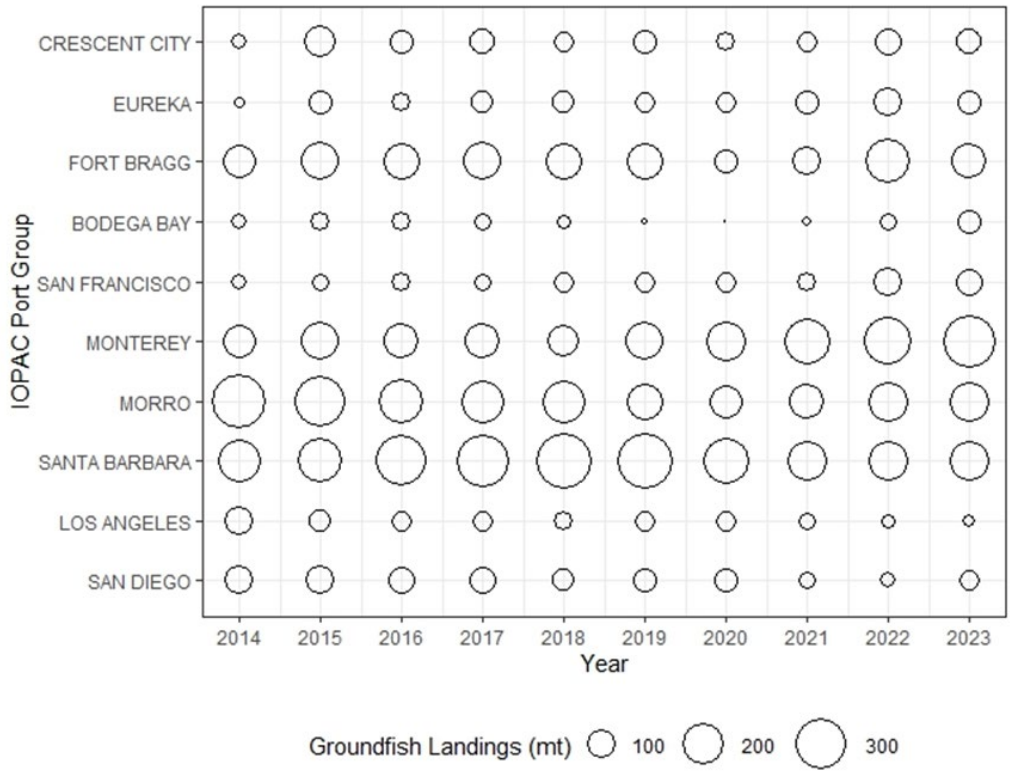

Figure 15. Groundfish landings (mt; all species) in the Limited Entry Fixed Gear (excluding sablefish endorsed), Open Access, and Nearshore sectors by California IOPAC port group, 2014-2023.

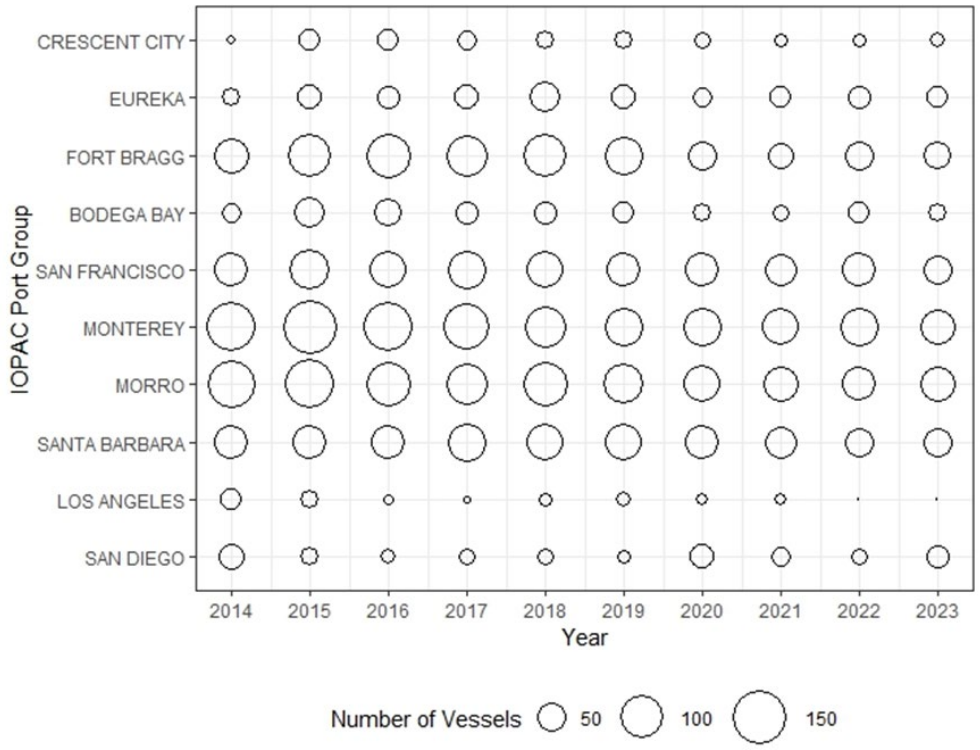

Figure 16. Number of vessels that made groundfish landings (all species) in the Limited Entry Fixed Gear (excluding sablefish endorsed), Open Access, and Nearshore sectors by California IOPAC port group, 2014-2023.

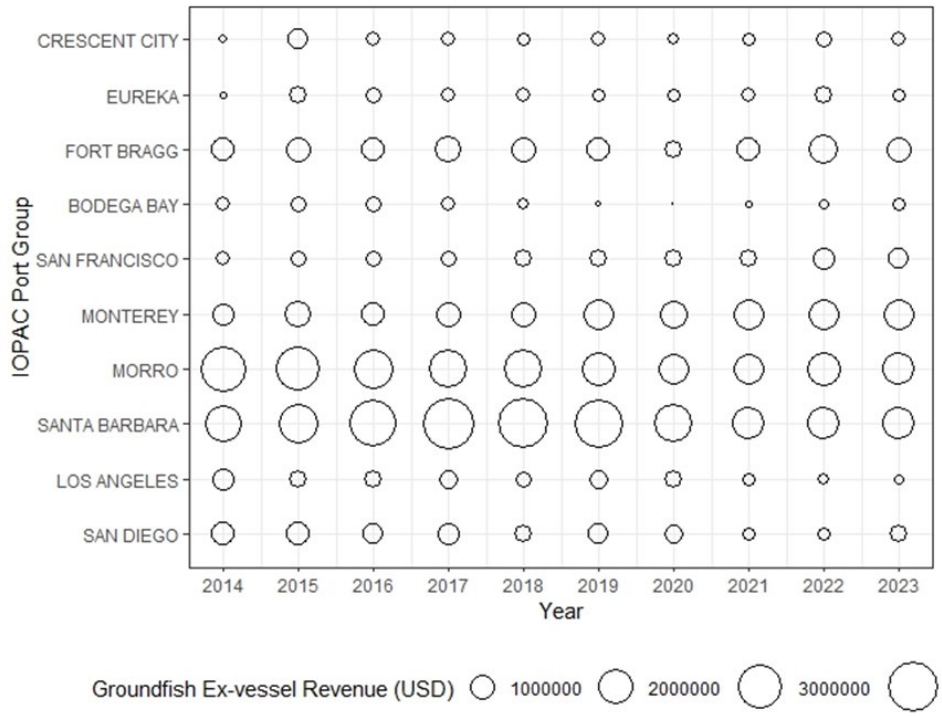

Figure 17. Inflation-adjusted ex-vessel revenue from groundfish landings (all species) in the Limited Entry Fixed Gear (excluding sablefish endorsed), Open Access, and Nearshore sectors by California IOPAC port group, 2014-2023

5.3.1 Area Between 42° and 40° 10' North latitude

Thetwo port complexes in northern California, Crescent City and Eureka, have a medium and low dependency on the commercial fishing industry, respectively, and rate moderate to high on the social vulnerability scale (**Error! Reference source not found.**). Both Crescent City and Eureka rely heavily on Dungeness crab (Error! Reference source not found.). However, Eureka fisherman also rely on groundfish as a major contributor to the port complex portfolio. Although groundfish may not supply the ports with the most ex-vessel revenue, groundfish are the fishery sectors that have been the most stable in light of canceled salmon closures or shortened invertebrate seasons (e.g., Dungeness crab, red sea urchin, etc.). In years where salmon and crab are open, groundfish provides fishermen the opportunity to generate an income in between these seasons, as crab is typically prosecuted in the winter and salmon in the late spring.

Groundfish landings and ex-vessel revenue in northern California are similar across both port complexes when comparing limited entry fixed gear, open access, and nearshore sectors since 2014, noting that there are more vessels participating out of Eureka (Figure 18, Figure 19, and Figure 20). This indicates each port complex in the north will be equally impacted by the fixed gear management measures outlined in Alternative 2 similar to the management measures put in place in 2023 and 2024 to prevent commercial California quillback rockfish mortality from exceeding the harvest limits. These management measures, which include vast area closures, gear restrictions, and prohibiting the entire nearshore complex in Federal waters, will have devastating impacts to these fishing communities. These ports generate a large portion of their fixed gear

income from lingcod and nearshore and demersal shelf stocks, which can no longer be accessed inside of 75 fm (where the majority of the rocky reefs exist). Additionally, the diversity of the Northern California bathymetry, with many canyons and shelf sections that extend the 75 fm depth contour far past the safe range for some of the smaller operations, could prevent vessels from replacing lost opportunity shoreward of the Non-Trawl RCA.

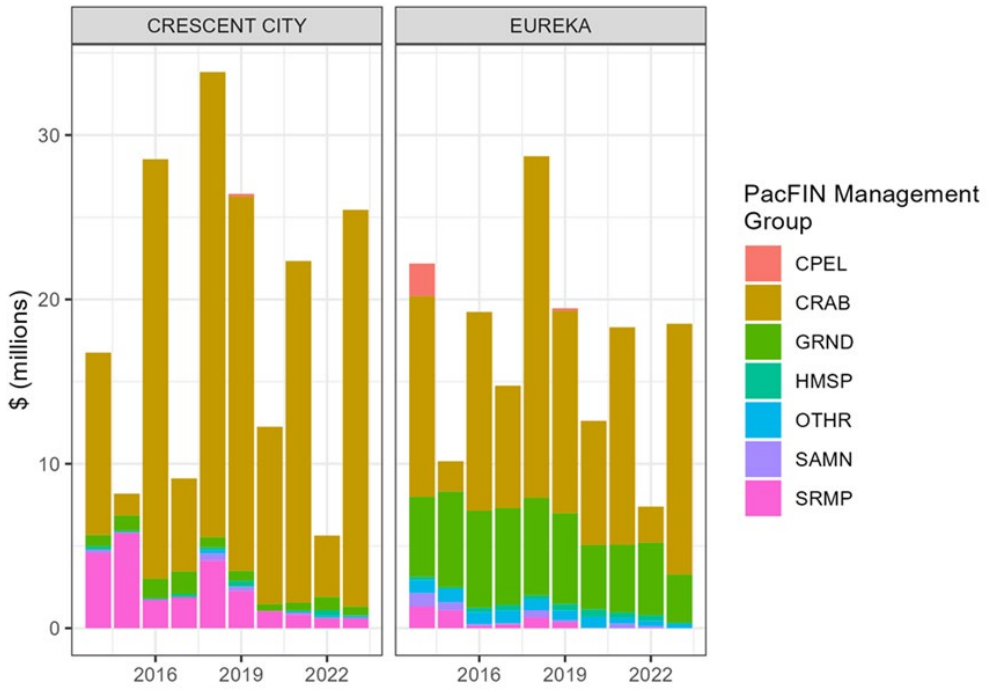

Figure 18. Commercial fish revenues by PacFIN Management Group for California IOPAC Port Areas between 42 - 40'10 2014 - 2023. Shellfish revenues are excluded. PacFIN Management Group acronyms are as follows: coastal pelagic (CPEL), crab, groundfish (GRND), highly migratory species (HMSP), other (OTHR), salmon (SAMN), and shrimp (SRMP). CODE010 - PacFIN Species Code List

The proposed management measures under Alternative 4 would likely close groundfish fisheries in the EEZ off of Northern California. Eureka is unique as it derives more of their proportional ex-vessel revenue from groundfish than any other port; however, most of the port complex's ex-vessel revenue is from bottom and midwater trawl landings (Figure 19). Given the different fishing strategies and target stocks of the trawl fishery compared to the non-trawl fishery, Alternative 2 may have less impact on the overall commercial value but Alternative 4 would have devastating impacts on the port. If the Council were to adopt the Alternative 4 (F = 0) rebuilding strategy, in the near term all directed groundfish sectors would need to be completely closed between 42° and 40° 10' N. lat. in the EEZ. In the long term, as the stock recovers, it is uncertain what fisheries, areas, etc. could reopen, as there is a non-zero chance that the trawl and fixed gear sector may interact with at least a single California quillback rockfish. A complete closure of the groundfish fishery between 42° and 40° 10' N. lat. may result in a potential yearly loss to the area of up to $5 million dollars based on a ten year ex-vessel revenue average (Table 12). However, the actual impact would likely be less if State waters activity was excluded. Moreover, the management measures used to reduce the 10-year California quillback rockfish average mortality in this area, which is currently 1 mt, would come at the potential loss of 620 mt of all other rockfish or 2,921

mt of all other groundfish per year (Table 11). Alternative 4 would therefore have disastrous short-term economic impacts to the groundfish sectors in this area. Further, it is unlikely an F = 0 scenario could be achieved, given the historical mortality of California quillback rockfish in other non-groundfish fisheries like Pacific halibut in this area of the state.

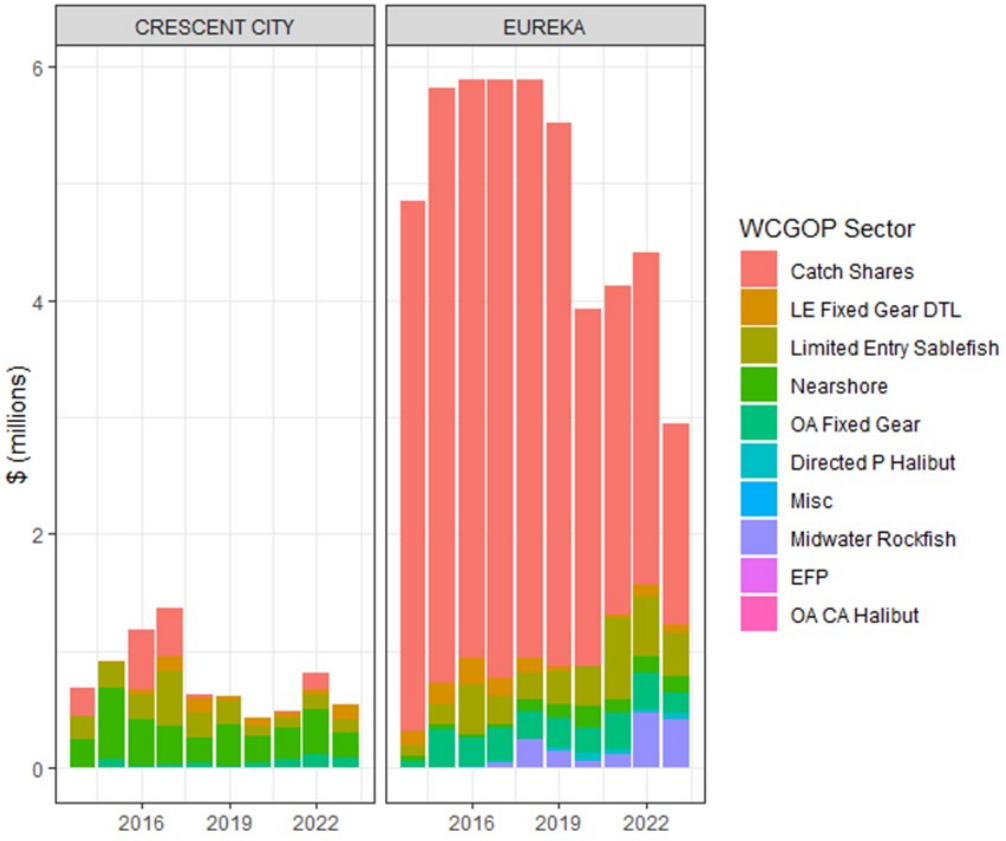

Figure 19. Groundfish revenue by West Coast Groundfish Observer Program sector code for IOPAC port areas between 42° - 40° 10′ N. lat. The following modifications to original WCGOP codes have been made here for ease of presentation: "Catch Shares" and "Catch Shares EM" have been combined; "Midwater Rockfish" and "Midwater Rockfish EM" have been combined; "Pink Shrimp," "Ridgeback Prawn," "Sea Cucumber," and "Research" have been combined into a "Misc" sector. There were no shoreside whiting landings into California ports, though note that the shoreside whiting fishery may possibly operate in California waters and land elsewhere.

5.3.2 Area Between 40° 10' and 37° 07' North latitude

The three port complexes in in the area between 40° 10' and 37° 07' N. lat., Fort Bragg, Bodega Bay, and San Francisco, have a medium and low dependency on the commercial fishing industry, respectively, and have high to low social vulnerability as latitude decreases (Table 9). These port complexes rely heavily on Dungeness crab, and to a lesser extent, salmon and groundfish with the exception of Fort Bragg, which is unique as it derives more of its proportional ex-vessel revenue from groundfish than any other port other than Eureka. In Fort Bragg, groundfish ex-vessel revenue matches or exceeds the revenue from Dungeness crab (**Error! Reference source not found.**). Although groundfish may not supply these ports with the most ex-vessel revenue in

relation to other management groups, they are part of the fishery participation network for the port and often act as an income stabilizer between other seasons or closures.

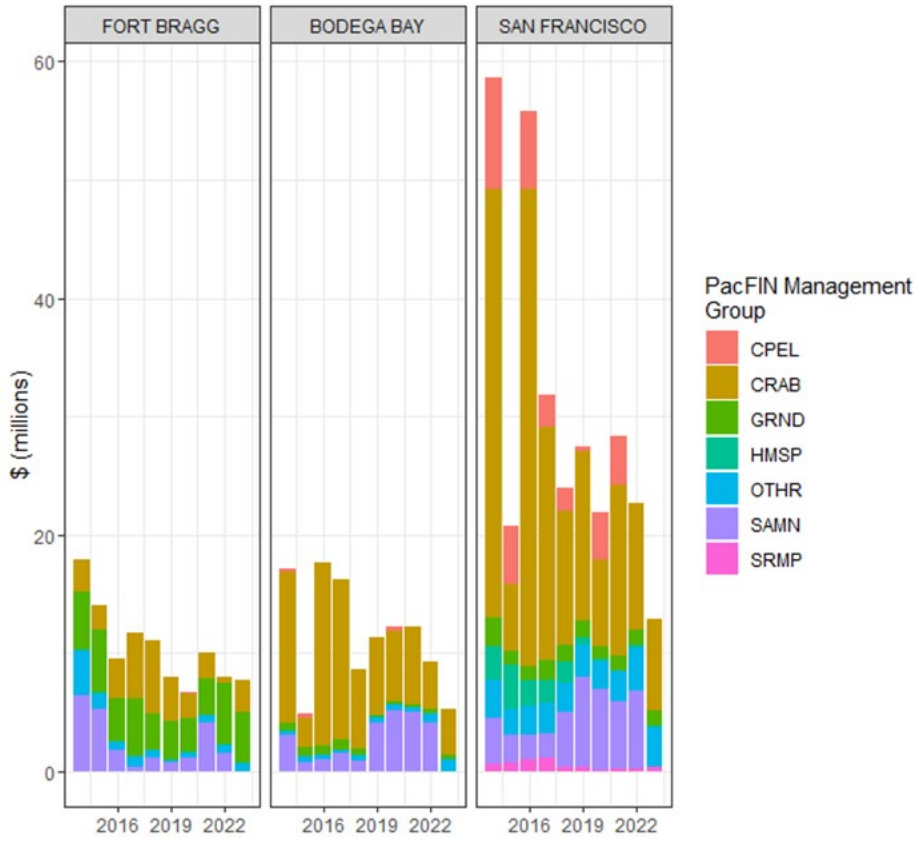

Figure 20. Commercial fish revenues by PacFIN Management Group for California IOPAC Port Areas between 40° 10′-37° 07′ N. lat. (2014 - 2023). Shellfish revenues are excluded. PacFIN Management Group acronyms are as follows: coastal pelagic (CPEL), crab, groundfish (GRND), highly migratory species (HMSP), other (OTHR), salmon (SALM), shellfish (SHLL), and shrimp (SRMP). CODE010 - PacFIN Species Code List

Fort Bragg's fixed gear groundfish landings, ex-vessel revenue, and number of participants are greater than Bodega Bay or San Francisco and among the highest in Northern or Central California (Figure 20, Figure 21, and Figure 22). Along with a higher proportion of the port's ex-vessel revenue being derived from groundfish and the limited diversity of other management groups landing into Fort Bragg (Figure 21), it is likely to be one of the port complexes most affected by either Alternative 2 or Alternative 4. San Francisco fixed gear sectors have been increasing in both landings and ex-vessel revenue over the last decade, which would be severely reduced under either alternative. Alternative 2 is similar to the management measures put in place in 2023, which have already greatly limited access in the commercial groundfish fishery. Similar to the Crescent City and Eureka ports, these impacts are felt substantially across these fishing communities, including vast area closures, gear restrictions, and prohibiting the entire nearshore complex in Federal waters. These ports generate a large portion of their fixed gear income from lingcod and nearshore and demersal shelf stocks, which can no longer be accessed inside of 75 fm where the majority of the rocky reefs exist. Additionally, the diversity of the Central California bathymetry, with many canyons and shelf sections that extend the 75 fm depth curve far past the safe range for some of

the smaller operations, could prevent vessels from replacing lost opportunity shoreward of the Non-Trawl RCA.

The current set of management measures adopted by the Council, in September 2023 and November 2023, for 2024, as inseason adjustments to reduce impacts to California quillback rockfish, are proposed for Alternative 2. Anecdotal evidence from public comment since September 2023 illustrates that these measures have had negative impacts in the form of decreasing landings and ex-vessel revenue in the region. As these measures are proposed under Alternative 2, a trend of reduced groundfish landings and ex-vessel revenue is expected to continue into the next biennium. Additionally, Alternative 4 could disproportionately impact Central California port complexes, notably Fort Bragg, as groundfish is a primary target in the industry's portfolio. Loss of the groundfish fishery would likely reduce, and potentially impede, infrastructure (e.g., processors, port services, etc.) linked to groundfish. Given the timeline to rebuild this stock, it is foreseeable that other community interests are likely to integrate into the port areas, (i.e., industry replacement). As California quillback recovers, these port communities likely will not be able to revert back to being fully supported by the fishing industry, considering the uncertainty of a future fishery. It is expected that densely populated ports with high property value such as San Francisco would see the loss of fishing infrastructure at a faster rate than less populated areas such as Fort Bragg. In San Francisco, it is highly unlikely for commercial real estate to return to fishing infrastructure after becoming a restaurant or apartment building, each of which would likely generate more revenue than a fishing port. Meaning, port communities may select for a known economic return rather than re-establish an unknown economy from fisheries, i.e., the loss of historic fishing communities to development.

Fort Bragg and San Francisco derive approximately half of the port complex's groundfish ex-vessel revenue from the trawl catch share sector (Figure 22). While there is uncertainty regarding the long term impacts to this fishery relative to Alternative 4, the near term impacts would likely be high in these ports. If the Council were to adopt the Alternative 4 (F = 0) rebuilding strategy, all directed groundfish sectors would need to be completely closed for the near term. In the long term, there is uncertainty regarding whether revisions to the rebuilding plan will be made. In addition, given that there is a non-zero chance that the trawl and fixed gear sectors may interact with at least a single quillback, management measures under an F = 0 strategy will likely need to be conservative, suggesting that the closures may be long term. A complete closure of the groundfish fishery in the Central California port complexes may result in a potential annual loss of approximately $5 million dollars to these communities, as compared to the average groundfish landings for the last ten years, if Alternative 4 were adopted (Table 12.). However, the actual impact would likely be less if State waters activity was excluded. Moreover, the management measures used to reduce the 10-year California quillback rockfish average mortality in this area, which is currently approximately 1 mt, would come at the potential loss of 793 mt of all other rockfish or 2,162 mt of all other groundfish per year (Table 11). Alternative 4 would have devastating economic impacts to this area and would likely still result in California quillback rockfish mortality associated with bycatch in other non-groundfish fisheries like Pacific halibut, salmon, and California halibut, among others.

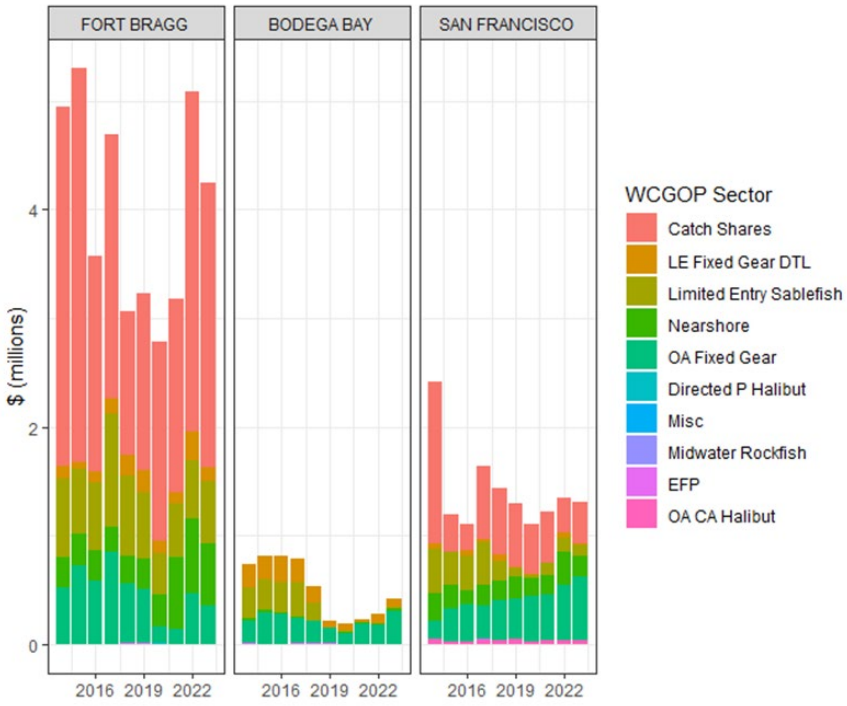

Figure 21. Groundfish revenue by West Coast Groundfish Observer Program sector code for IOPAC port areas between 40° 10′-37° 07′ N. lat. The following modifications to original WCGOP codes have been made here for ease of presentation: "Catch Shares" and "Catch Shares EM" have been combined; "Midwater Rockfish" and "Midwater Rockfish EM" have been combined; "Pink Shrimp," "Ridgeback Prawn," "Sea Cucumber," and "Research" have been combined into a "Misc" sector. There were no shoreside whiting landings into California ports, though note that the shoreside whiting fishery may possibly operate in California waters and land elsewhere.

5.3.3 Area Between 37° 07' North latitude and the US Mexico Border

The five port complexes in the area between 37° 07' N. lat. and the U.S./Mexico Border, which includes Monterey Bay, Morro Bay, Santa Barbara, Los Angeles, and San Diego, have a high to low dependency on the commercial fishing industry. They rate moderate to low on the social vulnerability scale with the exception of Moss Landing and Los Angeles which rate high to medium high (Table 9). Though quillback rockfish's range extends to Anacapa Island, California (approximately 34° N. lat.; Love et al., 2002), this species is extremely rarely recorded south of Point Conception in any commercial fishery data and never in California Collaborative Fisheries Research Program or the CDFW and MARE ROV survey data (Agenda Item F.8.a Supplemental GMT Report 1 March 2024). Therefore, it is unclear whether the impacts will be only to ports between 37° 07' and 34° 27' N. lat., namely Monterey Bay, Morro Bay, and Santa Barbara, or to all ports south of 37° 07' N. lat. No commercial landings of California quillback rockfish have been reported in ports south of Morro Bay, though two encounters with quillback rockfish were observed in the State-permitted nearshore fishery south of Point Conception. In addition, quillback rockfish were reported for only one year and month (December 2012) in the South District (San Diego, Orange and Los Angeles Counties) in CRFS data. Data are provided for all ports between 37° 07' N. lat. and the U.S./Mexico Border.

Monterey Bay, Morro Bay, and Santa Barbara ports are more similarly related than the southern ports in this area, as ocean dynamics and species composition shift from Central California into

the South California Bight. Additionally, they have a much larger portion of the fixed gear groundfish landings, ex-vessel revenue, and participants (Figure 22 and Figure 23) than the ports south of Point Conception. Monterey Bay generates most of their ex-vessel revenue from coastal pelagic species (CPS) and to a lesser extent salmon and groundfish; however, the groundfish fishery has been expanding in recent years (Figure 23). The shift to groundfish is likely due to the uncertainty in salmon/Dungeness crab and the boom and bust cycles of CPS. Morro Bay has a diverse portfolio which has relied more heavily on groundfish in recent years and Santa Barbara is primarily generating ex-vessel revenue from CPS or the "other" category, consisting primarily of spiny lobster and red sea urchin. The groundfish fishery has historically been the income stabilizer that provides stability throughout changes and closures to salmon, crab, coastal pelagic, and lobster seasons in this region. None of the five ports in this area will be affected by Alternative 2 if the management line remains at 37° 07' N. lat. other than the prohibition to retain California quillback rockfish as proposed above. Under the 2023 and 2024 framework, which would be continued under Alternative 2, the management measures associated with this region are not as restrictive as measures applied to the north due to the rare occurrence of California quillback rockfish (Agenda Item E.9.a, Supplemental GMT Report 2, November 2023). Alternative 2, however, may shift effort from the areas described above into Central and Southern California. This effort shift, in conjunction with the opening of the Cowcod Conservation Areas, and opening of the Non-Trawl RCA seaward of 75 fathoms, could concentrate effort south of 37° 07' N. lat., which may create other management issues that may need to be addressed with inseason management changes.

However, under Alternative 4, Monterey Bay, Morro Bay, Santa Barbara, Los Angeles, and San Diego groundfish fisheries would likely be closed to reach F = 0. As mentioned above, commercial quillback rockfish encounters are extremely rare south of Point Conception, but not zero, and therefore this area may need to be closed along with more centrally located ports. To reach F = 0, the Council would likely need to adopt a complete closure of the groundfish fishery, resulting in a yearly loss to the area of a potential $7 million dollars compared to the ten year average of groundfish landings (Table 12). However, the actual impact would likely be less if State waters activity was excluded. Moreover, the management measures used to reduce the 10-year California quillback rockfish average mortality in this area, which is currently less than 0.01 mt, would come at the potential loss of 427 mt of all other rockfish or 1,230 mt of all other groundfish per year (Table 11). Such an action would have devasting economic impacts to Monterey Bay, Morro Bay, Santa Barbara, Los Angeles, and San Diego, and likely would still have quillback rockfish mortality associated with bycatch in other non-groundfish fisheries.

Figure 22. Commercial fish revenues by PacFIN Management Group for California IOPAC Port Areas south of 37° 07′ N. lat. (2014 - 2023). Shellfish revenues are excluded. PacFIN Management Group acronyms are as follows: coastal pelagic (CPEL), crab, groundfish (GRND), highly migratory species (HMSP), other (OTHR), salmon (SAMN), shellfish (SHLL), and shrimp (SRMP). CODE010 - PacFIN Species Code List

Figure 23. Groundfish revenue by West Coast Groundfish Observer Program sector code for IOPAC port areas south of 37° 07′ N. lat. The following modifications to original WCGOP codes have been made here for ease of presentation: "Catch Shares" and "Catch Shares EM" have been combined; "Midwater Rockfish" and "Midwater Rockfish EM" have been combined; "Pink Shrimp," "Ridgeback Prawn," "Sea Cucumber," and "Research" have been combined into a "Misc" sector. There were no shoreside whiting landings into California ports, though note that the shoreside whiting fishery may possibly operate in California waters and land elsewhere.

5.4 Social Considerations Related to West Coast Fisheries

5.4.1 Equity and Fairness

Both MSA and Executive Order 13985 emphasize principles of fairness and equity in decision making. While these mandates are clear in their direction to consider fairness and equity, they are less clear in specifying precisely how these concepts should be evaluated. Household income is often seen as a factor describing underserved communities and is observable for a sample of West Coast fishery participants. Additionally, the vulnerability framework developed by Jepson and Colburn (2013) and utilized in the 2023 California Current Ecosystem Status Report uses household income as a determinant of vulnerability for communities of place. Using these survey data, we can directly observe this important determinant of vulnerability for fishery participants. In this section we examine the extent to which groundfish fishermen likely to be most severely

impacted by rebuilding measures exhibit household income characteristics making them particularly vulnerable to disruption.

The West Coast Fisheries Participation Survey is conducted regularly (every three years since 2017) by Social Scientists at the NWFSC. Its primary purpose is to help researchers and managers understand individuals' choices to participate in commercial fishing and the benefits, both monetary and non-monetary, that they derive from fishing. Survey questions 31 (from the 2023 survey) and 32 (from the 2020 survey) ask respondents for their approximate household income from the previous year.

Household income is defined categorically with 7 possible levels. Differences in distributions across these income categories for individuals most affected[19] by rebuilding measures versus those not directly affected can be evaluated using a χ^2 test-statistic. Under the null hypothesis, observations are distributed across the income levels independent of individual status (affected/unaffected). Figure 24 shows observed and expected observation counts under the null hypothesis for affected and unaffected fishermen, where the "affected" group includes all previously defined affected fishermen in California.

Figure 24. Observed and expected distribution of household income for 2023 survey respondents. "Affected" group includes affected fishermen in California.

5.4.2 Social Capital and Community Identity

Fishing is more than just a source of income to many fishers. It is a source of enjoyment and fulfillment that other available jobs apparently cannot match for most fishers. It is a way of

[19] Here "affected" individuals are those participating in fixed gear groundfish fisheries and "unaffected" includes all other respondents. The primary negative impacts of both Alternative 2 and Alternative 4 (loss of access to historical fishing grounds) will fall disproportionately on fixed gear groundfish fishermen in California.

life and an important part of social identity to many. How fisheries impact the wellbeing of participants and coastal communities is influenced by factors aside from how much fish can be harvested and the profits the fishery generates. (Holland et al. 2019, p.638)

Impacts to communities from loss of access to historically utilized fishing grounds generally extend beyond the financial impacts from loss of income to fishermen and loss of ex-vessel revenue to port communities. Social or non-monetary impacts of restricting access to fishing grounds may include loss of a sense of identity and belonging as well as loss of community cohesion that is important in sustaining fishing communities. Richmond and Casali (2008) identify social capital as a key determinant of fishing community sustainability and resilience.

While these impacts are difficult to quantify, the West Coast Fisheries Participation Survey was designed to help researchers and managers understand these social dynamics. Several questions from the 2023 vintage of this survey can offer important insights on social implications of a prolonged fishery closure:

1. Question 24: *Have you ever continued fishing in order to provide employment for crew when you thought the profits earned by the vessel might fail to cover expenses?* 57% of respondents answered in the affirmative to this question.
2. Question 12 asks respondents to indicate their agreement with a series of statements regarding connection to their community.
    a. 80% of respondents "Strongly Agree" with the statement: *Being a fisherman is important to me*.
    b. 63% "Strongly Agree" with the statement: *My fishing community is important to me.* Additionally, 62% "Strongly Agree" with the statement: *Continuing a community tradition is important to me.*
    c. 42% "Strongly Agree" with the statement: *Continuing a family tradition is important to me.*
3. Item #1 suggests that providing for the financial needs of their community is important to West Coast commercial fishermen. Item #2 suggests that West Coast commercial fishermen value their identity as fishermen and supports the perception of fishermen as emotionally connected to their communities.
4. The loss of access to a key target species like groundfish, and the fleet attrition likely to accompany that loss, will have impacts on well-being of individual fishermen as well as adverse impacts to communities stemming from degradation of social capital. While these potential social impacts are likely to be felt to some extent under either Alternative 2 or Alternative 4, they are likely to be more severe under Alternative 4.

5.4.3 Long-term considerations to commercial communities

Fuller et al. (2017) described three choices that fishery participants might make when faced with environmental, technological or management changes as 1) change spatial distribution of fishing, 2) find alternative sources of income and even stop fishing altogether, or 3) change how they distribute effort among the fisheries they participate in. The long term social and economic

difference between the two rebuilding alternatives are difficult to quantify because they are uncertain for three major reasons. First, the response of the stock to rebuilding efforts and the time needed for rebuilding is uncertain, which could require additional management measures to achieve rebuilding. Second, management measures for the duration of the rebuilding period are uncertain, as managers will need to respond to new information that comes from the newly emerged fishery, i.e., the use of non-bottom contact hook-and-line gear, and any other future changes to the fishery and/or ecosystem. The third source of uncertainty is fishery participant behavior.

The long term decline in overall commercial fishing activity in California, and its association with deteriorating commercial fishing support infrastructure[20], is well documented. Pomeroy et al. (2011) profiled the California North Coast ports of Crescent City, Eureka, and Fort Bragg, making the following observations:

> *"Aging infrastructure, the closure of support businesses such as Eureka Fisheries in 2000 and Eureka Ice and Cold Storage in 2008, and increasingly expensive real estate prices and permitting requirements for maintaining and developing Eureka's working waterfront, have complicated efforts by fishermen and others to maintain viable operations. Receiving and processing capacity has contracted geographically and become consolidated. Where multiple providers of goods and services (e.g., marine supply, fuel dock, vessel maintenance and repair) once were needed to meet local demand, only one or two of each type remain, serving communities elsewhere along the North Coast as well as Eureka. While this consolidation suggests increased efficiency, the limited number of goods and service providers makes the local fishing community vulnerable to further regulatory, economic and environmental change. (p.9)"*
>
> *"The decline in fishing activity at Crescent City over the last 30 years has reduced shoreside activity, leading businesses to close, reduce services and/or inventory, or diversify their operations. With limited alternative sources of revenue, harbor infrastructure has deteriorated. Insufficient provision for basic maintenance and repair of docks and related infrastructure has led to their disrepair and vulnerability to events such as the 2006 tsunami. These and other costs, particularly for dredging and dredge material disposal, and maintaining and operating the wastewater treatment plant, have become significant. (p.9)"*
>
> *"As fishing activity has declined over the last 30 years, so has the Noyo Harbor District's revenue base, making it difficult to maintain and improve infrastructure, while costs, particularly for dredging and dredge material disposal, have become significant both for the harbor district, and Dolphin Isle Marina. Use of other infrastructure, including receiving stations, fuel docks and the ice plant, which are privately owned, has declined as well, leading to reductions in the number and types of support businesses. With only a core group of support businesses remaining, fishery participants are concerned about the potential for further loss of infrastructure, and its implications for the viability of local fisheries and the fishing community. (p.10)"*

[20] Here "infrastructure" is used to encompass physical commercial fishery support infrastructure as well as commercial fishing support services (vessel and gear maintenance for example), and markets.

Infrastructure concerns specific to groundfish are documented in the Pacific Coast Groundfish Fishery Social concerns specific to groundfish are documented in the Pacific Coast Groundfish Fishery Social Study (PCGFSS) led by Suzanne Russell. Appendix J of the West Coast Groundfish Trawl Catch Share Program Five Year Review presents results from this survey relating to commercial fishing support infrastructure by homeport area. The overarching theme of responses from California's North Coast area is that persistent disruptions to groundfish participation (combined impacts of the Trawl Buyback Program and implementation of RCAs in 2003 permanently removed significant groundfish harvesting capacity from the Crescent City, Eureka, and Fort Bragg area; implementation of Catch Shares in 2011 which led to industry consolidation and further vessel attrition) has led to a loss of infrastructure and support services, creating a hardship for remaining fishermen. Similar losses in California port infrastructure resulting from restrictive management measures could be felt by the commercial fixed gear fishery under this rebuilding plan.

While it is difficult to project the magnitude, it is likely that reductions in groundfish fishing opportunity under Alternatives 2 and 4 will exacerbate the ongoing deterioration in commercial fishery infrastructure at California ports. As with most impacts in this analysis, the potential adverse infrastructure implications of Alternative 4 can reasonably be assumed to be more severe than Alternative 2, as Alternative 4 is expected to result in larger reductions in groundfish fishing activity.

5.5 Recreational Communities

Recreational anglers often report deriving value from fishing in the form of: health and wellness benefits of outdoor exercise and relaxation, spiritual and cultural benefits of connecting with nature, subsistence benefits, and social benefits of spending time with friends and loved ones (Young et al. 2016). Economic evaluation of recreational fishing, such as is commonly done through estimation of angler willingness to pay, encompasses the many dimensions of value anglers derive from fishing.

When recreational fishing access is limited, anglers are impacted through the loss of cultural, spiritual, social, and financial values associated with fishing. Economic evaluation of this loss implies consideration of the many distinct and unique sources of value (see Oleson et al. 2015). When referencing methodology or approach to inferring welfare losses from regulatory restrictions on recreational fishing we will use the term "economic analysis" or "economic impact analysis." When referencing particular potential or realized impacts to anglers and communities we will use the term "social and economic impacts" in recognition of the diverse sources of value recreational fishing provides.

Off California, groundfish are a common target for recreational anglers. Effort is variable but relative to time of year, port area, and presence of other target species. The majority of groundfish, including California quillback rockfish, are caught by boat-based anglers, either private vessels (PR mode) or party/charter vessels (PC mode). Recreational effort is correlated with population density, meaning areas of higher population density are expected to have higher effort than those with lower density. Additionally, differentiation of trips to target a particular species group (trip type) is generally reflective of stocks available to anglers in a given area. For example, in the northern ports, recreational anglers may preferentially target ocean salmon during the salmon season and in southern ports, recreational anglers may target kelp bass or highly migratory species

(e.g., tuna) at certain points of the year. The presence of other fisheries allows for anglers to diversify their effort. In areas with more target species, anglers can target species other than groundfish or groundfish that do not co-occur with California quillback rockfish. Overall, based on RecFIN data, bottomfish is the dominant target for recreational anglers in California (Figure 25).

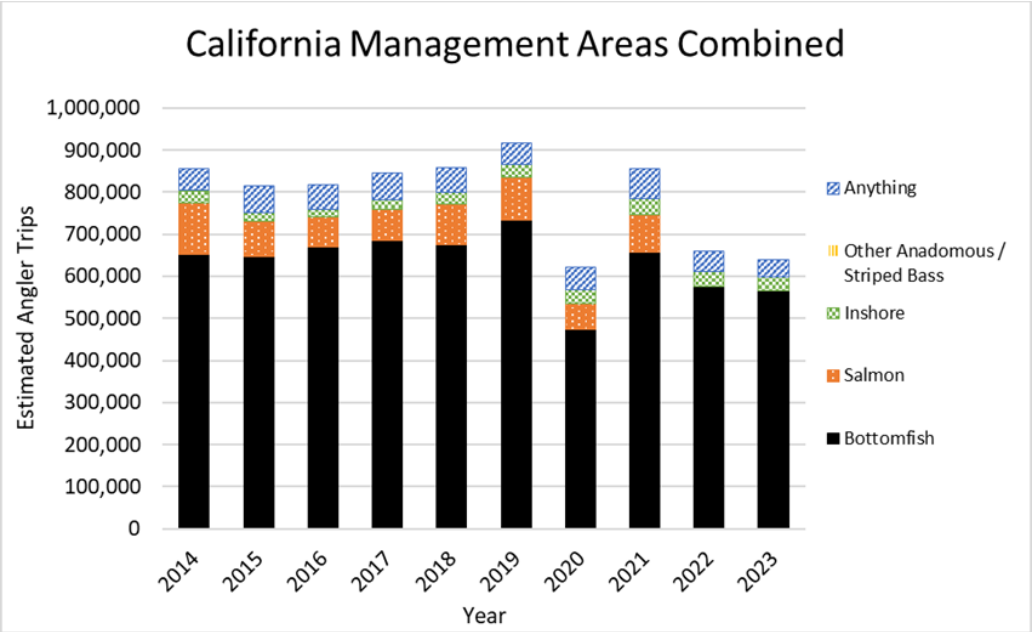

Figure 25. Statewide recreational angler trips in all Management Areas of the California recreational fishery by RecFIN trip type target from 2014-2023 for the private rental and party charter boat modes in ocean waters. Highly migratory species and invertebrate data is not included in RecFIN data for California. Salmon data only available through 2021 and is from the Council's Salmon Historical data ("blue book"). RecFIN trip type "bottomfish" includes groundfish, Pacific halibut and some state managed species. Examples of target species and/or groups in the trip type category can be found in Table 1.1 of the CRFS Methods document.

5.5.1 California Recreational Management Areas Fisheries

California manages the recreational fishery in five MAs: Northern (Oregon/ California border to 40°10′ N. lat.), Mendocino (40°10′ N. lat.to Point Arena 38°57.5' N. lat.), San Francisco (Point Arena, 38°57.5' N. lat. to Pigeon Point 37°11' N. lat.), Central (Pigeon Point, 37°11' N. lat. to Point Conception 34°27' N. lat.), and Southern (Point Conception 34°27' N. lat. to the US/Mexico Border). In terms of fisheries, there are noticeable differences between the Southern MA and the Northern MAs. For all MAs, groundfish provide a reliable opportunity and is a primary driver for fishing effort; however, each MA is not limited to groundfish as alternative targets are available. These other fisheries could provide positive benefits to recreational anglers and communities; however, these benefits may be limited to anglers who are able to access these non-groundfish fisheries and those communities where these alternate fisheries are accessible.

Fishery effort in the Northern (Figure 26), Mendocino (Figure 27), San Francisco Bay (Figure 28), and Central MAs (Figure 29) is primarily focused on groundfish and salmon (when available). Groundfish effort is the primary driver of the recreational fishery in these MAs. Recreational effort for salmon is second to groundfish in these MAs; however, annual salmon abundance can fluctuate and opportunity can be very limited in certain years. From 2008 to 2010 and again in 2023-24,

increased salmon fishing restrictions, including full season closures, were implemented to address the collapse of Sacramento River fall run Chinook salmon. Recreational anglers in these MAs target other species (Dungeness crab, albacore, and California halibut, etc.) based on the availability of the resource (i.e., time of year, proximity to port, abundance, etc.).

In the Northern and Mendocino MAs, Pacific halibut fishery provides an additional source of opportunity in this portion of the coast which is not available in all MAs. The halibut fishery is a quota fishery scheduled May through November, though the fishery may need to close early if quota is attained (or projected to be attained) prior to the scheduled end date. Reduced groundfish and salmon opportunities, however, have resulted in additional angling effort into this fishery, increasing the likelihood that the quota will be attained earlier in the year. Alternative targets could displace some of the angler effort and provide a positive impact to communities, as anglers have something to target, but it is unclear if they could offset the benefits provided by anglers who target groundfish. A reduction in overall fishing effort has a negative economic impact to revenue in local communities through reductions

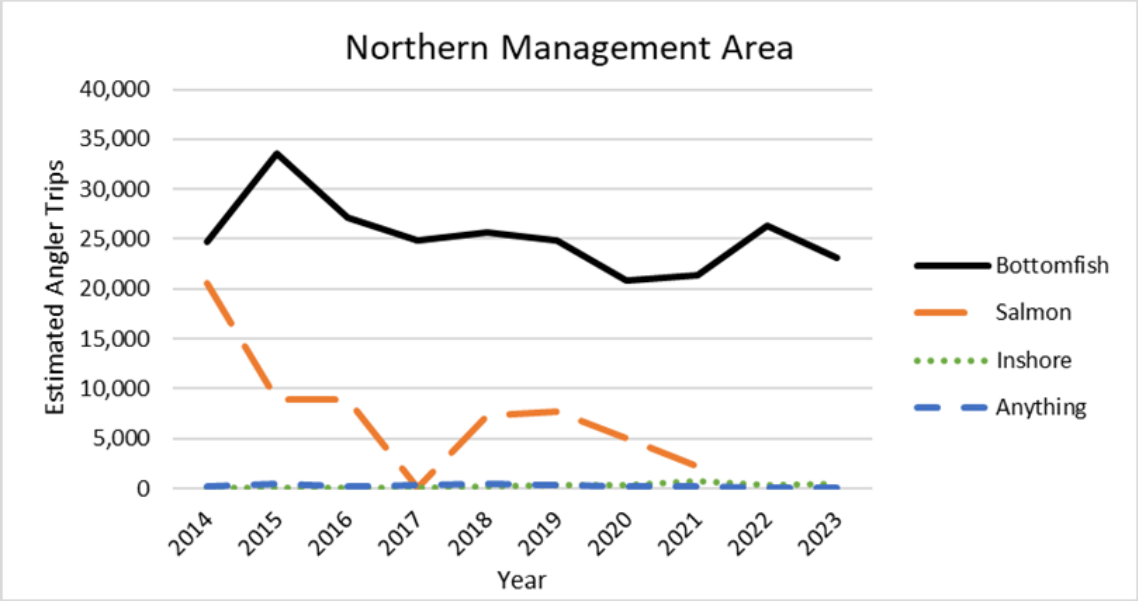

Figure 26. Recreational angler trips in the Northern Management Area of the California recreational fishery by RecFIN trip type target from 2014-2023 for the private rental and party charter boat modes in ocean waters. Salmon data only available through 2021 and is from the Councils Salmon Historical data ("blue book"). RecFIN trip type "bottomfish" includes groundfish, Pacific halibut and some state managed species.

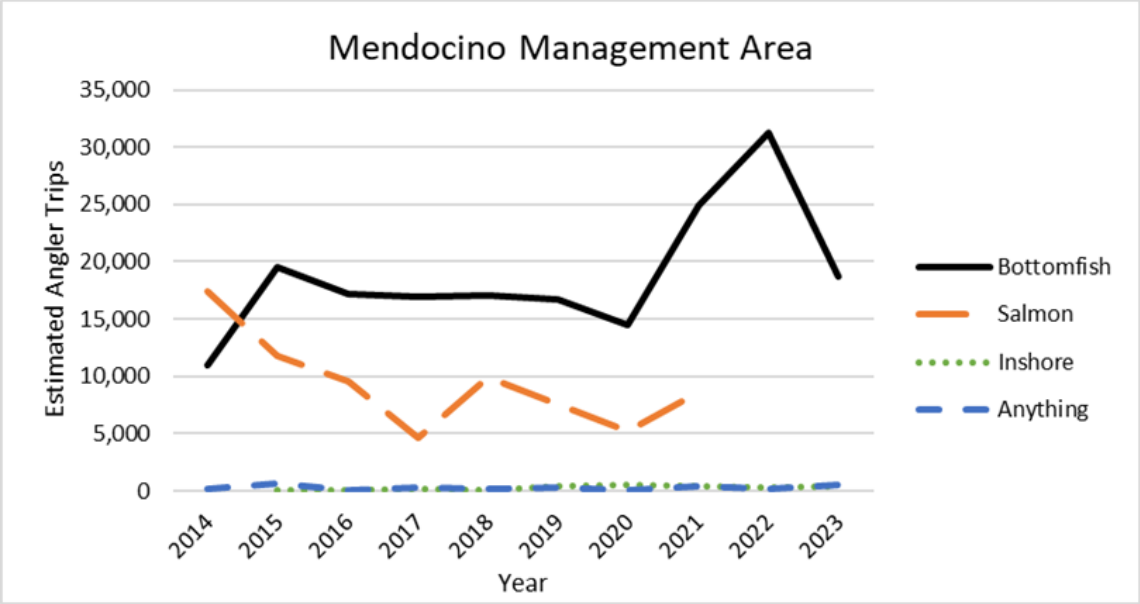

Figure 27. Recreational angler trips in the Mendocino Management Area of the California recreational fishery by RecFIN trip type target from 2014-2023 for the private rental and party charter boat modes in ocean waters. Salmon data only available through 2021 and is from the Councils Salmon Historical data ("blue book"). RecFIN trip type "bottomfish" includes groundfish, Pacific halibut and some state managed species. Examples of target species and/or groups in the trip type category can be found in Table 1.1 of the CRFS Methods document.

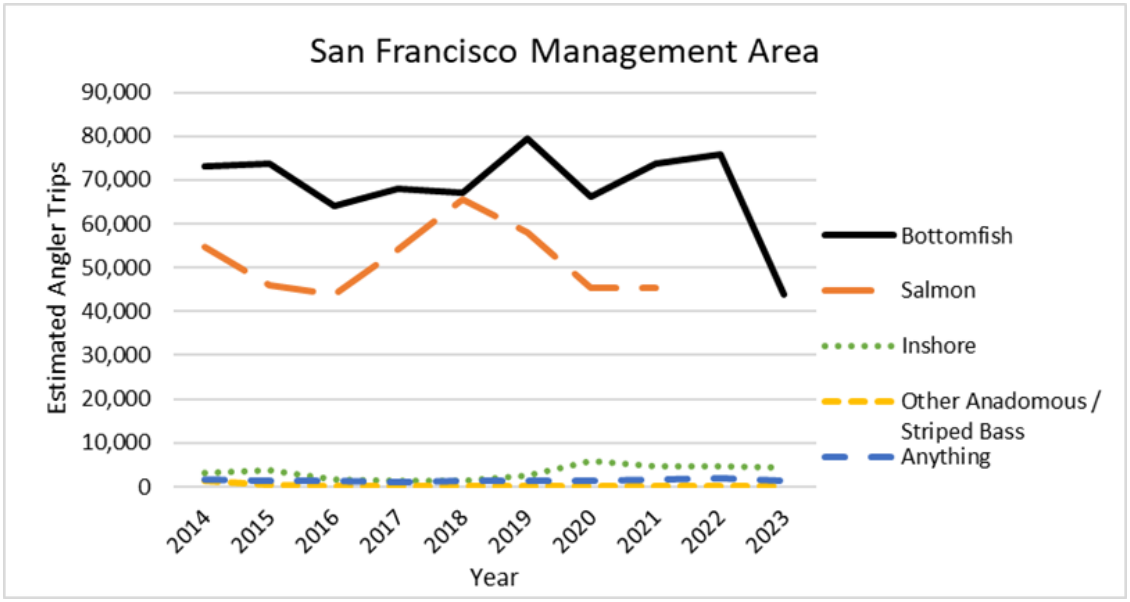

Figure 28. Recreational angler trips in the San Francisco Management Area of the California recreational fishery by RecFIN trip type target from 2014-2023 for the private rental and party charter boat modes in ocean waters. Salmon data only available through 2021 and is from the Councils Salmon Historical data ("blue book"). RecFIN trip type "bottomfish" includes groundfish, Pacific halibut and some state managed species. Examples of target species and/or groups in the trip type category can be found in Table 1.1 of the CRFS Methods document.

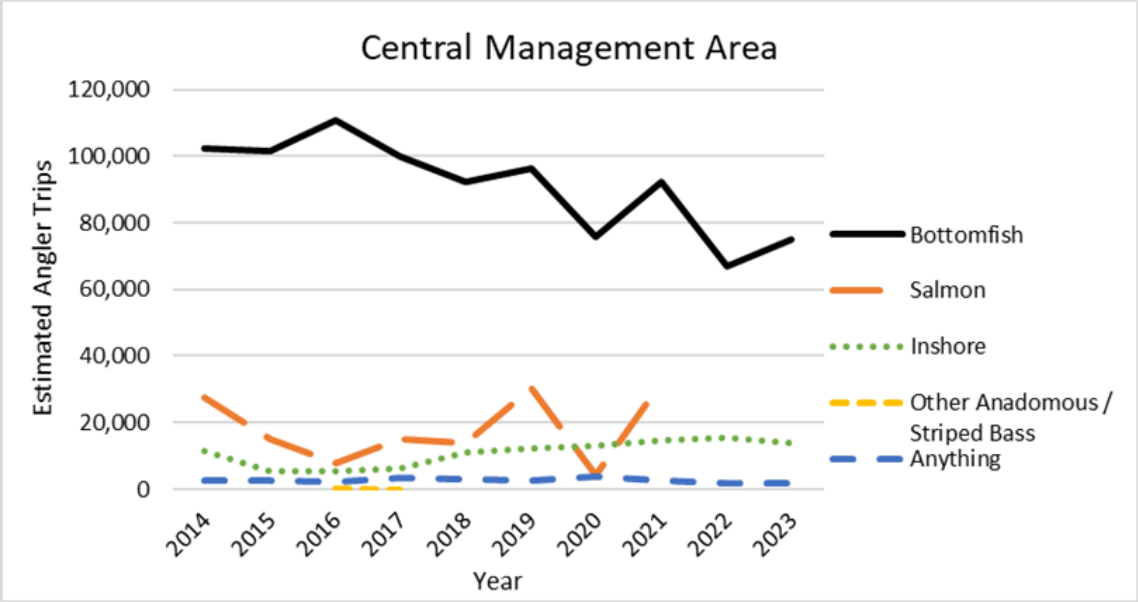

Figure 29. Recreational angler trips in the Central Management Area of the California recreational fishery by RecFIN trip type target from 2014-2023 for the private rental and party charter boat modes in ocean waters. Salmon data only available through 2021 and is from the Councils Salmon Historical data ("blue book"). Limited salmon effort occurs in the Southern MA, however salmon management reports trips from Monterey Bay to the Mexico border as one management area. The limited salmon effort which occurs in the Southern MA is displayed in the Central MA graphs. RecFIN trip type "bottomfish" includes groundfish, Pacific halibut and some state managed species. Examples of target species and/or groups in the trip type category can be found in Table 1.1 of the CRFS Methods document.

The San Francisco Bay MA offers the most opportunity for anglers north of the Southern MA, ranging from inshore bay fisheries (striped bass, shark, CA halibut, etc.) to nearshore groundfish to salmon and pelagic species (i.e., albacore). Anglers in this MA can shift to other fisheries more easily than other northern California MAs due to the diversity of target species.

The Southern MA offers anglers a wide diversity of target species. While primary angler effort is for groundfish in the Southern MA there are multiple alternatives for anglers to target, including California halibut, California sheephead, white seabass, and highly migratory species, and risk of California quillback rockfish interactions in this area are low, there is a non-zero chance it could be caught. Many of the alternative fisheries which have rockfish bycatch are State managed (e.g., California halibut, white seabass, ocean whitefish, sandbasses, and California sheephead). These fisheries, in general, have a low potential for California quillback rockfish bycatch and are outside the regulatory authority of the Council and the NMFS.

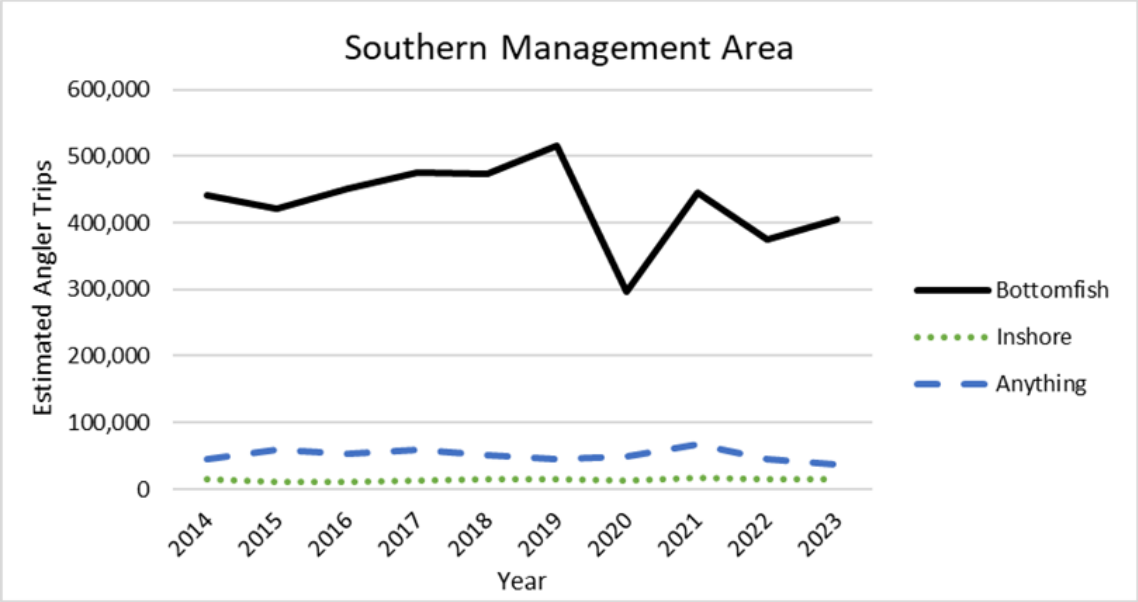

Figure 30. Recreational angler trips in the Southern Management Area of the California recreational fishery by RecFIN trip type target from 2014-2023 for the private rental and party charter boat modes in ocean waters. Limited salmon effort occur in this area; however, salmon management reports the limited trips from Monterey Bay to the Mexico border as one management area. The limited salmon effort which occurs is displayed in the Central MA graphs. RecFIN trip type "bottomfish" includes groundfish, Pacific halibut and some state managed species. Examples of target species and/or groups in the trip type category can be found in Table 1.1 of the CRFS Methods document

Depth Restrictions and Angler Effort Considerations

Opportunity in nearshore waters close to coastal reefs is the primary driver of recreational groundfish effort and provides social and economic benefits in California. From 2013-2024, just over 71% of bottomfish trips took place within 3 miles of the coast.

Alternative 2, the season structure for MAs north of 36° N. lat. would have seasonal depth restrictions, for portions of the year anglers would be restricted to waters greater than 50 fathoms, and in the remainder of the year the fishery would be closed in the EEZ. This structure prohibits access to depths from the shoreward EEZ to 50 fathoms, year round, as catch information suggests the abundance of California quillback rockfish is highest in these depths (Agenda Item F.8.a Supplemental CDFW Report 1 March 2024, Agenda Item E.7.a Supplemental CDFW Report 2, November 2021). The same strategy is implemented for 2024 (Agenda Item Supplemental CDFW Report 2, March 2024 and Agenda Item F.8.a Supplemental GMT Report 1 March 2024) and is mirrored for the 2025-26 seasons. This "offshore only" depth restriction is expected to allow for recreational fishing opportunities to continue; however, due to localized bathymetry, the presence or absence of rocky reefs outside of 50 fathoms and the proximity of the 50 fathom line to shore are not universal throughout the California Coast (Table 13). These factors are likely to reduce overall angler effort as private vessels may not be able to access these depths, safety, etc. CPFVs, however, may offer anglers a means to access these depths.

Recreational fisheries in the Northern MA are highly centered on nearshore waters due to the prevalence of coastal reefs, as this MA has limited rocky reef habitat beyond 50 fms close to the

ports shown in Table 13. The average distance from port to 50 fm is 9.7 nm. The Mendocino MA has limited rocky reef habitat beyond 50 fms close to port Table 13. The average distance from port to the 50 fm boundary is 3.8 nm. In the San Francisco MA, there is good rocky reef habitat beyond 50 fms, however, the distance to these areas is substantially greater than any other management area with an average of 21.5 miles from major launch ramps (Table 13). The Central MA has one of the starkest contrasts in distance to the 50 fm RCA line due to the Monterey Bay Canyon, as compared to other areas of the coast. Moss Landing is one of the closest launch ramps to the 50 fm RCA line at just under three miles, however, the ports of Morro Bay and Avila in the southern portion of the MA are over nine miles to the 50 fm RCA line (Table 13).

The offshore-only season structure is not considered under Alternative 4 as it is expected that the entire groundfish fishery off California would be closed.

Table 13. The distance in miles to the 50 fm RCA line from CRFS highest effort launch ramps (PR1 sites) in California and the average distance to the 50 fm RCA line in each management area, the avg distance north of Pt. Conception and the overall state average distance.

CRFS PR1 Site Name	Management Area	Miles to 50 fathom RCA
Crescent City Inner Boat Basin docks	Northern	8.78
Crescent City Harbor launch ramp	Northern	8.78
Trinidad hoist	Northern	7.53
Trinidad docks (water taxi)	Northern	7.53
Eureka Marina launch ramp	Northern	13.5
	Avg. Northern	**9.74**
Shelter Cove launch	Mendocino	4.24
Noyo River launch ramp	Mendocino	3.28
	Avg. Mendocino	**3.76**
Bodega Westside launch ramp	San Francisco	9.67
Berkeley Marina launch ramp	San Francisco	38.4
Princeton-Pillar Point launch ramp	San Francisco	16.4
	Avg. San Francisco	**21.49**
Santa Cruz Marina launch ramp	Central	9.36
Moss Landing launch ramp	Central	2.92
Monterey Marina launch ramp	Central	6.47
Coast Guard Jetty launch ramp	Central	6.44
Morro Bay launch ramp	Central	9.93
Avila Boat Sling	Central	9
	Avg. Central	**7.35**
	Avg. N. of Pt. Conception	**10.27**
Santa Barbara launch ramp	Southern	6.17
Ventura launch ramp	Southern	10.5
Channel Islands launch ramp	Southern	1.98

CRFS PR1 Site Name	Management Area	Miles to 50 fathom RCA
Marina Del Rey launch ramp	Southern	1.25
Cabrillo launch ramp	Southern	3.73
Dave's launch ramp	Southern	11.5
Sunset Aquatic launch ramp	Southern	10.4
Dana Point launch ramp	Southern	2.29
Dana Basin launch ramp	Southern	6.71
Shelter Island launch ramp	Southern	8.89
	Avg. Southern	**6.3**
	Statewide Avg.	**8.81**

5.5.2 California Groundfish Management Area Recreational Communities

As noted above, recreational effort for groundfish primarily occurs in nearshore waters. In general, nearshore waters are within State territorial boundaries. This rebuilding plan is specific to Federal waters. The following analysis assumes the State of California would take complementary action to implement similar rebuilding measures in State waters. However, management measures in State waters are outside the scope of this action and the authority of the Council and NMFS. Because the majority of California recreational fishing activity occurs in the nearshore in State waters, any significant fishing opportunities that would be maintained under Alternative 2 would likely occur in State waters. In the following descriptions of MAs, No Action represents the current state of knowledge, i.e., as of 2023, regarding fishery income in those MAs. The reason to show this is to provide a reference point for comparison of the effects the Alternatives could have on the MAs. These data and other statistics are further elaborated in the Agenda Item F.6. Attachment 7, June 2024, -the socio-economic analysis for the 2025-26 biennium.

Northern MA

The Northern Management Area encompasses the major ports of Crescent City and Eureka with a number of smaller landings (e.g., Trinidad and Fields Landing). The ports of Crescent City and Eureka were identified as having medium high social vulnerability; whereas, Crescent City displays medium reliance on recreational fisheries and Eureka has low reliance (Table 9). The reliance rating suggests that under both alternatives, the social and economic impact to these communities is differential. Crescent City could be expected to incur higher impacts due to regulatory changes related to California quillback rockfish than would Eureka.

The groundfish season in the Northern MA is highly depth restrictive as quillback rockfish are common in this MA. The season structure to support Alternative 2 would be closed in the EEZ for nine months of the year and would restrict access to greater than 50 fathoms for the other 3 months of the year.

Management measures to achieve Alternative 2 would likely result in a reduction of overall fishing effort in this MA which may correspond to reduced economic benefits. However, alternative fishing target opportunities (e.g., salmon, Pacific halibut) may offset some of the negative impacts

due to groundfish effort reductions at times when those fisheries are not restricted as well. Under Alternative 4, all recreational groundfish effort in the EEZ would cease, though anglers could only be able to target non-groundfish species. This Alternative would result in negative economic impacts to these fishing communities.

Under Alternative 2, this MA is expected to adversely affect ports in terms of constraints on season and depth restrictions to minimize California quillback rockfish mortality. Table 14 evaluates income impacts resulting from recreational fishing trips projected under the alternatives. This Table overestimates impacts directly tied to restrictions in the EEZ because of the difficulty in disentangling State waters versus Federal waters fishing activity and impacts For the Crescent City - Eureka area Alternative 2 results in a $3.4 million increase in income relative to Alternative 4. Income impacts of recreational fishing under Alternative 4 management measures are negative relative to No Action. While Alternative 2, would present a restrictive management scenario for the recreational groundfish fishery in this MA, it would allow for fishing which may provide some positive economic impact to businesses that provide goods and services to recreational anglers (e.g., freshwater, crab, salmon, etc.). Alternative 4 is the most restrictive management scenario and businesses that are centered on marine recreational groundfish fisheries (e.g., tackle shops, charter boats, etc.) would likely see adverse economic impacts, and businesses that are linked to marine recreational groundfish fisheries (e.g., hotels, restaurants, etc.) could be negatively impacted as well.

Table 14. Expected recreational fishery income and income change under the Alternatives for the Northern Management Area ($millions). After Agenda Item F.5 Supplemental Attachment 4, April 2024

Community Groups	No Action	Alternative 2	Alternative 4
Recreational Fishery income impacts	2.6	3.4	0.0
Change in recreational fishery income impacts	*2.6*	+0.9	-2.6

Mendocino Management Area

The Mendocino MA encompasses the major port of Shelter Cove and Fort Bragg, with several rural ports (e.g., Albion). Fort Bragg and Shelter Cover were identified as having medium social vulnerability and reliance on groundfish in the recreational fisheries by NMFS (Table 9). These ratings suggest these communities could be negatively impacted due to the integration of recreational fisheries into their industrial profiles.

The groundfish season in the Mendocino MA is highly depth restrictive as California quillback rockfish are common in this MA. Like in the Northern MA, the season structure to support Alternative 2 in the Mendocino MA would be closed in the EEZ for nine months of the year and would restrict access to greater than 50 fathoms for the other 3 months of the year.

Alternative 2 would likely result in a reduction of overall fishing effort in this MA which may correspond to reduced social and economic benefits. However, alternative fishing target opportunities (e.g., salmon, Pacific halibut) may offset some of the negative impacts due to groundfish effort reductions at times when those fisheries are not restricted as well. Under Alternative 4, all groundfish effort would be curtailed and anglers would only be able to target non-groundfish species. Alternative 4 would result in greater income losses and associated job

losses, which would likely impose negative social and economic impacts to these fishing communities compared to Alternative 2.

Table 15. Expected recreational fishery income and income change under the Alternatives for the Mendocino Management Area ($millions). After Agenda Item F.5 Supplemental Attachment 4, April 2024

Community Groups	No Action	Alternative 2	Alternative 4
Recreational Fishery income impacts	3.7	5.0	0.0
Change in recreational fishery income impacts	*3.7*	+1.3	-3.7

Table 15 evaluates management measures similar to those expected under Alternative 2 of this rebuilding plan. This Table overestimates impacts directly tied to restrictions in the EEZ because of the difficulty in disentangling State waters versus Federal waters fishing activity and impacts. For the Fort Bragg - Bodega Bay area, Alternative 2 results in a $5 million increase in income relative to Alternative 4. Income impacts of recreational fishing under Alternative 4 are negative relative to No Action. Although Alternative 2 presents a restrictive management scenario for the recreational groundfish fishery in this MA, it does allow for fishing which, relative to No Action, provides positive economic impact to businesses that provide goods and services to recreational anglers (e.g., freshwater, crab, salmon, etc.). Alternative 4 is the most restrictive management scenario. Businesses that are centered on marine recreational groundfish fisheries (e.g., tackle shops, charter boats, etc.) would likely experience financial losses associated with the reduction in recreational groundfish trips. Businesses indirectly linked to marine recreational groundfish fisheries (e.g., hotels, restaurants, etc.) could be negatively impacted as well

San Francisco Management Area

The San Francisco MA encompasses the major recreational ports of Bodega Bay, Sausalito, Berkeley, Emeryville, San Francisco and Half Moon Bay, as well as a number of minor ports. Bodega Bay was identified as having low social vulnerability and medium to high dependence and San Francisco, which this analysis treats as proxy for the Bay Area, has low dependence on groundfish in the recreational fisheries (Table 9). These ratings suggest differential social and economic impacts to port communities could occur due to regulatory changes to the groundfish fishery. It could be expected that impacts to socioeconomics of Bodega Bay would be more negative than impacts to San Francisco, suggesting that recreational fishing is more integrated into the industries of Bodega Bay than San Francisco.

This MA has the largest coastal population in northern California, with a seemingly corresponding amount of recreational fishing effort (Figure 28). While overall California quillback rockfish encounter rates are lower than in the Mendocino and Northern MAs, the high angler effort for groundfish appears to correlate with high California quillback rockfish mortality. Unlike other MAs, the San Francisco MA offers unique fishing opportunities (e.g., California halibut, striped bass, etc.) inside San Francisco Bay (State waters), which provides additional fishing alternatives when other fisheries are closed or when weather is inclement. Historically, effort within San Francisco bay has fluctuated based on target species abundance. Groundfish has been, historically, a reliable fishery for recreational anglers given the seasonality and variability in availability of other targets in this MA. Other opportunities include albacore and other tunas seasonally, and Dungeness crab. Recreational salmon opportunities in this region can be limited in some years.

From 2008 to 2010 and again in 2023-2024, restrictions were implemented to address the collapse of Sacramento River fall-run Chinook salmon. Restrictions on salmon and other fisheries typically coincide with increased groundfish effort and clearly demonstrate the importance of alternative fishing opportunities when salmon fishing is closed (Figure 28). Alternative opportunities will be particularly important for 2024 and in future years given the likely event of continued restrictions on salmon stocks in the near future. With no or reduced salmon seasons, restrictions on groundfish seasons to reduce impact on California quillback rockfish would likely result in a reduction of overall fishing effort in this MA, as was seen from 2022 and 2023 in Figure 28

The groundfish season in the San Francisco MA is highly depth restrictive as California quillback rockfish are somewhat common in this MA. Anecdotally, the summer months are thought to provide the bulk of the social and economic benefits to fishing communities in this area; however, this major metropolitan area generates substantial fishing effort year round if opportunity is provided. Alternative 2 would likely result in a reduction of overall fishing effort in this MA which may correspond to reduced social and economic benefits. However, alternative fishing target opportunities (e.g., salmon, California halibut. striped bass, etc.) may offset some of the negative impacts due to groundfish effort reductions at times when those fisheries are not restricted as well. Under Alternative 4, all groundfish effort would be curtailed and anglers would only be able to target non-groundfish species. Alternative 4 would result in negative social and economic impacts to these fishing communities; however, these impacts could be limited to ports that primarily focus on groundfish. Ports inside of San Francisco Bay may be able to better diversity as non-groundfish species are prevalent and easily accessible.

Table 16. Expected recreational fishery income and income change under the Alternatives for the San Francisco Management Area ($millions). After Agenda Item F.5 Supplemental Attachment 4, April 2024

Community Groups	No Action	Alternative 2	Alternative 4
Recreational Fishery income impacts	11.5	20.5	0.0
Change in recreational fishery income impacts	*11.5*	+9.0	-11.5

Table 16 evaluates income impacts resulting from recreational fishing trips, for the San Francisco area, Alternative 2 results in a potential $20.5 million increase in income relative to Alternative 4. Income impacts of recreational fishing under Alternative 4 management measures are negative relative to No Action. While Alternative 2 presents a restrictive management scenario for the nearshore groundfish fishery in this MA, it does allow for fishing which may provide some positive economic impact to businesses that provide goods and services to recreational anglers (e.g., freshwater, crab, salmon, etc.). Alternative 4 is the most restrictive management scenario, and businesses that are centered on marine recreational groundfish fisheries (e.g., tackle shops, charter boats, etc.) would likely result in adverse economic impacts and businesses that are linked to marine recreational groundfish fisheries (e.g., hotels, restaurants, etc.) could be negatively impacted as well. It may be more adverse for isolated communities, such as Half Moon Bay, which do not have the fishery diversity that the interior San Francisco Bay communities have.

1.1 Central Management Area

The Central Management Area encompasses the major recreational ports of Santa Cruz, Moss Landing, Monterey, Morro Bay and Avila and a number of rural landings. Excepting Moss

Landing, the port communities listed have low social vulnerability and low reliance on recreational fishing (Table 9). The reliance rating suggests that under both alternatives, the social and economic impacts to these communities may not be highly affected by regulatory changes. These port areas may be more diversified in terms of other industries available to residents and could potentially withstand impacts from recreational fishery regulatory changes.

Under Alternative 2, differential impacts could occur to communities north and south of 36 N. lat. As noted above in Table 7, the season structure PPA divides the Central MA into two areas, one north of 36° N. lat. and one south of 36° N. lat. North of 36° N. lat., there would be increased recreational fishery restrictions in terms of where and when anglers could fish. The ports impacted are Monterey, Moss Landing, and Santa Cruz. The season structure in this area would be the same as the three management areas to the north. South of 36° N. lat., season structure more closely resembles the Southern Management area, which is to say there are fewer restrictions on season restrictions for anglers in Morro Bay and Avila compared to the fishery north of 36° N. lat. The bifurcation of the Central MA in 2024 was intended to lessen the social and economic impacts to port areas south of 36° N. lat. which have little to no impact on California quillback rockfish. South of 36° N. lat., season structure and management measures are primarily designed to avoid impacts on species other than California quillback rockfish such as vermilion/sunset rockfish and copper rockfish. Under Alternative 4, the entire recreational fishery in the EEZ would be closed to groundfish for all of the Central district

Despite the northern portion of the MA benefiting from the unique bathymetry of the Monterey Bay, nearshore opportunities in summer months (June - September) still provide the bulk of the social and economic benefits to fishing communities in this area. In 2024, the Central MA was split into two sub areas with different regulations north and south of 36° N. lat. Almost all California quillback rockfish mortality in recreational fisheries occurs north of 36° N. lat. (Agenda Item F.8.a Supplemental GMT Report 1 March 2024, Agenda Item F.8.a, Supplemental CDFW Report 2, March 2024).

Table 17 Expected recreational fishery income and income change under the Alternatives for the Central Management Area ($millions). After Agenda Item F.5 Supplemental Attachment 4, April 2024

Community Groups	No Action	Alternative 2	Alternative 4
Recreational Fishery income impacts	12.4	19.7	0.0
Change in recreational fishery income impacts	*12.4*	+7.3	-12.4

Table 17 evaluates income impacts resulting from recreational fishing trips. This Table overestimates impacts directly tied to restrictions in the EEZ because of the difficulty in disentangling State waters versus Federal waters fishing activity and impacts. The Table shows Alternative 2 resulting in a potential $19.7 million income increase for Santa Cruz – Monterey – Morro Bay relative to Alternative 4. Income impacts of recreational fishing under Alternative 4 management measures are negative relative to No Action. In the northern part of this MA, Alternative 2 presents a restrictive management scenario for the recreational groundfish fishery in this MA, it does allow for fishing which may provide some positive economic impacts to businesses that provide goods and services to recreational anglers (e.g., California halibut, salmon, etc.). Impacts to the southern portion of this MA would not be as restrictive as in the northern part

of this MA since California quillback rockfish are rare in this part of the Central MA. This area, along with the Southern MA, have the most liberal season and regulations in the State.

Under Alternative 4, businesses that are centered on marine recreational groundfish fisheries (e.g., tackle shops, charter boats, etc.) would likely result in adverse economic impacts and businesses that are linked to marine recreational groundfish fisheries (e.g., hotels, restaurants, etc.) could be negatively impacted as well.

Southern Management Area

The Southern MA encompasses the ports of Santa Barbara, Ventura, Long Beach, Los Angeles, Marina Del Rey, Dana Point, Oceanside and San Diego as well as numerous other minor ports and launch ramps. This area is the largest population center in California and a far greater amount of boat-based effort is exerted in this MA than in MAs north of Point Conception (Figure 30). The community reliance on recreational fishing in this MA is low; however, Santa Barbara, Oxnard, Los Angeles, Newport Beach and San Diego have high vulnerability. The reliance rating suggests that under both alternatives, the social and economic impact to these communities may not be highly affected by regulatory changes (Table 9). This could indicate there are other, more dominant factors that impact these communities more so than recreational fishing In contrast to an Alternative 2 scenario, under Alternative 4, all recreational groundfish effort would likely have to cease to eliminate the small chance of California quillback rockfish mortality, and anglers would only be able to target non-groundfish species.

The proposed Southern MA season structure under Alternative 2 are primarily designed to avoid impacts on species other than California quillback rockfish, such as vermilion/sunset rockfish and copper rockfish. In the Southern MA, the fishery would be closed January – March, open in all depths from April 1 through June 30, open shoreward of 50 fm July 1 through September 30, and open for an offshore only fishery (>50 fm RCA line) from October 1 – December 31. This season is similar to the 2024 season and impacts are expected to be similar.

Table 18 evaluates income impacts resulting from recreational fishing trips. This Table overestimates impacts directly tied to restrictions in the EEZ because of the difficulty in disentangling State waters versus Federal waters fishing activity and impacts. The Table shows Alternative 2 resulting in a potential $162.5 million income increase relative to Alternative 4. Income impacts of recreational fishing under Alternative 4 management measures are negative relative to No Action. Complete closure of the groundfish fishery would have devasting economic impacts to this area.

Table 18. Expected recreational fishery income and income change under the Alternatives for the Southern Management Area (millions). After Agenda Item F.5 Supplemental Attachment 4, April 2024

Community Groups	No Action	Alternative 2	Alternative 4
Recreational Fishery income impacts	104.2	162.5	0.0
Change in recreational fishery income impacts	*104.2*	+58.3	-104.2

Table 18 evaluates income impacts resulting from recreational fishing trips. This Table overestimates impacts directly tied to restrictions in the EEZ because of the difficulty in disentangling State waters versus Federal waters fishing activity and impacts. The Table shows

Alternative 2 resulting in a potential $162.5 million income increase relative to Alternative 4. Income impacts of recreational fishing under Alternative 4 management measures are negative relative to No Action. Complete closure of the groundfish fishery would have devasting economic impacts to this area.

6. Conclusions

California quillback rockfish is overfished and requires a rebuilding plan. The goal of a rebuilding plan is to rebuild the stock in the shortest time possible taking into account the status and biology of the stock and the needs of fishing communities. This rebuilding plan analysis considers two rebuilding strategies, Alternative 2: the ABC rule, and Alternative 4: F = 0.

Under the ABC rule strategy (i.e., Alternative 2), the stock is expected to rebuild by 2060 (73.6 percent probability of rebuilding by 2071 (T_{MAX})) and under the F = 0 strategy, the stock is expected to be rebuilt by 2045 (99.9 percent probability of rebuilding by 2071 (T_{MAX})). The ABC rule allows for ACLs of 1.3 mt and 1.5 mt for 2025 and 2026, respectively, whereas the F = 0 strategy has a 0 ACL until the stock is rebuilt. Under the F = 0 strategy, ABCs would increase during the rebuilding period, but the ACLs remain at 0. The simple difference between the two strategies is Alternative 4 is predicated on zero fishing mortality of California quillback rockfish.

Management measures to support Alternative 2, the ABC rule, allow for minimal California quillback rockfish mortality in the groundfish fishery. The ACLs for this strategy could be interpreted as a *de minimis* strategy, in that no directed fishery could be prosecuted on this stock and the ACLs are likely to only support minor bycatch of California quillback rockfish. Management measures for Alternative 2 would allow for both recreational and commercial fishing; however, these fisheries would be managed with restrictions designed to avoid California quillback rockfish. In brief, these management measures would remove effort from areas and depths where California quillback rockfish have been historically caught off of California and move the fishery to depths where they are uncommon or rarely observed. The management measures to achieve Alternative 2 are primarily focused on recreational and commercial non-trawl fisheries. California quillback rockfish abundance increases in a northerly direction. Proposed management measures under Alternative 2 reflect the fishery's encounters of California quillback rockfish in accordance to their range. In brief, the State is subject to two commercial management regimes, one that is north of 37° 07′ N. lat. and one that is south of 37° 07′ N. lat., and two recreational management regimes, one that is north of 36° N. lat. and one that is south of 36° N. lat. In the northern area, management measures are designed to restrict access through time/depth closures, sub-bag and trip limits of zero, and highly restrictive commercial fishery trip limits of other co-occurring stocks. The northern area is subject to higher restrictions through a more conservative approach to managing the fisheries, whereas in the southern area, fisheries are still managed through a series of time/area closures, a recreational sub-bag limit of zero, and commercial trip limits. However, as California quillback rockfish encounters are expected to be extremely rare in the southern area, a more liberal management approach is proposed.

Alternative 4 would require imposing more prohibitive and widespread closures on all directed groundfish fisheries, including trawl fisheries and southern non-trawl fisheries which would not be restricted under Alternative 2. The extent of depth and gear restrictions off of California necessary to achieve zero mortality of quillback rockfish are unknown at this time, noting that some vessels generally operate much deeper than areas considered "nearshore" where California quillback rockfish preside.

The Council would likely be required to close the entire groundfish fishery in the EEZ off of California under Alternative 4 to achieve zero mortality in directed groundfish fisheries; however, zero mortality across all West Coast fisheries is likely unachievable, as mortality has occurred incidentally in non-groundfish fisheries (e.g., Pacific halibut) and in State managed groundfish fisheries in State waters. These fisheries are not subject to this rebuilding plan. It is unrealistic to expect zero mortality from fisheries not subject to the rebuilding plan and any mortality would violate the assumption in the rebuilding plan of no fishing mortality under F = 0.

Fishery diversity increases from north to south in California. Port communities in the northern portion of the State (i.e., N of 36° N. lat.) could potentially be able to fish Dungeness crab and salmon when opportunities to fish groundfish is limited; however, in recent years, these fisheries have not been consistent due to a multitude of issues (e.g., abundance, whale entanglement, etc.) and are not year-round fisheries. Port communities in the southern portion of the State (i.e., S of 36° N. lat.) in the areas affected by the California quillback rockfish closures, where fishery diversity is higher, would have increased opportunity to target State-managed non-groundfish fisheries, lobster, and some HMS stocks. However, the extent to which these fisheries could replace groundfish is uncertain, as they too are seasonal, whereas groundfish previously provided the bridge between other high value non-groundfish target stocks.

Alternative 4 would likely result in complete economic failure for those businesses heavily integrated and/or businesses primarily dependent on groundfish in California ports. The MSA states that a stock's rebuilding time should be as short as possible, taking into account the status and biology of the overfished stock and the needs of fishing communities (See § 304(e)(A)(i)). A rebuilding plan must specify a target year for rebuilding based on the time required for the stock to reach BMSY. This target is bounded by a lower limit (TMIN) defined as the time needed for rebuilding in the absence of fishing (i.e., F = 0). In most cases, because of the biology of the stocks and the needs of fishing communities, the rebuilding time, or the target year, for an overfished species will be greater than the minimum rebuilding time (TMIN). Alternative 4 is clearly projected to rebuild the stock in the shortest amount of time; however, in doing so it could require a near complete groundfish closure in Federal waters off of California.

Based on the above analyses, impacts from the implementation of a rebuilding plan would likely be disproportionately felt in different California management areas. California quillback rockfish displays an abundance cline from north to south, with the stock's presence increasing from 36 N. lat. north. South of this latitude, abundance is low and encounter rates are rare. The northerly ports tend to rely on groundfish, crab, and salmon. As noted above, Dungeness crab and salmon fisheries have been in rapid decline for multiple reasons, which leaves groundfish as the primary target. Under Alternative 4, removing groundfish as a target could have disastrous short term (and potentially long term) impacts to fishing communities north of 36 N. lat. South of 36 N. lat, fishing communities are dependent on groundfish, but can also target a variety of other fish (HMS, State managed stocks, etc.) that are not available to the north. Thus, while these communities would be severely impacted by a closure of the groundfish fishery in Federal waters, as groundfish is the primary fishery in the southern part of California, the impact may be less than to the north. Still, while there is potential for some ports to support non-groundfish fisheries, the benefits could be limited as groundfish generally provides stability to ports. Other non-groundfish fisheries, which have historically provided positive economic benefits (e.g., Dungeness crab, salmon, etc.), are

becoming increasingly unstable foundations for ports due to such factors as lack of certainty regarding season structure, abundances, and regulator changes.

Alternative 2 management measures are preferred as compared to Alternative 4 because they offer more management flexibility and the ability to adapt to new information, while being more surgical with openings and gear allowances than Alternative 4 management measures. As noted, Alternative 2 management measures are restrictive for half of the State and do not include trawl fishery restrictions. Thus, some groundfish and alternative non-groundfish opportunities will allow for some stability to the fishery overall. Alternative 4 would decrease fishery stability in the entire State, including because the alternative stocks available do not provide the same benefits across the State. Ports north of 36 N. lat. are less flexible in reacting to groundfish closures due to the lack of fishery diversity. These ports are highly focused on groundfish and target salmon and crab based on their intermittent availability. Ports south of 36 N. lat. are more flexible to groundfish closures as there is more diversity in fisheries; however, groundfish in this area provides a consistent source of positive benefits to communities. Availability of non-groundfish stocks can be intermittent (e.g., salmon, crab) or unavailable to large portions of the State, e.g., kelp bass, white seabass, salmon, crab, etc.

Commercial non-trawl management measures under Alternative 2 are only proposed from 42° to 37° 07' N. lat., whereas management measures for the recreational sector are proposed from 42° to 36° N. lat. Under Alternative 2 management measures, the economic benefits from the groundfish fishery in areas closed to protect California quillback rockfish will be reduced relative to historical benefits. The net result in this area from Alternative 2 is likely to have increased negative impacts to fishing communities relative to past benefits and the commercial management structure. Economic impacts for southern fishing communities are not expected to incur the same level of negative impacts as to more northern communities where California quillback rockfish are more common. Other than the prohibition of California quillback rockfish the management measures for this area are not expected to change from status quo, thus allowing the groundfish fishery to largely continue as it has in the past. While the social and economic impacts are likely to produce fewer benefits overall to fishing communities in the north, the management measures would still allow for fishing to occur at select depths and times during the year, which will provide some relief to communities.

Alternative 4 would impose large burdens on the economy and devastate coastal fishing communities in California, which may never return to groundfish once the stock is rebuilt. As has been noted, groundfish supports most California ports, or at least significantly contributes to these communities. Alternative 4 would likely close all groundfish effort off of California. Some communities may be able to replace groundfish, but likely not to the same level of benefits for port communities as those provided by, or with the same financial security created by, the groundfish fishery. Other industries may replace fishing in communities; however, it is unclear if and when this would occur.

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Finding of No Significant Impact Amendment 33 to the Pacific Coast Groundfish Fishery Management Plan, 2025-26 Harvest Specifications and Management Measures.

Unique ID Number: 45446.014

I. Purpose of Finding of No Significant Impact (FONSI): The National Environmental Policy Act (NEPA) requires the preparation of an Environmental Impact Statement (EIS) for any proposal for a major federal action significantly affecting the quality of the human environment. 42 U.S.C. § 4332(C). Agencies may issue a Finding of No Significant Impact (FONSI) if they determine during NEPA review that a proposed agency action is not anticipated to have a significant effect on the human environment and therefore does not require the issuance of an EIS. *Id.* § 4336e(7); 40 C.F.R. § 1500.5(b). The Council on Environmental Quality (CEQ) regulations direct agencies to examine both the context of a proposed action and the intensity of the effect to determine whether an adverse effect of such action is significant. 40 C.F.R. § 1501.3(d).

Agencies must examine the significance of the action in several contexts, including the characteristics of the geographic area, such as proximity to unique or sensitive resources or communities with environmental justice concerns; the potential global, national, regional, and local contexts (as appropriate); as well as the duration, including short-and long-term effects. *Id.* § 1501.3(d)(1). In examining the intensity of the effect, CEQ identifies several specific criteria for consideration. *Id.* § 1501.3(d)(2). Each criterion is discussed below with respect to the proposed action and considered individually as well as in combination with the others.

In preparing this FONSI, we reviewed the Final Environmental Assessment for Amendment 33 to the Pacific Coast Groundfish Fishery Management Plan, 2025-26 Harvest Specifications and Management Measures (EA), which evaluates the affected environment and the environmental effects of the proposed action and the action alternatives (including the duration of impact, and whether the impacts were adverse and/or beneficial and their magnitude). The EA is hereby incorporated by reference. 40 C.F.R. § 1501.6(c).

II. Approach to Analysis: Four alternatives were considered in this EA. Under the No Action alternative, the harvest specifications and management measures that are in place for 2024 would remain in place for the 2025-26 biennium and would not be updated with new information (2023 catch and discard data was used to inform the EA's analysis, however, since all 2024 fishery data is not yet available). Under Alternative 1, the default harvest control rules are applied to each stock or species, as updated with the most recent information from new stock assessments and other sources. Alternative 2 is the same as Alternative 1, except that alternative harvest control rules are considered for four stocks: Dover sole, rex sole, shortspine thornyhead, and California quillback rockfish. Alternative 2 also includes new management measures for the Pacific Coast groundfish fishery that were not in place during previous biennia. Alternative 3 is the same as Alternative 2, except that it includes different alternative harvest specifications for California quillback rockfish,

which were proposed by the California Department of Fish and Wildlife for consideration in the California Quillback Rockfish Rebuilding Plan. Alternative 3 was considered but rejected for full analysis in the EA, as the California quillback rockfish harvest specifications would not meet the technical or legal requirements of the Magnuson Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act). Alternative 4 is also the same as Alternative 2, except it includes a rebuilding plan for California quillback rockfish that assumes zero catch (fishing = 0) in Pacific Coast groundfish fisheries. Additional detail on each action alternative is provided in Section 2.4 of the EA.

III. Context: The geographic scale of the affected environment is the United States Exclusive Economic Zone (EEZ), seaward of Washington, Oregon, and California state territorial waters (3 nautical miles from shore); this is neither considered large-scale nor considered to be long-term in duration. The affected resources include target species, non-target species, prohibited and select protected species, marine mammals and turtles, seabirds, habitat, and marine ecosystem. For further in-depth discussion, see the affected environment as described in Section 1.1 (general) and Section 2.3.2 (California Quillback Rockfish Rebuilding Plan) of the EA.

IV. Intensity: The proposed action is unlikely to threaten a violation of Federal, state, or local law because it was designed to be in compliance with all applicable laws, including those imposed for environmental protection.

The very nature of the proposed action is to make adjustments within the current fishery management framework in order to allow for the continuation of the sustainable fishing harvest of managed groundfish species on the U.S. West Coast. Most of these adjustments reflect minor changes from the existing fishery management framework. The action is designed to have effects on marine fish species and groundfish fisheries. The degree to which managed fish and socioeconomic and environmental resources are affected by the proposed action is, however, mitigated by the existing fishery management framework, which is designed to balance (1) conservation of marine fish species within the ecosystem and (2) utilization of groundfish stocks by fisheries to the benefit of society and the affected coastal economies.

The proposed action is expected to have both beneficial and adverse effects to socioeconomic resources (see Section 4.5 of the EA and Appendix 1).

- **Beneficial**: The biomass for sablefish, which is one of the most lucrative stocks on the U.S. West Coast, is expected to increase over 200 percent in the 2025-26 biennium, which will consequently allow for increased tier limits in the primary sablefish fishery and trip limits in the limited entry fixed gear and open access fisheries. If fishermen can find adequate market demand, this could expand fishing opportunity across all non-trawl commercial sectors. Additionally, the new management measure for re-combining shortspine thornyhead allocations both north and south of 34° 27’ North latitude (N. lat.) is expected to provide more fishing opportunity seaward of northern California for the commercial non-trawl fleet and trawl Individual Fishing Quota (IFQ) fleet. If the allocations had remained separated for north and south of the 34° 27’ N. lat. management line, the trip limits for north of 34° 27’ N. lat. would have been so small, that a targeted fishery would have likely been unattainable, which would have resulted in lost economic opportunity and unnecessary regulatory discards. In addition, if the allocations had remained

separated for north and south of the 34° 27’ N. lat. management line, trawl IFQ limits would have been constraining. Combining the shortspine thornyhead allocations allows for more flexible use of the resource.

- **Adverse**: The California Quillback Rockfish Rebuilding Plan will restrict fishing activity in the nearshore seaward of northern California; however, this is necessary to rebuild the stock over the long-term. The chosen rebuilding strategy is expected to rebuild the stock within the Magnuson-Stevens Act-mandated timeframe, while still providing some fishing opportunity to meet the needs of California fishing communities. The different rebuilding strategies for California quillback rockfish are discussed in detail in Appendix 1 to the EA.

On a coastwide scale, future groundfish harvest associated with the proposed action is not expected to be appreciably different than existing harvest levels. The proposed action is therefore anticipated to have an overall negligible net effect on both socioeconomic resources and managed fish over the two-year period that the rules are expected to be in effect.

The proposed action is not expected to affect public health or safety.

The proposed action is not expected to adversely affect Federal threatened or endangered species and/or their critical habitat beyond those effects considered in current Biological Opinions for the Pacific Coast groundfish fishery. Potential effects to ESA-listed species are discussed in Sections 4.2 and 5.3.2 of the EA.

The proposed action is not expected to adversely affect stocks of marine mammals as defined in the Marine Mammal Protection Act. Potential effects to marine mammals are discussed in Section 4.2 of the EA.

The proposed action is not expected to adversely affect essential fish habitat (EFH) identified under the Magnuson-Stevens Act. Potential effects to EFH are discussed in Section 4.3 of the EA.

The proposed action is not expected to adversely affect bird species protected under the Migratory Bird Treaty Act. Potential effects to seabirds are discussed in Sections 4.2 and 4.4 of the EA.

The proposed action is not expected to adversely affect national marine sanctuaries or monuments, vulnerable marine or coastal ecosystems (including, but not limited to, shallow or deep coral ecosystems), or biodiversity or ecosystem functioning (e.g., benthic productivity, predator-prey relationships, etc.).

The proposed action may have effects on cultural resources or resources important to traditional cultural and religious tribal practice. However, those effects are not expected to be significant. In addition, the proposed action was developed after meaningful consultation and collaboration with tribal officials from the action area, consistent with Executive Order 13175. Tribal representatives proposed management measures, which are included in the proposed action. Additionally, none of the management measures nor any other aspect of this action are expected to impede the exercise of tribal treaty rights or have significant impacts on resources important to traditional cultural and religious tribal practices.

The proposed action is not expected to have a disproportionately high or adverse effect on the health or the environment of minority or low-income communities, as compared to the impacts on other communities.

The proposed action is not expected to result in any effects contributing to the introduction, continued existence, or spread of nonnative invasive species or promoting the introduction, growth, or expansion of the range of such species.

The proposed action is not expected to cause an effect to any other physical or biological resources where the impact is considered substantial in magnitude or over which there is substantial uncertainty or scientific disagreement.

V. Other Actions Including Connected Actions: As discussed in Section 5 of the EA, no connected actions have been identified and the cumulative effects of other actions, which have occurred, are occurring, or are reasonably certain to occur in the action area, are unlikely to be significant.

VI. Mitigation and monitoring:
Several aspects of the proposed action mitigate potential effects to the affected environment or monitor the effects of the proposed action.

- **Directed Open Access Permit**: The new management measure that will implement a directed open access permit program is expected to help the National Marine Fisheries Service (NMFS) and the Pacific Fishery Management Council (Council) better track and account for participation in the directed open access sector, thus enabling the Council and NMFS to better account for impacts to and from this sector. The ability to better tailor observer coverage to this sector would help verify impacts from non-bottom contact hook-and-line gear types that were recently approved for use inside the Non-Trawl Rockfish Conservation Area starting in 2023 (87 FR 77007, January 1, 2023).
- **Descending Device Requirement**: The new management measure that would require recreational vessels off California to carry a descending device is expected to reduce mortality of rockfish species in the Pacific Coast groundfish recreational fisheries by increasing the likelihood that discarded species will be returned to depth.
- **Fishery Monitoring**: The proposed action continues to use declaration reports and vessel monitoring systems to monitor geographic areas off the U.S. West Coast where certain types of fishing is prohibited. This monitoring is used to enforce fishing restrictions.

None of these mitigation or monitoring measures were necessary to keep impacts of the proposed action from being significant. They are being implemented as precautionary measures.

DETERMINATION

Based on the Final Environmental Assessment for Amendment 33 to the Pacific Coast Groundfish Fishery Management Plan, 2025-26 Harvest Specifications and Management Measures, the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Program has determined in this FONSI that preparation of an EIS for Amendment 33 to the Pacific Coast Groundfish Fishery Management Plan, 2025-26 Harvest Specifications and Management Measures

is not required because the proposed action will not have significant effects. All adverse impacts of the proposed action, as well as mitigation measures, have been evaluated to reach this conclusion of

October 15, 2024

Jennifer Quan
Date

for
Regional Administrator
West Coast Region
National Marine Fisheries Service