Draft Harvest Specifications Sections of the Pacific Coast Groundfish Fishery 2025-2026 Harvest Specifications and Management Measures

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Executive Summary

The purpose of this document is to provide information for the 2025-2026 biennial groundfish harvest specifications and management measures process for decision making by the Pacific Fishery Management Council (PFMC). This document analyzes default harvest specifications and those with proposed alternatives as adopted by the Council, as of March 2024.

Default harvest specifications are computed by applying the best scientific information available, such as new endorsed stock assessments or updated stock projections, to "default" harvest control rules which were utilized in the most recent 2023-2024 groundfish management cycle.

Default harvest specifications for 2025-2026 were adopted by the Council in November 2023 for all managed groundfish stocks, with additional alternatives considered for dover sole, rex sole, and shortspine thornyhead. In March 2024, a range of rebuilding strategies and an associated range of 2025-2026 harvest specifications were adopted for quillback rockfish in California to consider as alternatives.

The table below summarizes selected species with harvest specification alternatives that deviate from the default harvest specifications for the majority of managed groundfish species in the next cycle. These alternatives are being considered by the Council and final preferred alternative selection is scheduled for April 2024.

Table 1. Alternative 2025 and 2026 harvest specifications for select U.S. West Coast groundfish stocks; Alternative 1 is the default harvest control rule, and Alternatives 2-4 are the alternative harvest control rules under consideration.

Stock	Alternative	Harvest Control Rule
Rex Sole	Alternative 1	Default: ABC = ACL (P* = 0.40)
	Alternative 2 (PPA)	ABC = ACL (P* = 0.45)
Shortspine Thornyhead	Alternative 1	Default: Precautionary; ACL < ABC, 40-10 rule ACL split N (70.6%) and S (29.4%) of 34° 27' N. Lat. 5-yr rolling avg of biomass estimates from WCGBT survey (P* = 0.40)
	Alternative 2 (PPA)	Precautionary; ACL < ABC, 40-10 rule ACL split N (70.6%) and S (29.4%) of 34° 27' N. Lat. 5-yr rolling avg of biomass estimates from WCGBT survey (P* = 0.45)
Dover Sole	Alternative 1	Default ACL = 50,000 mt
	Alternative 2 (PPA)	ABC = ACL (P* = 0.45)
Quillback Rockfish in CA	Alternative 1	Default HCR: SPR = 0.55, ACL = ABC (P* = 0.45)
	Alternative 2	ABC Rule
	Alternative 3	CDFW proposed (November 2023)
	Alternative 4	F=0 (i.e. no fishing mortality)

1. Alternatives

1.1 Description of Alternatives

Chapter 1 describes the alternatives (No Action, Alternative 1, Alternative 2, and Preliminary Preferred) that could be implemented to manage groundfish fisheries for the 2025-26 biennial period. No Action reflects 2023 groundfish harvest specifications for comparison purposes. Alternative 1 reflects the default harvest control rules (HCRs); whereas Alternative 2 reflects the alternative HCRs for the identified stocks (Dover sole, rex sole, and shortspine thornyhead). Preliminary Preferred Alternative (PPA) HCRs were identified for Dover sole, rex sole, and shortspine thornyhead by the Council in November 2023. The stock of quillback rockfish off California was declared overfished in December 2023, and a range of rebuilding strategies and associated harvest specifications were adopted by the Council in March 2024. The species with Alternatives proposed which consider changes to their default HCRs are shown in Table 3.

Harvest specifications include the overfishing limit (OFL), acceptable biological catch (ABC), and annual catch limit (ACL) for all stocks and stock complexes actively managed under the Pacific Coast Groundfish Fishery Management Plan (FMP). These metrics are described in detail in the Status of the Pacific Coast Groundfish Fishery: Stock Assessment and Fishery Evaluation (SAFE) document, which is incorporated by reference.

U.S. West Coast groundfish stocks are managed under a harvest specification framework that considers scientific and management uncertainties. The first specification is the OFL, which is the maximum sustainable yield (MSY) estimated for the stock and the legal harvest limit beyond which constitutes overfishing. The OFL is determined either by applying the harvest rate (F) or proxy rate estimated to result in a biomass capable of sustaining MSY (i.e., F_{MSY}) recommended by the Council's Scientific and Statistical Committee (SSC) to an estimate of exploitable biomass in the case of assessed stocks or through an approved data-limited method (e.g., Depletion-Corrected Average Catch [DCAC] or Depletion-Based Stock Reduction Analysis [DB-SRA]) in the case of unassessed stocks. Regardless of the method or data informing the calculation of an OFL, there is scientific uncertainty in the estimation of an OFL. The FMP mandates a precautionary buffer to account for this uncertainty by prescribing an ABC harvest level that is less than the OFL. A further reduction from the ABC can be specified when setting an ACL that accounts for management uncertainty, socioeconomic considerations, ecological considerations, conservation objectives, and/or other considerations the Council and National Marine Fisheries Service (NMFS) wish to address. Since the ACL can be set equal to the ABC, the ABC is the highest harvest level that can be specified for U.S. West Coast groundfish stocks.

Management measures are designed to keep the mortality of these stocks and stock complexes at or below the ACLs, which are not discussed in this document.

1.2 Harvest Specification Alternatives

At the national level, National Standard 1 Guidelines at 50 CFR §600.310 define harvest specifications and what must be considered when specifying them. The FMP Chapter 4 describes the framework for biennial specifications, as well as Section 2.8 of the SAFE document. The OFL, ABC, and the ACL for each stock is based on the best scientific information available including endorsed stock assessments, changes in SSC-endorsed stock categories, or changes in SSC-endorsed sigma values (i.e., variances used to account for scientific uncertainty in setting ABCs). Any revised or new HCRs adopted by the Council and used to determine specifications for the subject biennial period become the new default for future biennial management cycles. The Alternatives are summarized in Table 3 and detailed below in Section 2.1.1.

Harvest specifications are based on the most recent assessments for actively managed stocks, including those managed in stock complexes. Results from new assessments conducted in 2023 were used to determine 2025 and 2026 harvest specifications for copper rockfish in California (south of 42° N. lat.), black rockfish in Washington, Oregon, and California, canary rockfish, petrale sole, rex sole, sablefish, and shortspine thornyhead. Harvest specifications were also provided from 2023 catch-only projection updates of the most recent assessments for widow rockfish, chilipepper rockfish, and yellowtail rockfish north of 40° 10′ N. lat. with actual total catches replacing the removal assumptions in the respective assessments for these stocks. Catch-only projections for yelloweye rockfish were updated in 2023 based on the most recent 2017 rebuilding analysis and utilized for harvest specifications. Rebuilding analyses for quillback rockfish in California (south of 42° N. lat.) were conducted in 2023 to provide the basis for potential harvest specifications.

Draft harvest specifications under consideration for the 2025-2026 biennium can be found in the Pacific Fisheries Information Network (PacFIN) Apex reporting system, in Groundfish reports GMT008 through GMT013. The GMT008 report contains relevant information and links to stock assessments, any updated projections, etc. which are represented annually for both default HCRs under Alternative 1 and any proposed revisions under Alternative 2. Final harvest specifications from prior management cycles are found in the GMT015 report for comparison or reference. These reports will be updated as the Council moves forward in consideration of harvest specifications each management cycle.

1.2.1 No Action

The No Action scenario describes the 2023 harvest specifications. No Action is not an alternative under consideration for implementation, as the 2023 harvest specifications do not represent the best scientific information available. In brief, the No Action Alternative is an untenable option and is presented only as an informal comparison for the Council and stakeholders to understand the changes in directionality of 2023 biennial specifications compared to the proposed 2025-2026 biennial specifications and management measures. The detailed analyses of 2023 harvest specifications and their impacts are found in Informational Report 2, September 2022.

1.2.2 No Action Comparison to Preliminary Preferred Alternatives

The default HCRs are the same as those used for the final 2023 harvest specifications (No Action). Table 2 compares 2023 ACLS to 2025 and 2026 ACLs to illustrate the change between No Action and Alternative 1. Most changes are the result of 2023 stock assessment outcomes. The largest percent difference in the ACL from 2023 to 2025 is for sablefish where the ACL under the default HRC in Alternative 1 is ~230% higher than in 2023 (based on the results of the 2023 limited update stock assessment; Appendix 1). The Other Flatfish complex increase in ACL relative to 2023 (52% higher) is a result of the stock assessment conducted for rex sole, which is a component species of this complex. In most cases, the ACLs are decreasing. Canary rockfish and shortspine thornyhead decreases are noted as decreased by more than 50% due to outcomes of stock assessments conducted in 2023. Time-varying sigmas increase with increased age of the assessment for category 1 and 2 stocks accounting for most of the decrease in stocks without a new assessment in 2023 (i.e. the older an assessment is or how long ago it was conducted increases our uncertainty about the stock and thus harvest specifications decrease to account for that uncertainty).

Table 2. Comparison of 2023 (No Action) and 2025 and 2026 groundfish annual catch limits (ACLs) under default harvest control rules (Alternative 1). Stocks and complexes with a greater than 50% change in the ACL from 2023 to 2025 in bold.

Stock/Complex	Area	ACL (mt)			% Change 2023 to 2025
		2023 (No Action)	2025 (Alt 1)	2026 (Alt 1)	
Yelloweye Rockfish	CW	66	56	57	-15.2%
Arrowtooth Flounder	CW	18,632	11,193	9,227	-39.9%
Big Skate	CW	1,320	1,224	1,188	-7.3%
Black Rockfish	WA	290	245	241	-15.5%
Black Rockfish	CA	334	234	236	-29.9%
Bocaccio	S of 4010	1,842	1,681	1,668	-8.7%
Cabezon	CA	182	162	155	-11.0%
Cabezon/Kelp Greenling c/	WA	20	15	10	-25.0%
Cabezon/Kelp Greenling	OR	185	177	174	-4.3%
California Scorpionfish	CW	262	244	238	-6.9%
Canary Rockfish	**CW**	**1,284**	**571**	**573**	**-55.5%**
Chilipepper	S of 4010	2,183	2,815	2,643	28.9%
Cowcod	S of 4010	80	77	75	-3.8%
Darkblotched Rockfish	CW	785	754	732	-3.9%
Dover Sole a/	CW	50,000	50,000	50,000	0.0%
English Sole	CW	9,018	8,884	8,819	-1.5%
Lingcod	N of 4010	4,378	3,631	3,534	-17.1%
Lingcod	S of 4010	726	768	795	5.8%
Longnose Skate	CW	1,708	1,616	1,579	-5.3%
Longspine Thornyhead	N of 3427	2,295	2,050	1,957	-10.7%
Longspine Thornyhead	S of 3427	725	648	618	-10.7%
Pacific Ocean Perch	N of 4010	3,573	3,328	3,220	-6.9%
Petrale Sole	CW	3,485	2,354	2,255	-32.5%
Sablefish	**N of 36**	**8,486**	**28,688**	**27,238**	**238.1%**
Sablefish	**S of 36**	**2,338**	**7,857**	**7,460**	**236.1%**
Shortspine Thornyhead	**N of 3427**	**1,359**	**502**	**504**	**-63.1%**
Shortspine Thornyhead	**S of 3427**	**719**	**209**	**210**	**-70.9%**
Pacific Spiny Dogfish	CW	1,456	1,361	1,318	-6.5%
Splitnose Rockfish	S of 4010	1,592	1,508	1,469	-5.3%
Widow Rockfish	CW	12,624	11,237	10,392	-11.0%
Yellowtail Rockfish	N of 4010	5,666	6,241	6,023	10.1%
Pacific Cod	CW	1,600	1,600	1,600	0.0%
Starry Flounder	CW	392	392	392	0.0%
Blue/Deacon/Black Rockfish	OR	597	423	428	-29.2%
Nearshore Rockfish North b/	N of 4010	93	88	86	-5.4%
Nearshore Rockfish South b/	S of 4010	887	1,059	1,059	19.4%
Other Fish	CW	223	223	223	0.0%
Other Flatfish	**CW**	**4,862**	**7,392**	**6,735**	**52.0%**

Stock/Complex	Area	ACL (mt)			% Change 2023 to 2025
		2023 (No Action)	2025 (Alt 1)	2026 (Alt 1)	
Quillback Rockfish (CA) b/	**S of 42**	**na**	**1.26**	**1.47**	**na**
Shelf Rockfish North	N of 4010	1,283	1,392	1,378	8.5%
Shelf Rockfish South	S of 4010	1,469	1,465	1,462	-0.3%
Slope Rockfish North	N of 4010	1,540	1,488	1,460	-3.4%
Slope Rockfish South	S of 4010	701	693	690	-1.1%

a/ Relative to current biomass, the default ACL results in an ACL > ABC, which is untenable.
b/ California quillback rockfish were removed from the Nearshore Rockfish complexes in November 2023. Thus, the units of comparison are offset between the 2023 ACL and 2025-2026 values in this table.

1.2.3 Alternative 1: Default Harvest Specifications

Alternative 1 represents the default harvest control rule scenario. As discussed above, default harvest specifications are computed by applying the best scientific information available, such as new endorsed stock assessments, to current default HCRs for all groundfish stocks.

Chapter 4 of the Groundfish FMP specifies the framework for the Alternative 1 harvest specifications as follows, "… the harvest controls from the previous biennium (referred to as default harvest control rules) are applied to the best available scientific information to determine the numerical values of the harvest specifications for the next biennial period. The default HCR would establish the harvest specifications based on the F_{MSY} (or proxy value) used in the previous biennium applied to the best current estimate of stock biomass to determine the OFL. The ABC is determined by applying the uncertainty buffer used in the previous biennium except that if the P* approach was used, the same P* value used in the previous biennium is applied. The ACL is determined using the appropriate method for current stock status, if known. If a stock has recovered such that stock size is now above the MSY biomass target, the default harvest control sets the ACL equal to the ABC using the same P* value used in the previous biennium, if applicable. If the status has not changed or is unknown, the same method used in the previous cycle is used to compute the default HCR. This includes cases where a constant catch HCR was used in the previous cycle to set the ACL below the ABC, in which case the same constant catch numerical value is used as the default ACL for the next biennial cycle. In the case of a stock managed under a rebuilding plan, the default HCR is the one described in the current rebuilding plan."

Appendix 1 (2025) and Appendix 2 (2026) provide OFLs based on the best current estimate of stock biomass, ABCs based on the SSC's default sigma values ($\boldsymbol{\sigma}$ - scientific uncertainty) for each stock category and overfishing probabilities (P*s - probability of overfishing) selected by the Pacific Fishery Management Council from the 2023-2024 management cycle, and ACLs that comport with the default HCRs.

The Council adopted stock definitions for 14 FMP groundfish species under Amendment 31 which are also reflected in revisions to Appendices 1 and 2.

1.2.4 Alternative 2: Alternative Harvest Control Rules

The three stocks with alternative harvest specifications considered for 2025 and beyond are rex sole, shortspine thornyhead, and Dover sole (Table 3). In November 2023, the Council adopted these alternative HCRs to inform a range of alternative harvest control rules for detailed analysis and selected their preliminary preferred alternatives. The Preliminary Preferred Alternative (PPA) 2025 and 2026 harvest specifications include the Alternative 1 default HCRs for all stocks and stock complexes

(Appendix 1 and 2), except Alternative 2 for rex sole, shortspine thornyhead, Dover sole (see Table 3), and excluding quillback rockfish off California.

The stock of quillback rockfish off California was declared overfished in December 2023, and a range of rebuilding strategies and associated harvest specifications were adopted by the Council in March 2024 as Alternatives 1 through 4 (Table 3).

Comparison of these Alternatives and biological impact analyses of 2025-2026 harvest specification for these stocks are found in Section 2.1. The Council is scheduled to select final preferred alternatives in April 2024.

Table 3. Alternative 2025 and 2026 harvest specifications (mt) for select U.S. West Coast groundfish stocks; No Action is the 2023 harvest specification for comparison purposes, Alternative 1 is the default harvest control rule, and Alternative 2-4 are the alternative harvest control rules under consideration. Preliminary Preferred Alternative = PPA, as selected by the Council in November 2023.

Stock	Alternative	2023			2025			2026			Harvest Control Rule
		OFL	ABC	ACL	OFL	ABC	ACL	OFL	ABC	ACL	
Rex Sole	No Action	2198	1437	1437							
	Alternative 1				5205.59	3966.66	3966.66	4430.60	3309.66	3309.66	ABC = ACL (P* = 0.40)
	Alternative 2 (PPA)				5205.59	4549.68	4549.68	4299.66	3719.21	3719.21	ABC = ACL (P* = 0.45)
Shortspine Thornyhead	No Action	3177	2078	2078							
	Alternative 1				939.75	716.09	502 *N 34°27';* 209 *S 34°27'*	962.46	718.96	503 *N 34°27';* 210 *S 34°27'*	Precautionary; ACL < ABC, 40-10 rule ACL split N (70.6%) and S (29.4%) of 34° 27' N. Lat. 5-yr rolling avg of biomass estimates from WCGBT survey (P* = 0.40)
	Alternative 2 (PPA)				939.75	821.34	575.62 *N 34°27';* 239.70 *S 34°27'*	961.08	831.33	582.29 *N 34°27';* 242.48 *S 34°27'*	Precautionary; ACL < ABC, 40-10 rule ACL split N (70.6%) and S (29.4%) of 34° 27' N. Lat. 5-yr rolling avg of biomass estimates from WCGBT survey (P* = 0.45)
Dover Sole	No Action	63834	59685	50000							
	Alternative 1				51214	47424	50000	46049	42457	50000	Default ACL = 50,000 mt
	Alternative 2 (PPA)				51214	47424	47424	46049	42457	42457	ABC = ACL (P* = 0.45)
Quillback rockfish CA	No Action a/	2.11	1.85	1.76							2023-2024 HCR (a/ contribution to Nearshore Rockfish Complexes)
	Alternative 1				1.52	1.26	1.26	1.77	1.47	1.47	Default HCR: SPR 0.55 (P* = 0.45)
	Alternative 2				1.52	1.30	1.30	1.77	1.50	1.50	ABC Rule (P* = 0.45)
	Alternative 3				8.41	5.06	5.06				CDFW Proposed (Nov 2023) (ABC=Category 3 buffer w/ P*=0.40)
	Alternative 4				1.52	0	0	1.81	0	0	F=0 (no fishing mortality)

1.1.1.1 Alternative Harvest Specifications for Rex Sole

The 2023 rex sole assessment was a length-based data-moderate assessment (Min*, et al.* 2023). The current assessment estimates the stock is 76.1% of unfished spawning output in 2023, above the 25% management target level, indicating the stock is healthy. Rex sole is part of the Other Flatfish complex and thus the assessment results lead to increases in harvest specifications for this complex under both Alternatives for 2025-2026. However, though the trajectory starts off with a high estimated spawning biomass in the next management cycle for 2025 and 2026, it then progressively decreases (and ABCs/ACLs) in the next ten years.

The default HCR informing Alternative 1 for rex sole is to apply a P* of 0.40 and set the ACL equal to the ABC. The Council also wanted to explore Alternative 2 with a less precautionary harvest control rule of ACL = ABC with a P* of 0.45, which would provide the trawl fleet greater flexibility in the event of future expansion (Agenda Item G.6.a, Supp GMT Report 1, September 2023).

See section 2.1.1.1 for the comparison of stock-specific biological impacts related to the policy choice between Alternatives 1 and 2.

1.1.1.2 Alternative Harvest Specifications for Shortspine Thornyhead

The 2023 assessment of shortspine thornyhead was a length-based data-moderate assessment (Zahner*, et al.*, 2023). The assessment estimates that the relative spawning output of the stock is in the precautionary zone, just below the management target of 40% of unfished levels, at 39.4% in 2023. Although recruitment has been relatively stable, spawning output declined considerably from the 1970s to the late 2010s.

The default HCR informing Alternative 1 for shortspine thornyhead is to apply a P* of 0.40, with the ACL set below the ABC due to application of the 40-10 rule (i.e., because the stock is below the biomass target of 40%). The coastwide ABC is split into two-area based ACLs north (70.6%) and south (29.4%) of 34° 27′ N. lat. using a 5-yr rolling average for biomass estimates from the Northwest Fisheries Science Center (NWFSC) West Coast Bottom Trawl Survey (WCGBT) by area. In Alternative 2, a P* of 0.45 was requested as a possible management option as projected ABCs are comparable to the Groundfish Management Team (GMT) predicted catch projections for 2023 and 2024. Thus, shortspine thornyhead may become a constraining species to the trawl fleet. Additionally, with anticipated increases in sablefish ACLs, the trawl fleet that targets Dover sole, thornyheads, and sablefish (DTS) may expand effort. Given these expected constraints, the GMT proposed the higher P* of 0.45 to analyze whether the Council can minimize impacts to the trawl fishery while still preventing overfishing of the stock.

See section 2.1.1.2 for the comparison of stock-specific biological impacts related to the policy choice between Alternatives 1 and 2.

1.1.1.3 Alternative Harvest Specifications for Dover sole

Since 2015, the default HCR for Dover sole informing Alternative 1 is to apply a P* of 0.45, with the ACL equal to a constant catch of 50,000 mt. Updated projections provided to the Council in November 2023 (Agenda Item E.2 Revised Attachment 4 Nov 2023), were based on the 2021 stock assessment (Wetzel and Berger 2021) with revised removal assumptions. Updated projections of stock size in 2025-2026 indicated that a constant 50,000 mt ACL is untenable since the ACL would now exceed the ABC based on estimated biomass. Thus, Alternative 2 was proposed with a P* of 0.45 and the ACL set equal to the ABC, resulting in ACLs in 2025-26 lower than 50,000 mt (47,424 and 42,457 mt, respectively).

See section 2.1.1.3 for the comparison of stock-specific biological impacts related to the policy choice between Alternatives 1 and 2.

1.1.1.4 Alternative Harvest Specifications for Quillback Rockfish in California

The results of the 2021 length-based data moderate stock assessment for quillback rockfish off California indicated the stock is below the minimum stock size threshold (MSST) of 25% unfished (Langseth et al. 2021). The Council adopted 2023-2024 harvest specifications for California quillback rockfish with a spawning potential ratio (SPR) = 0.55 and P*=0.45. A rebuilding analysis was conducted in 2023 based on the 2021 data moderate assessment (Agenda Item E.2 Attachment 1 Nov 2023). On December 14, 2023, the U.S. Secretary of Commerce (Secretary) declared the status of quillback rockfish off the coast of California as overfished.

At the November 2023 Council meeting, a range of 2025-2026 OFL, ABC, and ACL values for quillback rockfish off California were requested for overwinter analysis of groundfish harvest specifications by the GMT. In the range of 2025 harvest specifications, the lower values represented the "ABC Rule" (Table 5 and 4, Agenda Item E.2 Attachment 1 Nov 2023) and the upper range of values represented values proposed by the California Department of Fish and Wildlife (Agenda Item E.2.a Supplemental CDFW Report 2 Nov 2023). For the 2025-2026 biennium and beyond, the Council decided the California stock of quillback rockfish will be managed as a single stock (i.e. not within the nearshore rockfish complexes).

At the March 2024 Council meeting, the rebuilding analysis for quillback rockfish off California conducted in 2023 was adopted, with resulting scientific rebuilding parameters (Langseth 2023). The Council also requested a range of rebuilding strategies for overwinter analysis of groundfish harvest specifications. These continued to include an Alternative with the ABC rule and CDFW proposed values as requested in November 2023. They also requested Alternatives with the default harvest control rule as used in 2023-2024 harvest specifications (SPR = 0.55 with ACL=ABC and P*=0.45), and an Alternative with no fishing mortality (F=0).

See section 2.1.1.4 for the comparison of stock-specific biological impacts related to the policy choice between Alternatives 1 through 4.

1.2.5 The Preferred Alternative

The Council's preferred harvest specification alternative will be provided after the Council makes a final preferred alternative (FPA) decision scheduled in April 2024.

1.2.6 Alternatives Considered but not Analyzed Further

The Council considered alternatives for both canary rockfish and sablefish but did not opt to pursue them for further analyses (Agenda Item E.5 and E.7, November 2023).

The 2023 benchmark assessment for canary rockfish encompassed a single area along the U.S. West Coast (Langseth*, et al.* 2023). This was a modification from the 2015 stock assessment, which was spatially explicit with distinct areas for WA, OR, and CA. The 2023 assessment of canary rockfish estimated the stock to be in the precautionary zone at 35% of unfished biomass (below the 40% management target). The default HCR for canary rockfish is to apply a P* of 0.45 with the ACL less than the ABC, due to application of the 40-10 rule. During the 2023 canary rockfish STAR panel, a projection was conducted with a P* of 0.40, as a possible management option. Across the last three years the average estimated annual mortality was above either of the proposed ACLs for 2025-2026, which indicated canary rockfish could become constraining. The Council considered this alternative but did not analyze it further, as restrictions may need to be implemented in different fishery sectors for decreased ACLs resulting from either option.

The stock assessment for sablefish (Johnson*, et al.* 2023) was updated in 2023 due to observations of high recruitment in 2020 and 2021 and concerns that these large year classes could constrain targeted and non-targeted fisheries if unaccounted for. The assessment estimated the stock at 63% of unfished biomass in 2023, above the 40% management target. However, there is greater uncertainty in the strength of these recent year-classes than for older year-classes. The default HCR for sablefish is to apply a P* of 0.45 with the ACL set equal to the ABC. The Council also explored a more precautionary harvest control rule with a P* of 0.40, given the limited information available to inform the magnitude of the year classes that are largely driving the projected increase in spawning biomass. Based on recent mortality estimates, actual removals were likely to remain well below the ACL under either P* value. Neither alternative demonstrated decline in the fraction of unfished spawning biomass until 2028, so the risk of overfishing was considered low under both P* values. Thus, the alternative precautionary harvest control rule was not analyzed further.

2. Direct and Indirect Effects of the Alternatives

2.1 Impacts of Harvest Specifications

This section evaluates how alternative harvest specifications affect the future status of actively managed groundfish stocks. Harvest specifications are by themselves management objectives with no direct effect on the environment. Harvest specifications indirectly affect managed groundfish stocks by setting limits on how much of each stock may be caught. It is important to note that the stock assessments and projections underlying this evaluation assume that ACLs are fully attained during the projection period as a default; that is, realized catch equals the ACL. For most stocks, however, catch has historically been less than the ACL. If roughly similar patterns persist in the 2025-2026 biennial period, the actual impact of fishing mortality on the future status of most stocks is likely to be less than is forecast in the assessment projections.

There are three stocks with preliminary preferred alternative HCRs that depart from the default HCRs used for 2025-2026 harvest specifications. Alternative 2 harvest specifications represent the preliminary preferred alternatives for these three stocks; rex sole, shortspine thornyhead, Dover sole. The Council has yet to identify a preferred alternative for quillback rockfish in California, but in November 2023 and March 2024 adopted a range of specifications for analysis.

Stock-specific biological impacts associated with the alternatives analyzed for the three stocks tasked for detailed analysis are provided in Section 2.1.1. Higher ACLs can provide greater economic benefits and reduce bycatch constraints, but can also increase conservation risks, especially when a stock assessment's estimates of spawning biomass (or spawning output) and fraction of unfished biomass are more uncertain. Stock assessors provide projections under higher and lower harvest strategies (e.g., P*=0.45 vs. P*=0.40, respectively) to compare how they affect spawning biomass annually over the next ten years, taking into consideration any uncertainty around stock size and status.

2.1.1 Stocks with Alternative Harvest Control Rules under Consideration

2.1.1.1 Rex Sole

The default HCR informing Alternative 1 for rex sole is to apply a P* of 0.40 (sigma = 1) and set the ACL equal to the ABC. This has been the Council's adopted specification since it was last assessed. The Council also wanted to explore Alternative 2 with a less precautionary harvest control rule of ACL = ABC with a P* of 0.45 (sigma = 1), which would provide the trawl fleet greater flexibility in the event of

future expansion (Agenda Item G.6.a, Supplemental GMT Report 1, September 2023). Harvest specifications for both Alternatives under the base model in the 2023 assessment are provided in Table 4.

The 2023 rex sole assessment was a length-based data-moderate assessment (Min*, et al.* 2023). The SSC endorsed the 2023 stock assessment and recommended a category 2 designation with a default sigma of 1.0. The 2023 assessment, while still data-moderate, was informed by additional data (catches, survey index of abundance, fishery and survey length compositions, and survey conditional age-at-length data) and estimated growth within the model, providing a more informed understanding of the stock. Under the FMP, B_{MSY} is the biomass level that produces maximum sustainable yield (MSY). The current assessment estimates the stock is 76.1% of unfished spawning output in 2023, above the management target B_{MSY} of 25% depletion for all assessed flatfish stocks (Figure 2-2), indicating the stock is healthy.

The estimated model uncertainty was less than the category 2 groundfish assessment default value of sigma = 1. Thus, the use of the default category 2 sigma = 1 captures the range of scientific uncertainty expected from the assessment.

Uncertainty in the decision table from the 2023 assessment represents the uncertainty in female natural mortality (Table ix; Min, et al. 2023). Uncertainty in the forecasted 10-year projections is essentially based on uncertainty around the 2023 OFL and corresponds to the lower and upper quantiles of female natural mortality values. Thus, the uncertainty interval encompasses the potential low state of nature (i.e. if the stock forecast was incorrectly lower than assumed by the base model), to the mid (base model used), to the potential high state of nature (i.e. if the stock forecast was incorrectly higher than assumed by the base model). Only in the last two years (2033-2034) of the low state of nature under Alternative 2 (P*=0.45), does the fraction unfished drop below the management target 25% B_{MSY}. Thus, only if the stock assessment forecasts were inaccurate and ended up at the lowest level, would there be a risk of the stock status dipping into the precautionary zone. With the base model adopted and utilized for projections, the stock remains healthy.

Projections from the stock assessment base model for 2025 and beyond are based on a spawning potential ratio (SPR) of 30% and the 25:5 harvest control rule if applicable (Table 4).

Though the trajectory starts off with a high estimated spawning biomass in the next management cycle for 2025 and 2026, it then progressively decreases (and ABCs/ACLs) in the next ten years (Figure 1). However, ten-year depletion projections indicate the stock remains healthy and above the management target 25% B_{MSY} across both Alternatives 1 and 2 (Figure 2) and their associated harvest levels. Thus, the policy choice between selecting Alternative 1 or 2 will not impact the stock status in the projection period.

Both Alternatives 1 and 2 demonstrate a similar trend in ABC specifications over the next ten years (Figure 3), with Alternative 2 (P*=0.45) allowing for slightly higher harvest. Alternative 2 was selected as the Council's PPA in November 2023.

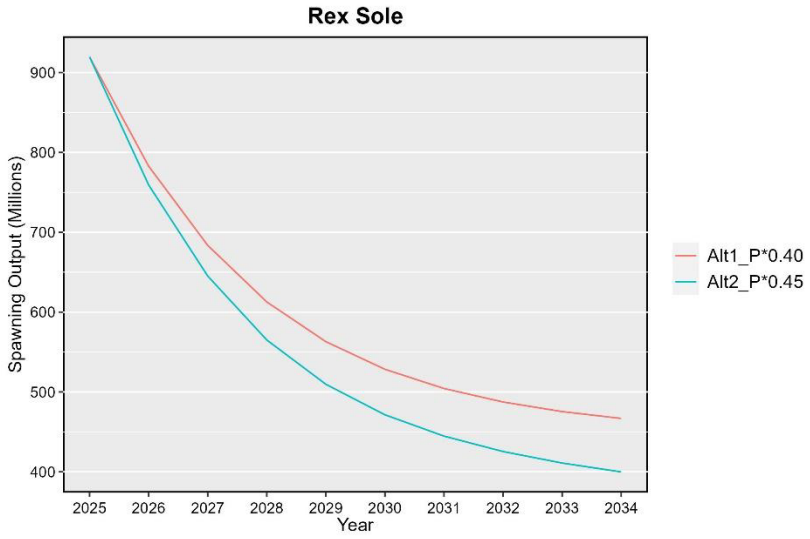

Figure 1. Projected spawning output (millions of eggs) of Rex Sole under two alternative harvest control rules, 2025-2034. Alternative 1 is the default harvest control rule (P*=0.40) and Alternative 2 is the preliminary preferred alternative (P*=0.45).

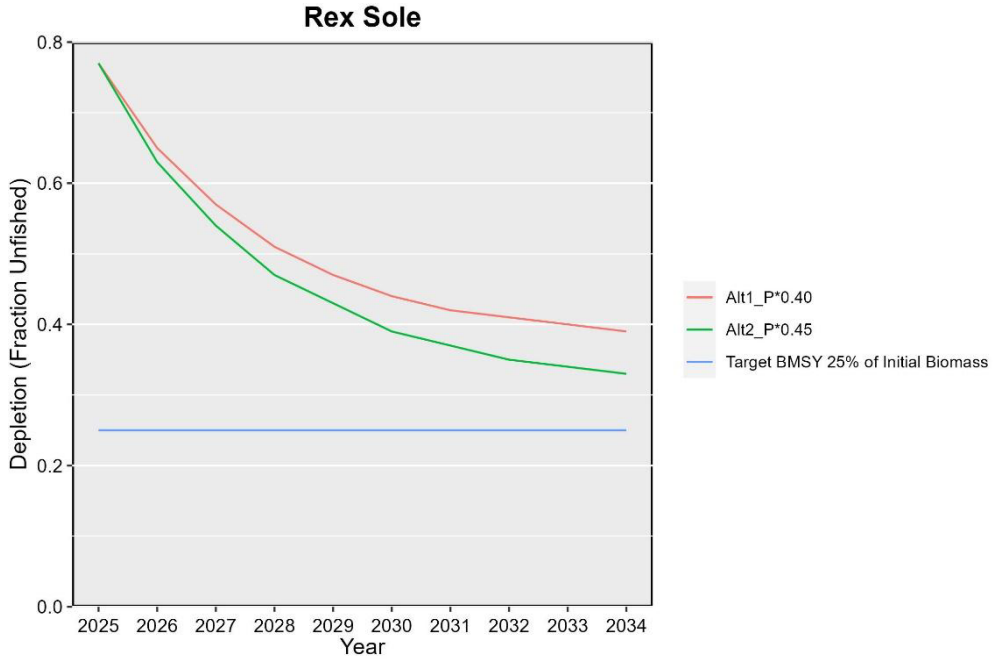

Figure 2. Projected depletion (fraction unfished) of Rex Sole under two alternative harvest control rules, 2025-2034. Alternative 1 is the default harvest control rule (P*=0.40) and Alternative 2 is the preliminary preferred alternative (P*=0.45).

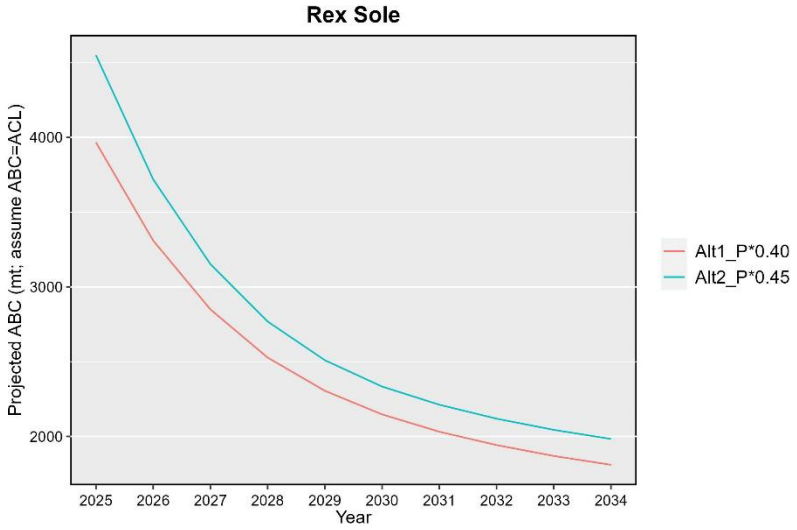

Figure 3. Projected acceptable biological catch (ABC; mt) of Rex Sole under two alternative harvest control rules, 2025-2034. Alternative 1 is the default harvest control rule (P*=0.40) and Alternative 2 is the preliminary preferred alternative (P*=0.45).

Table 4. Projected rex sole harvest specifications under the base model in the 2023 assessment under P* harvest control rules of 0.40 (Alternative 1) and 0.45 (Alternative 2).

Management decision	Year	OFL (mt)	ABC Catch (mt)	Spawning output (millions of eggs)	Fraction unfished
P*=0.4 (Alt 1)	2023	5173.05	447.17	912.72	0.76
	2024	5188.27	447.17	915.43	0.76
	2025	5205.59	3966.66	919.55	0.77
	2026	4430.60	3309.66	782.80	0.65
	2027	3887.61	2849.62	683.62	0.57
	2028	3515.28	2527.49	612.74	0.51
	2029	3265.15	2305.19	563.00	0.47
	2030	3098.63	2147.35	528.39	0.44
	2031	2987.50	2031.50	504.32	0.42
	2032	2911.74	1942.13	487.41	0.41
	2033	2858.29	1869.32	475.40	0.40
	2034	2819.35	1810.02	466.84	0.39
P*=0.45 (Alt 2)	2023	5173.06	447.17	912.72	0.76
	2024	5188.27	447.17	915.43	0.76
	2025	5205.59	4549.68	919.55	0.77
	2026	4299.66	3719.21	759.25	0.63
	2027	3678.62	3152.58	645.20	0.54
	2028	3260.91	2768.52	565.09	0.47
	2029	2984.23	2509.73	509.63	0.43
	2030	2801.39	2333.56	471.40	0.39
	2031	2678.03	2212.06	444.69	0.37
	2032	2590.04	2118.65	425.38	0.35
	2033	2523.30	2043.88	410.96	0.34
	2034	2469.55	1983.05	399.85	0.33

2.1.1.2 Shortspine Thornyhead

The default HCR informing Alternative 1 for shortspine thornyhead is to apply a P* of 0.40, with the ACL set below the ABC due to application of the 40-10 rule (i.e. because the stock is below the biomass target of 40% depletion). The coastwide ABC is split into two-area based ACLs north (70.6%) and south (29.4%) of 34° 27′ N. lat. using a 5-yr rolling average for biomass estimates from the NWFSC WCGBT survey by area. This method for apportionment was adopted by the Council in November 2023.

In Alternative 2, a P* of 0.45 was requested as a possible management option, as projected ABCs are comparable to the GMT predicted catch projections for 2023 and 2024. Thus, shortspine thornyhead may become a constraining species to the trawl fleet. Additionally, anticipated increases in sablefish ACLs, the trawl fleet that targets Dover sole, thornyheads, and sablefish (DTS) may expand effort. Given these expected constraints, the GMT proposed the higher P* of 0.45 to analyze whether the Council can minimize impacts to the trawl fishery while still preventing overfishing of the stock.

Harvest specifications for both Alternatives under the base model in the 2023 assessment are provided in Table 5.

The 2023 shortspine thornyhead assessment was a length-based data-moderate assessment (Zahner*, et al.* 2023). The assessment estimates that the relative spawning output of the stock is in the precautionary zone, just below the management target B_{MSY} of 40% of unfished levels, at 39.4% in 2023 (Table 5, Figure 5). Although recruitment has been relatively stable, spawning output declined considerably from the 1970s to the late 2010s. The stock status is estimated to have only fallen below the management target starting in 2020. The SSC endorsed the 2023 stock assessment and recommended a category 2 designation with a default sigma of 1.0.

The estimated model uncertainty was less than the category 2 groundfish assessment default value of sigma = 1. Thus, the use of the default category 2 sigma = 1 captures the range of scientific uncertainty expected from the assessment.

Uncertainty in the decision table from the 2023 assessment represents the uncertainty based on natural mortality (Table vii; Zahner*, et al.* 2023). Uncertainly in the forecasted 10-year projections is essentially based on uncertainty around the 2023 OFL, which was fairly broad, and states of nature were chosen based on the range of natural mortality values seen in the literature. The uncertainty interval encompasses the potential low state of nature (i.e. if the stock forecast was incorrectly lower than assumed by the base model), to the mid (base model used), to the potential high state of nature (i.e. if the stock forecast was incorrectly higher than assumed by the base model). In the base model and high state of nature, both demonstrate increasing status over the projection period. Only in the low state of nature scenario, if the stock assessment forecasts were inaccurate and ended up in the lower range, would the stock status continue to decline over the projection period and not begin to rebound. In that case, there would be a risk of the stock status continuing to decline into the precautionary zone. In both the base model adopted and the high state of nature, projections begin to rebound over the next ten years with less risk to the stock under either Alternative harvest level.

Projections from the stock assessment base model for 2025 and beyond are based on a spawning potential ratio (SPR) of 50% and the 40:10 harvest control rule if applicable (Table 5). The assessment indicated that stock status would slowly decline before beginning a slow rebound over the next ten years (Figure 5). Alternative 1 with the default HCR (P*=0.40) would return the stock status to healthy, above the management target of 40% depletion by 2034. Alternative 2 (P*=0.45) would follow a similar increasing trajectory but not rebound beyond the precautionary zone within the ten years projected by the assessment. Thus, Alternative 2 would present a longer-term trade-off in higher harvest but would result in the stock status remaining precautionary for a longer period and thus the 40:10 harvest control rule would remain in effect as well.

Alternatives 1 and 2 demonstrate different trends in ABC specifications over the next ten years (Figure 6), with Alternative 2 (P*=0.45) allowing for higher harvest specifications that slightly increase over time. Alternative 1 provides fairly consistent ABC specifications, though at lower levels than Alternative 2. Alternative 1 with the default harvest control rule would have an average projected ACL of 718 mt (2025-2034), which is near recent annual catch levels. Alternative 2 would have a higher average projected ACL of 853 mt over the ten-year period (2025-2034). Alternative 2 was selected as the Council's PPA in November 2023.

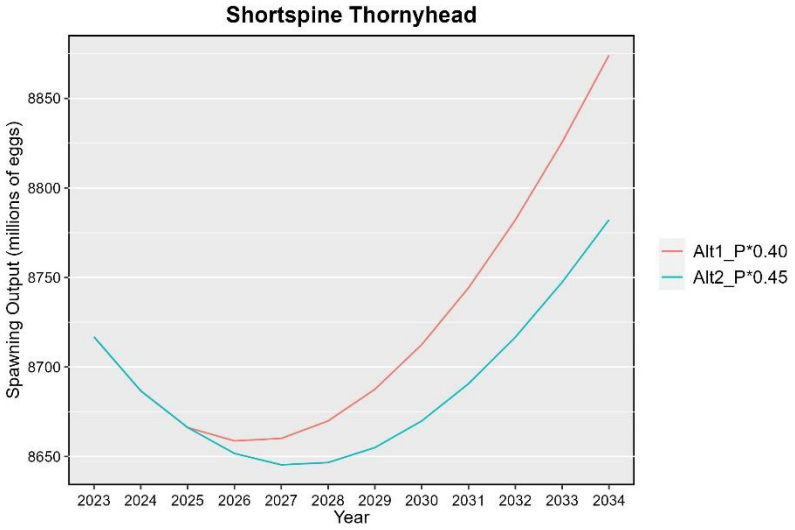

Figure 4. Projected spawning output (millions of eggs) of Shortspine Thornyhead under two alternative harvest control rules, 2025-2034. Alternative 1 is the default harvest control rule (P*=0.40) and Alternative 2 is the preliminary preferred alternative (P*=0.45).

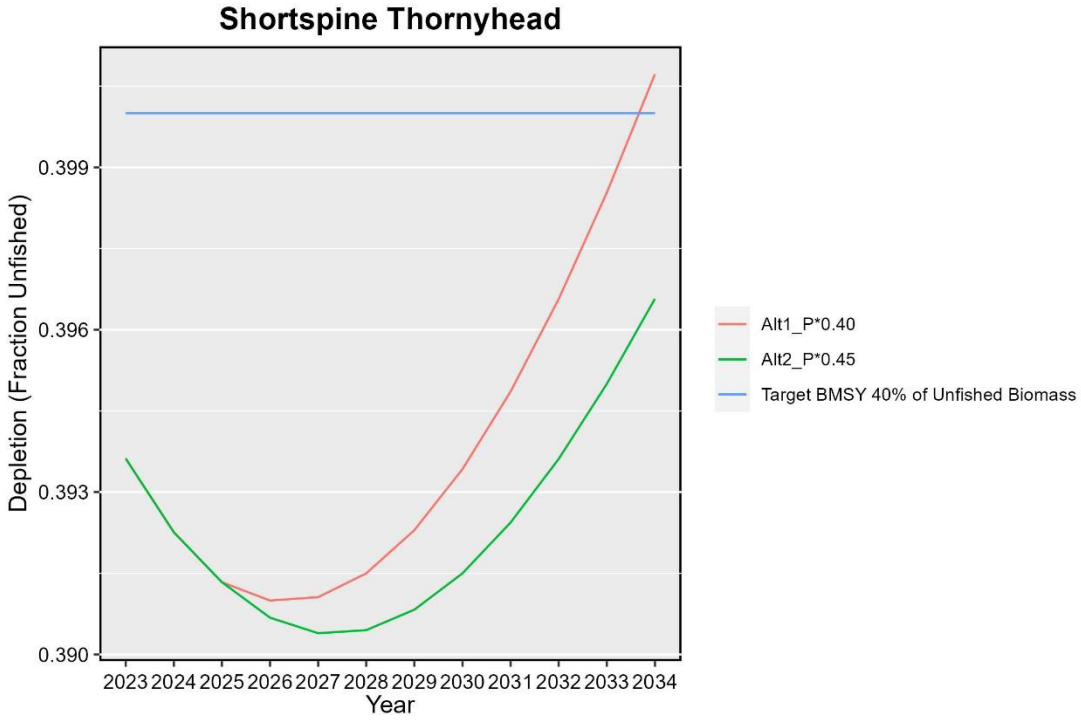

Figure 5. Projected depletion (fraction unfished) of Shortspine Thornyhead under two alternative harvest control rules, 2025-2034. Alternative 1 is the default harvest control rule (P*=0.40) and Alternative 2 is the preliminary preferred alternative (P*=0.45).

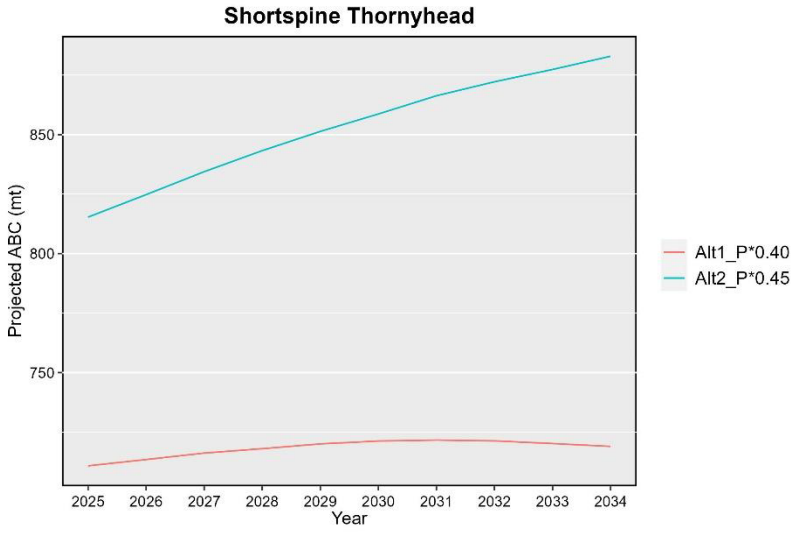

Figure 6. Projected acceptable biological catch (ABC; mt) of Shortspine Thornyhead under two alternative harvest control rules, 2025-2034. Alternative 1 is the default harvest control rule (P*=0.40) and Alternative 2 is the preliminary preferred alternative (P*=0.45).

Table 5. Projected Shortspine Thornyhead harvest specifications under the base model in the 2023 assessment under P* harvest control rules of 0.40 (Alternative 1) and 0.45 (Alternative 2).

Management decision	Year	OFL (mt)	ABC (mt)	ACL (mt)	Spawning output (millions of eggs	Fraction unfished
P*=0.4 (Alt 1)	2023	NA		NA	8,716.84	0.39
	2024	NA		NA	8,686.69	0.39
	2025	939.75	716.09	710.84	8,666.24	0.39
	2026	962.46	718.96	713.47	8,658.74	0.39
	2027	984.52	721.65	716.19	8,660.12	0.39
	2028	1005.90	723.24	718.04	8,669.87	0.39
	2029	1026.58	724.77	720.05	8,687.53	0.39
	2030	1046.56	725.27	721.25	8,712.50	0.39
	2031	1065.88	724.80	721.67	8,744.22	0.40
	2032	1084.54	723.39	721.32	8,782.10	0.40
	2033	1102.57	721.08	720.20	8,825.59	0.40
	2034	1119.95	719.01	719.01	8,874.11	0.40
P*=0.45 (Alt 2)	2023	NA		NA	8716.84	0.39
	2024	NA		NA	8686.69	0.39
	2025	939.75	821.34	815.32	8666.24	0.39
	2026	961.08	831.33	824.77	8651.73	0.39
	2027	981.63	841.26	834.40	8645.37	0.39
	2028	1001.34	850.14	843.25	8646.64	0.39
	2029	1020.21	858.00	851.33	8655.00	0.39
	2030	1038.26	864.87	858.65	8669.87	0.39
	2031	1055.52	871.86	866.29	8690.66	0.39
	2032	1071.99	876.89	872.17	8716.67	0.39
	2033	1087.70	881.04	877.35	8747.37	0.40
	2034	1102.67	885.44	882.91	8782.19	0.40

2.1.1.3 Dover Sole

Since 2015, the default HCR for Dover sole has set the ACL equal to a constant catch of 50,000 mt (Alternative 1). However, projections of stock size in 2025-2026 indicate that a constant 50,000 mt ACL is untenable since the ACL would now exceed the ABC based on estimated biomass (Table 6). The ABC considers the scientific uncertainty in estimating the overfishing limit and the ACL cannot exceed the ABC. In the default scenario under Alternative 1, the ACL of 50,000 mt would result in a harvest limit above the allowable scientific uncertainty from the assessment. Thus, Alternative 2 was proposed with a P* of 0.45 and the ACL set equal to the ABC, resulting in ACLs lower than 50,000 mt (47,424 and 42,457 mt, respectively). Actual removals are likely to remain well below the ACL under Alternative 2, keeping the risk of overfishing low.

The projections provided to the Council in November 2023 (Agenda Item E.2 Revised Attachment 4 Nov 2023), were based on the 2021 stock assessment (Wetzel and Berger 2021), but set the assumed removals equal to the adopted ACL of 50,000 mt in 2023 and 2024 per Council request in September 2023. Projection values are represented in Table 6 and Figures 7 through 9 below. Under Alternative 2,

decreasing trends are similar for both spawning biomass and the fraction unfished, which still remain in healthy status above the 25% depletion management target during the ten-year period.

Alternative 1 with a default ACL of 50,00 mt constant catch is an untenable option based on scientific uncertainty (i.e. ACL>ABC) and Alternative 2 provides an option for allowable harvest to keep the stock status within the management target yet acknowledging that the biomass trend is decreasing over the projection period. Alternative 2 was selected as the Council's PPA in November 2023.

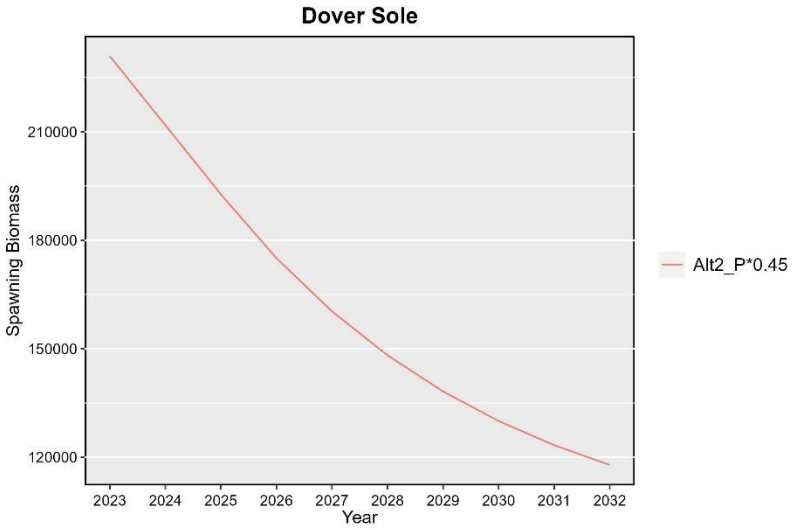

Figure 7. Projected spawning biomass (mt) of Dover Sole under Alternative 2 with ACL set to ABC and P*=0.45.

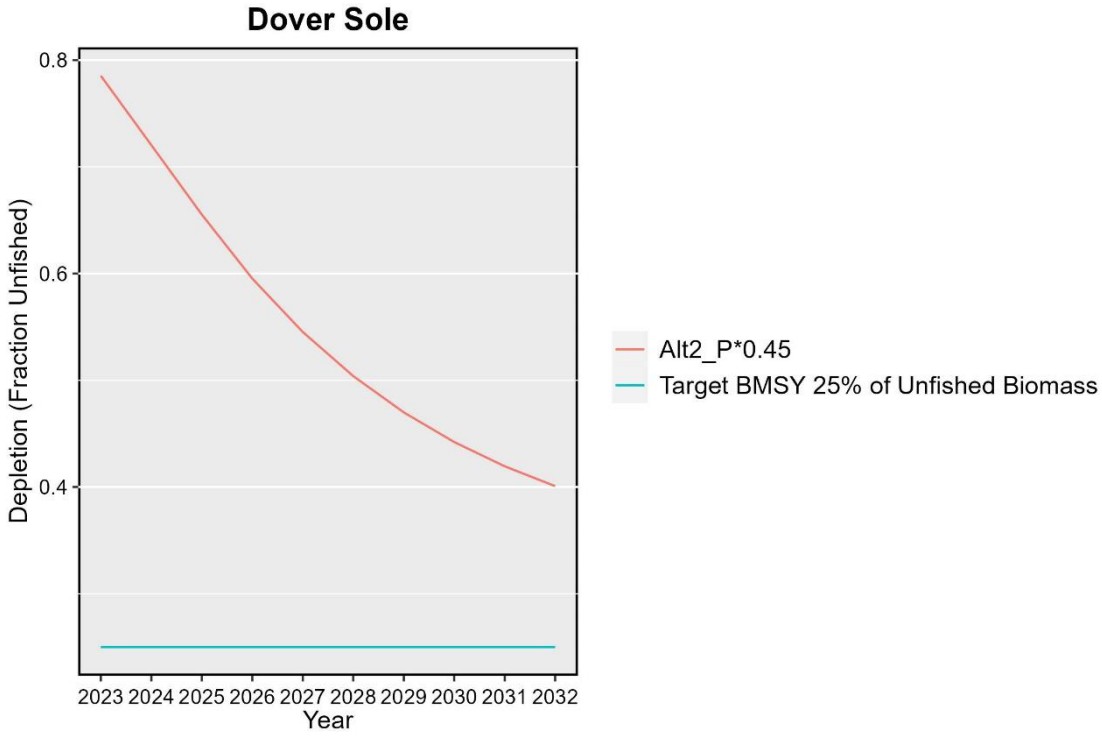

Figure 8. Projected depletion (fraction unfished) of Dover Sole under Alternative 2 with ACL set to ABC and P*=0.45.

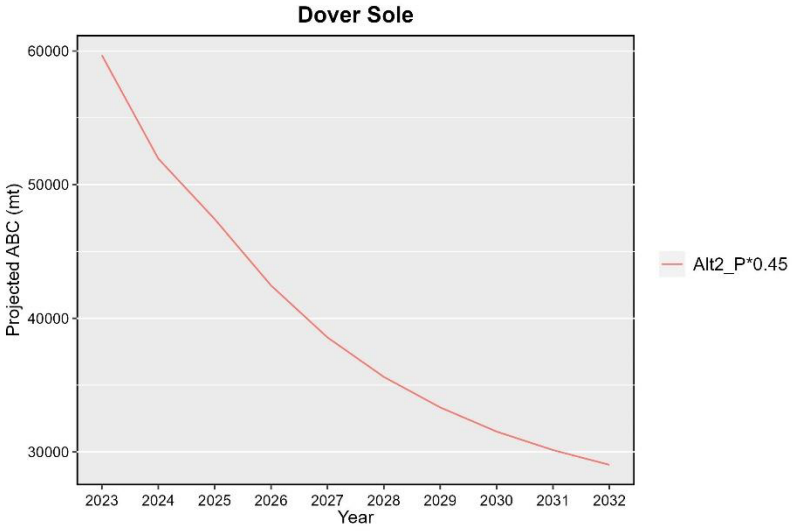

Figure 9. Projected acceptable biological catch (ABC; mt) of Dover Sole under Alternative 2 with ACL set to ABC and P*=0.45.

Table 6. Projected Dover sole harvest specification projections under Alternative 2 (P* = 0.45), 2023-2032. Projections based on the 2021 assessment using the sigmas for 2020 and beyond, P*=0.45 with assumed removals equal to the adopted ACL of 50,000 mt in 2023-24 (per September 2023 Council request).

Management decision	Year	OFL (mt)	ABC (mt)	ACL (mt)	Spawning Biomass (mt)	Fraction unfished
P*=0.45 (Alt 2)	2023	63834	59685	50000	230918	0.785
	2024	55859	51949	50000	211824	0.720
	2025	51214	47424	47424	192697	0.655
	2026	46049	42457	42457	175053	0.595
	2027	42064	38573	38573	160340	0.545
	2028	39010	35616	35616	148190	0.504
	2029	36670	33333	33333	138201	0.470
	2030	34873	31526	31526	130018	0.442
	2031	33490	30141	30141	123340	0.419
	2032	32407	29037	29037	117869	0.401

2.1.1.4 Quillback Rockfish in California

Amendment 31 to the Pacific Coast Groundfish Fishery Management Plan was approved by the Council in June 2023, which defined quillback rockfish along the U.S. west coast as three separate stocks corresponding to waters off Washington, Oregon, and California. A stock assessment was conducted for California quillback rockfish in 2021 (Langseth et al. 2021).

If a groundfish stock falls below a default overfished threshold level or minimum stock size threshold, a rebuilding analysis is conducted. The 2021 stock assessment of quillback rockfish in California waters estimated that the population was below the overfished threshold level. Thus, a draft rebuilding analysis was developed in 2023 (Langseth 2023) to examine a range of alternative rebuilding strategies and inform harvest specification decision-making. Both the 2021 stock assessment and subsequent 2023 rebuilding analysis were determined to be the best scientific information available (BSIA) by the Scientific and Statistical Committee. The 2023 rebuilding analysis was adopted at the March 2024 Council meeting, which specified resulting rebuilding parameters (T_{min} = 2045, T_{max} = 2071, mean generation time of 26 years). T_{min} represents the minimum amount of time a stock is expected to rebuild in the absence of fishing since the year of declaration (2025); expected means at least 50% probability of attaining B_{MSY}. Based on the rebuilding analysis, quillback rockfish in California were unable to rebuild within 10 years. Thus, 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 Council also requested analysis of a range of rebuilding strategies for policy consideration. The requested rebuilding strategies are noted as Alternatives 1 thru 4 (Table 7), with Alternative 1 as the default HCR and Alternatives 2-4 as those being considered which deviate from the default scenario. Harvest specifications for Alternative 3 were proposed by the California Department of Fish and Wildlife (Agenda Item E.2.a, Supplemental CDFW Report 2 Nov 2023), and thus are not found in the adopted 2023 rebuilding analysis.

Table 7. Results of rebuilding strategies based on Langseth 2023, using GMT assumed removals for 2021-2024, and Alternative 3 harvest specifications proposed by CDFW (November 2023). T_{target} indicates the rebuilding target year associated with each rebuilding strategy.

Quillback Rockfish in CA	Harvest Control Rule			
	Alternative 1	**Alternative 2**	**Alternative 3**	**Alternative 4**
	Default HCR SPR=0.55 (P*=0.45)	ABC Rule (P*=0.45)	CDFW Proposed (Nov 2023)	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	1.52/1.3	8.41/5.06	1.52/0
2026 OFL/ACL (mt)	1.77/1.47	1.77/1.5		1.81/0
SPR	0.55	-		1
T_{target}	2062	2060		2045
T_{max}	2071	2071		2071
Probability of recovery by T_{max}	0.694	0.736		0.999

The rebuilding analysis assumes these HCRs persist through the course of rebuilding the California quillback rockfish population. However, long-term management strategies for quillback rockfish may be revisited during each biennial management cycle undertaken by the Council.

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}. Essentially, Alternative 4 with F=0 contains no fishing mortality and thus the stock would be built by 2045, which is the minimum time to rebuild. However, this Alternative is generally untenable since some fishing mortality would be expected to occur, even if it were non-directed mortality, as well as results in significant economic impacts to fisheries.

Alternative 1 represents the default harvest control rule, as used in the 2023-2024 management cycle, with a SPR of 0.55, P* = 0.45, and ABC=ACL. Alternative 1 would rebuild the stock by 2062, within the statutory maximum time to rebuild of 2071 (T_{max}). Alternative 1 represents a 69.4% probability of rebuilding by 2071 (T_{max}).

Alternative 2 is described as the "ABC rule" rebuilding strategy, which is where the ABC is set equal to management risk tolerance (P*) and the scientific uncertainty (sigma) reduction applied to the overfishing limit (OFL). This calculation applies the ABC harvest rate with time-varying sigma and a P* = 0.45. Alternative 2 under the ABC rule would rebuild the stock by 2060, well within the statutory maximum time to rebuild of 2071 (T_{max}). The ABC rule rebuilding strategy allows for some harvest and represents the strategy that is closest to the maximum time to rebuild. Alternative 2 represents a 73.6% probability of rebuilding by 2071 (T_{max}).

Alternative 1 under default HCR would have a lower probability of rebuilding (69.4%) within the required timeline, compared to Alternative 2 (73.6%) 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 1 provides just slightly higher harvest specifications (~2%) over the ten-year period than Alternative 2.

Alternative 3 harvest specifications for California quillback rockfish were proposed by CDFW during the November 2023 Council meeting. Per the Agenda Item E.2.a. Supplemental CDFW Report 2, CDFW recommended values for 2025-2026 specifications that:

> "utilize the 50% SPR harvest rate MSY proxy from the 2021 assessment of quillback rockfish, as was done for the length-based DM assessment for quillback rockfish in Washington. In 2025, this would result in an OFL specification of 8.41 mt with a category 3 buffer. A range of management measure alternatives might include a range of P* values from 0.45 to 0.35 with appropriate scientific uncertainty buffers applied which would result in ABC:ACL values of 6.55 mt to 3.89 mt until a full assessment and alternative conservation and management measures for non-target species can be developed by the Council."

The Alternative 3 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 [8.41*0.602=5.06]. 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 MSA rebuilding requirements. Selecting Alternative 3 would provide much greater uncertainty for impacts on the population of California quillback rockfish than harvest specifications under Alternatives 1 or 2 as determined by the rebuilding analysis.

3. Magnuson-Stevens Act National Standards

Below are National Standards 1 and 2 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 FMP include an estimate of MSY and 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 factor; and in the case of an overfished fishery, provides for rebuilding to a level consistent with producing the MSY in such fishery. The harvest specification action alternatives are consistent with the OY harvest management framework described in Chapter 4 of the Groundfish FMP. The FMP 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 preliminary preferred HCRs for the 2025-2026 management cycle balance the stock conservation mandate in the MSA and the socioeconomic mandate to provide the greatest overall benefit to the U.S. with respect to managing marine resources consistent with the NS1 guidelines. For rex sole, the 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 ten-year projection period. The less precautionary HCR under the preferred Alternative 2 would balance the need for potential future expansion in the groundfish trawl fleet while still maintaining a stock status above the management target. The recent 2023 rex sole assessment results demonstrated an increase to status quo and the Alternatives do not pose additional 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 slowing rebounding over the next ten years. The preferred Alternative 2 would follow a similar trajectory but does not return the stock to a healthy status within the projection period such as under Alternative 1, which only reaches healthy status in the last projected year. However, it does follow the same trend as the default Alternative 1 and yet allows for higher harvest specifications with slight increases over time. This stock is important to the groundfish trawl fleet and 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 preferred Alternative provides an option for allowable harvest which keeps the stock in healthy status. The default Alternative 1 with a constant allowable catch exceeds what is possible based on updated biomass estimates 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 preliminary preferred harvest specifications for the 2025-2026 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 the new assessments.

The 2021 stock assessment of quillback rockfish off California and the associated 2023 rebuilding analysis were used to inform multiple alternative rebuilding strategies and harvest specification options being considered by the Council. An additional Alternative proposed by the California Department of Fish and Wildlife is based on assumptions made from the 2021 stock assessment alone, and not the subsequent 2023 rebuilding analysis. This stock was also removed from the Nearshore Rockfish Complexes, to ensure precision in management and tracking of mortality, etc. which will assist in sustainable management.

Under the Alternatives being considered for this stock, Alternative 1 under the default HCR would have a lower probability of rebuilding and but only take two years longer to rebuild within the required timeline than Alternative 2. It does provide slightly higher harvest specifications (~2% over ten years), which are still important even at this scale due to the severe restrictions and impacts that these constricting harvest specifications will have on groundfish fisheries. Trade-offs will need to be considered carefully under National Standard 1. Although Alternative Alternative 4 with no fishing mortality would rebuild in the shortest timeline, it is generally untenable as some fishing mortality would be expected to occur, even if non-directed, and it would also have severe economic consequences. Alternative 3 based on an assumption from the 2021 stock assessment and not the subsequent rebuilding analysis, provides harvest specifications beyond what would appear biologically reasonable for a rebuilding population and with greater uncertainty. Thus, Alternative 3 presents a conservation concern under National Standard 1 as it would not meet the MSA rebuilding requirements.

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

The best available science standard applies to the following areas relative to this proposed action: stock assessments, rebuilding analyses, and methods for determining management reference points (OFL, ABC, ACL, etc.); these areas form the basis for determining harvest levels and the evaluation of socioeconomic impacts. Harvest specifications for 2025 and 2026 were updated and based on default or alternative HCRs analyzed in this document. These values reflect the application of the best scientific information available to current harvest management policies, with one exception Alternative under consideration. The supporting science is discussed below.

The harvest specifications considered under the action (the action alternatives, including the Preliminary Preferred Alternatives) are based on the most recent stock assessments and developed through the peer review STAR process. All these assessments were judged by NMFS to be based on BSIA before results were used to decide harvest specifications and management measures. The exception under harvest specification alternatives is Alternative 3 for quillback rockfish off California, which is based on a stock

assessment assumption but not the subsequent rebuilding analysis results which were determined to be BSIA. Thus, Alternative 3 for quillback rockfish off California does not align with the principle of National Standard 2.

The Groundfish SAFE document will be updated to summarize the basis for alternative harvest specifications and reference the stock assessments that were used. It also describes the methods that were used to determine reference points for harvest specifications (OFL, ABC, ACL, etc.) for stocks and stock complexes.

The process to decide stock assessment priorities utilizes a matrix of factors designed by the NMFS Northwest Fisheries Science Center 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. Outputs from this model are used by the Council to develop the alternatives and are considered BSIA.

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Appendix 1

APPENDIX 1. Alternative 1 Default Harvest Control Rules: 2025 harvest specifications (overfishing limit (OFL), acceptable biological catch (ABC), and annual catch limit (ACL); units in mt) under default harvest control rules, for U.S. West Coast groundfish stocks and stock complexes. Stocks with new 2023 assessments/catch projections in bold; stocks defined under Groundfish FMP Amendment 31 are in blue highlight with the adopted stock area (area) definition. Provisional values yet to be considered by the SSC/Council in italics.

Stock/Complex	Area	Category	P*	2025 OFL	2025 ABC	2025 ACL	Assess Year	Notes
Yelloweye Rockfish	**CW**	**1**	**0.40**	**105.80**	**87.20**	**55.80**	**2017**	**OFL based on the 2023 catch-only update of the 2017 rebuilding analysis (Table 1, Agenda Item G.2 Supp Revised Attachment 15 Sept 2023).**
Quillback Rockfish	**CA**	**2**	**0.45**	**1.52**	**1.26**	**1.26**	**2021**	**OFL based on 2023 rebuilding analysis (Table 5, Agenda Item F.2 Attachment 1 March 2024). SPR=0.55, ABC=ACL, P*=0.45**
Arrowtooth Flounder	CW	2	0.40	16,460.00	11,193.00	11,193.00	2017	OFL based on the 2021 catch-only update of the 2017 update assessment (Table 1; Correa et al. 2021; Agenda Item C.6 Attachment 9 Sept 2021).
Big Skate	CW	2	0.45	1,456.00	1,224.00	1,224.00	2019	OFL projected using a 50% SPR harvest rate in the 2019 big skate assessment (Table 15 pg 67).
Black Rockfish	**WA**	**1**	**0.45**	**261.56**	**244.56**	**244.56**	**2023**	**OFL projected using a 50% SPR harvest rate in the 2023 full assessment (Table vii, pg xix).**
Black Rockfish	**CA**	**1**	**0.45**	**250.10**	**233.80**	**223.6**	**2023**	**OFL projected using a 50% SPR harvest rate in the 2023 full assessment (Table 65, pg 142).**
Bocaccio	S. of 40°10′ N. lat.	1	0.45	1,849.00	1,681.00	1,681.00	2017	OFL projected using a 50% SPR from the 2019 updated harvest specification projections based on new sigmas with a 7.4% reduction to subtract the portion of the assessed stock north of 40°10’ N. lat. (Table 5 pg 3; Agenda Item H.8 Supp Attachment 2 Sept 2019).
Cabezon	CA	1	0.45	176.40	161.76	161.76	2019	OFL projected using a 45% SPR from the 2019 assessment (Table ES18 pg 41; Table ES19 pg 42).

Stock/Complex	Area	Category	P*	2025 OFL	2025 ABC	2025 ACL	Assess Year	Notes
Cabezon	S. of 34°27′ N. lat.	1	0.45	20.50	18.80	18.80	2019	OFL projected using a 45% SPR from the 2019 assessment (Table ES18 pg 41).
Cabezon	34°27 – 42′ N. lat.	1	0.45	155.90	142.96	142.96	2019	OFL projected using a 45% SPR from the 2019 assessment (Table ES19 pg 42).
Cabezon/Kelp Greenling	WA			*18.82*	*14.64*	*14.64*		Sum of harvest specification contributions of component stocks in the complex.
Cabezon	*WA*	*3*	*0.45*	*11.72*	*9.12*	*9.12*	*2019*	**Provisional: OFL based on a 2023 catch-only update of the 2019 DB-SRA assessment (Table 2, Agenda Item F.2 Supp Revised Attachment 2 April 2024).*
Kelp Greenling	WA	3	0.45	7.10	5.52	5.52	2015	OFL based on a 2015 DB-SRA estimate using a low vulnerability prior (Table 11 pg 12, Delta option 4; Agenda Item I.4 Attachment 4 November 2015). Low vulnerability prior from data-moderate assessment document (Figure 54 in Cope et al. 2015).
Cabezon/Kelp Greenling	OR			195.6	176.93	176.93		Sum of harvest specification contributions of component stocks in the complex.
Cabezon	OR	1	0.45	52.60	48.23	48.23	2019	OFL projected using a 45% SPR from the 2019 assessment (Table ES20 pg 43).
Kelp Greenling	OR	1	0.45	143.00	128.70	128.70	2015	OFL projected in the 2021 catch-only update of the 2015 assessment (Table 5, Agenda Item C.8. Attachment 2 September 2021).
California Scorpionfish	CW		0.45	273.00	244.00	244.00	2017	OFL from the 2019 catch-only update of the 2017 assessment (Table 6 pg 4; Agenda Item H.8 Supp Attachment 2 Sept 2019).
Canary Rockfish	**CW**	**1**	**0.45**	**646.93**	**604.88**	**571.28**	**2023**	**OFL projected using a 50% SPR harvest rate in the 2023 full assessment (Table vii, pg xvi). Precautionary, ACL<ABC.**

Stock/Complex	Area	Category	P*	2025 OFL	2025 ABC	2025 ACL	Assess Year	Notes
Chilipepper	**S. of 40°10′ N. lat.**	**1**	**0.45**	**3,128.06**	**2,815.25**	**2,815.25**	**2015**	**OFL from a 2023 catch-only projection update of the 2015 assessment, based on the corrected 2017 catch-only update to the assessment to correct errors in historical catch estimates between 1916-2016 (based on the 2017 model with time-varying buffers starting in 2015). (Table 1 pg 2; Agenda Item E.2 Attachment 2 Nov 2023). OFLs are apportioned to the North (7%) and South (93%) of 40°10' N lat. based on average historical landings. S of 40°10' N lat. 2025 OFL = 3363.5 * 0.93 = 3128.06; 2026 OFL = 3171.2 * 0.93 = 2949.22.**
Cowcod	S. of 40°10′ N. lat.			111.14	76.56	76.56	2019	Harvest specifications are the sum of assessed area projections (South of Pt Conception 34°27' N. lat.) and DBSRA estimates (40°10' to 34°27' N. lat.).
Cowcod	S. of 34°27′ N. lat.	2	0.40	92.81	65.52	65.52	2019	OFL is based on a 50% SPR harvest rate projected in the 2019 assessment, with a time varying category 2 sigma, P* = 0.4. in 2019 projections (Table 6 pg 5; error in caption as correction is South of 34°27' N. lat.; Agenda Item H.6 Attachment 2 November 2019).
Cowcod	40°10′ – 34°27′ N. lat.	3	0.40	18.33	11.04	11.04	2019	OFL is based on the 2019 DB-SRA estimate in Appendix B of the 2019 cowcod assessment (Table F2 pg 179; Percentile 50% (Median)). OFLs are apportioned to the north of 40°10' N lat. (3%) and 40°10' – 34°27' N lat. (97%) based on cumulative historical catch (Table F3 pg 179; 1916-2018).
Darkblotched Rockfish	CW	1	0.45	830.00	754.00	754.00	2017	OFL projected using a 50% SPR in the 2021 catch-only projection update (Table 1; Lee 2021; Agenda Item C.6 Attachment 12 Sept 2021).

Stock/Complex	Area	Category	P*	2025 OFL	2025 ABC	2025 ACL	Assess Year	Notes
Dover Sole	**CW**	**1**	**0.45**	**51,214**	**47,424**	**[50,000]**	**2021**	**OFL projected using a 30% SPR harvest rate in the 2021 full assessment, with assumed removals equal to the adopted ACL of 50,000 mt in 2023-24 (per September 2023 Council request) (Table 2; Agenda Item E.5 Attachment 4 Nov 2023). Default 50k mt ACL.**
English Sole	CW	2	0.45	11,175.00	8,884.00	8,884.00	2013	OFL is based on a 30% SPR harvest rate in the 2013 data-moderate assessment, with ACL = ABC (P* = 0.45) in 2019 projections (Table 3 pg 4; Agenda Item H.6 Attachment 2 November 2019).
Lingcod	N. of 40°10′ N. lat.	2	0.45	4,237.00	3,631.00	3,631.00	2021	OFLs projected using a 45% SPR harvest rate in the 2021 full assessment of lingcod North of 40°10’ N lat. (Table vii pg xvi).
Lingcod	S. of 40°10′ N. lat.	2	0.45	897.00	768.00	748.00	2021	OFLs projected using a 45% SPR harvest rate in the 2021 full assessment of lingcod South of 40°10’ N lat. (Table vii pg xvi). The southern stock of lingcod is below 40% (precautionary), so ACL<ABC with the 40-10 rule applied.
Longnose Skate	CW	2	0.45	1,922.00	1,616.00	1,616.00	2019	OFLs projected using a 45% SPR harvest rate in the 2019 assessment (Table ES-6 pg 20). ACL = ABC.
Longspine Thornyhead	CW	2	0.40	4,284.00	2,697.92	2,697.92	2013	Coastwide OFL projected using a 50% SPR harvest rate in the 2019 catch-only projection update (Table g pg 13). The coastwide ABC (P* = 0.4) is apportioned N (76%) and S (24%) of 34°27’ N lat. to determine ACLs based on the 2003-2012 average swept area biomass from the NMFS trawl survey.
Longspine Thornyhead	S. of 34°27′ N. lat.	2	0.40			647.5	2013	Coastwide OFL projected using a 50% SPR harvest rate in the 2019 catch-only projection update (Table g pg 13). The coastwide ABC (P* = 0.4) is apportioned N (76%) and S (24%) of 34°27’ N lat. to determine ACLs based on the 2003-2012 average swept area biomass from the NMFS trawl survey. S of 34°27’ N lat. 2025 ACL = ABC 2,697.92 * 0.24 = 647.5; 2026 ACL = ABC 2,574.60 * 0.24 = 617.9.

Stock/Complex	Area	Category	P*	2025 OFL	2025 ABC	2025 ACL	Assess Year	Notes
Longspine Thornyhead	N. of 34°27′ N. lat.	2	0.40			2,050.42	2013	Coastwide OFL projected using a 50% SPR harvest rate in the 2019 catch-only projection update (Table g pg 13). The coastwide ABC (P* = 0.4) is apportioned N (76%) and S (24%) of 34°27' N lat. to determine ACLs based on the 2003-2012 average swept area biomass from the NMFS trawl survey. N of 34°27' N lat. 2025 ACL = ABC 2,697.92 * 0.76 = 2050.42; 2026 ACL = ABC 2,574.60 * 0.76 = 1956.70.
Pacific Ocean Perch	N. of 40°10′ N. lat.	2	0.45	4,029.00	3,328.00	3,328.00	2017	OFL projected using a 50% SPR harvest rate in the 2019 Pacific Ocean Perch Updated Harvest Specification Projections (Table 7, Agenda Item H.8 Supplemental Attachment 2 September 2019). ACL = ABC (P* = 0.45).
Petrale Sole	**CW**	**1**	**0.45**	**2,518.00**	**2,354.00**	**2,354.00**	**2023**	**OFL projected using a 30% SPR harvest rate in the 2023 full assessment (Table 30, pg 75).**
Sablefish	**CW**	**1**	**0.45**	**39,085.00**	**36,544.70**	**36,544.7**	**2023**	**OFL projected using a 45% SPR harvest rate in the 2023 limited update assessment (Table vii, pg xvi). ACL split N (78.5%) and S (21.5%) of 36° N. Lat. using a 5-yr rolling avg (2017-2022, no survey 2020) of biomass estimates by area from the NWFSC WCGBT survey.**
Sablefish	**S. of 36°**	**1**	**0.45**			**7857.11**	**2023**	
Sablefish	**N. of 36°**	**1**	**0.45**			**28687.59**	**2023**	
Shortspine Thornyhead	**CW**	**2**	**0.40**	**939.75**	**716.09**		**2023**	**OFL projected using a 50% SPR harvest rate in the 2023 full assessment (Table 7, pg 42). Precautionary ACL < ABC, 40-10 rule, ACL split N (70.6%) and S (29.4%) of 34° 27' N. Lat. 5-yr rolling avg of biomass estimates from WCGBT survey. P*=0.40.**
Shortspine Thornyhead	**S. of 34°27′ N. lat.**	**2**	**0.40**			**209**	**2023**	
Shortspine Thornyhead	**N. of 34°27′ N. lat.**	**2**	**0.40**			**502**	**2023**	

Stock/Complex	Area	Category	P*	2025 OFL	2025 ABC	2025 ACL	Assess Year	Notes
Spiny Dogfish	CW	2	0.40	1,857.00	1,361.00	1,361.00	2021	OFL is based on a 50% SPR harvest rate projected in the 2021 assessment, with a category 2 sigma, P* = 0.4, ACL=ABC in 2019 projections (Table 4 pg 5; Agenda Item E.3 Supp Revised Attachment 4 November 2021).
Splitnose	S. of 40°10′ N. lat.	1	0.45	1,724.00	1,508.00	1,508.00	2009	Projections based on the 2009 assessment using the sigmas for 2020 and beyond (Table 2 pg 3; Agenda Item G.6 Attachment 2 September 2023).
Widow Rockfish	**CW**	**1**	**0.45**	**12,254.00**	**11,237.00**	**11,237.0**	**2019**	**OFL based on the 2023 catch-only update of the 2019 update assessment (Table 2; Agenda Item G.2 Attachment 14 Sept 2023).**
Yellowtail Rockfish	**N. of 40°10′ N. lat.**	**1**	**0.45**	**6,865.96**	**6,241.16**	**6,241.16**	**2017**	**OFL based on the 2023 catch-only update of the 2017 update assessment (Table 1; Agenda Item E.2 Attachment 3 Nov 2023).**
Pacific Cod	CW	3	0.40	3,200.00	1,926.00	1,600.00		OFL is based on the highest historical catch (in 1985), ACL = 50% of the OFL.
Starry Flounder	CW	3	0.40	652.00	392.00	392.00	2017	OFL based on the 2017 DB-SRA assessment of starry flounder (Agenda Item F.6.a Supp SSC Rpt1 November 2017).
Blue/Deacon/Black Rockfish	OR		0.45	463.94	423.28	423.28		Sum of harvest specification contributions of component stocks in the complex.
Black Rockfish	**OR**	**1**	**0.45**	**367.50**	**343.62**	**343.62**	**2023**	**OFL projected using a 50% SPR harvest rate in the 2023 full assessment (Table vii pg xix).**
Blue	OR	2	0.45	96.44	79.66	79.66	2017	OFL projected using a 50% SPR from the 2021 updated harvest specification projections for blue and deacon rockfishes (Table 3; Agenda Item C.8 Attachment 2 September 2021). HG = ABC/ACL for managing OR fisheries.
Nearshore Rockfish North	N. of 40°10′ N. lat.			105.89	87.89	87.77		Sum of harvest specification contributions of component stocks in the complex.
Black and Yellow	N. of 40°10′ N. lat.	3	0.45					

Stock/Complex	Area	Category	P*	2025 OFL	2025 ABC	2025 ACL	Assess Year	Notes
Blue	42° – 40°10′ N. lat.	2	0.45	33.56	27.72	27.72	2017	OFL from the 2019 catch-only projection update (Table g pg 16; Agenda Item H.5 Supp Revised Attachment 17 September 2019). 10% of the CA OFL is apportioned North of 40°10' N lat. (see Appendix D of the 2017 Assessment, pg 361).N of 40°10' N lat. 2025 OFL = 335.61 * 0.10 = 33.561; 2026 OFL = 335.08 * 0.10 = 33.508.
Blue	WA	3	0.45	7.20	5.60	5.60	2017	Inferred Washington OFL provided in Appendix F (Table F2 pg 373) of the 2017 Blue and Deacon Rockfishes assessment.
Brown	N. of 40°10′ N. lat.	2	0.45	2.10	1.67	1.67	2013	OFL from the 2019 harvest projection update (Table 1 pg 3; Agenda Item H.6 Attachment 2 November 2019). The portion of the coastwide stock North of 40`10 N lat. based on the proportion of cumulative removals by area during 1916-2012 (~1.15%). N of 40°10' N lat. 2025 OFL = 181.9 * 0.0115 = 2.1; 2026 OFL = 182.5 * 0.0115 = 2.11.
Calico	N. of 40°10′ N. lat.	3	0.45					
China	WA	2	0.45	9.45	7.65	7.65	2015	OFLs projected from the North Model in the 2015 assessment updated with 2019 catch-only projections (Table r pg 34; Agenda Item H.5 Supp Revised Attachment 19 September 2019).
China	40°10′ – 46°16′ N. lat.	2	0.45	19.89	16.11	16.11	2015	OFLs projected from the Central Model in the 2015 assessment updated with 2019 catch-only projections (Table r pg 34; Agenda Item H.5 Supp Revised Attachment 19 September 2019).
Copper	**N. of 42°**	**2**	**0.45**	**19.06**	**16.34**	**16.34**	**2021**	**OFL from the 2023 projection update of the 2021 assessments, based on a stock definition of OR and WA (N of 42) (Table 5 pg 4; Agenda Item G.6 Supp Revised Attachment 2 September 2023).**

Stock/Complex	Area	Category	P*	2025 OFL	2025 ABC	2025 ACL	Assess Year	Notes
Copper	**42° – 40°10′ N. lat.**	**1**	**0.45**	**7.4**	**6.92**	**6.80**	**2023**	**OFL projected from the 2023 full assessment; stock defined as CA (S of 42), apportioned to complex (N 4010 = 5.86%) based on estimates of rocky habitat and density of copper rockfish in the area (Table xv, pg xxvii, version Sept2023).**
Gopher	N. of 40°10	3	0.45				2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Grass	N. of 40°10′ N. lat.	3	0.45	0.66	0.51	0.51	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Kelp	N. of 40°10′ N. lat.	3	0.45	0.01	0.01	0.01	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Olive	N, of 40°10′ N. lat.	3	0.45	0.32	0.25	0.25	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Quillback	WA	3	0.45	2.86	2.23	2.23	2021	OFL projected using a 50% SPR harvest rate MSY proxy from the 2021 assessment of quillback rockfish in WA (November 2021 version Section 4.2 pg 20, per SSC recommendation as constant OFL = 2.86 mt, Category 3, P*=0.45, ABC = 2.22 mt).
Quillback	OR	2	0.45	3.17	2.72	2.72	2021	OFL projected using a 50% SPR harvest rate from the 2021 assessment of quillback rockfish in Oregon (December 2021 version, Table 14 pg 51, per Section 4.1 pg 23).
Treefish	N, of 40°10′ N. lat.	3	0.45	0.22	0.17	0.17	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).

Stock/Complex	Area	Category	P*	2025 OFL	2025 ABC	2025 ACL	Assess Year	Notes
Nearshore Rockfish South	S, of 40°10′ N. lat.			1,137.10	933.90	931.76		Sum of harvest specification contributions of component stocks in the complex.
Black and Yellow	S, of 40°10′ N. lat.	2	0.45				2019	Gopher and black-and-yellow rockfishes are now combined in the 2019 assessment and resulting harvest specifications (documented in the gopher specifications). OFL based on a 50% SPR harvest rate projected in the 2019 assessment (Table g pg xix).
Blue	40°10′ – 34°27′ N. lat.	2	0.45	302.05	249.49	249.49	2017	OFL from the 2019 catch-only projection update (Table g pg 16; Agenda Item H.5 Supp Revised Attachment 17 September 2019). 90% of the CA OFL is apportioned South of 40°10’ N lat. (see Appendix D of the 2017 Assessment, pg 361).S of 40°10’ N lat. 2025 OFL = 335.61 * 0.90 = 302.049; 2026 OFL = 335.08 * 0.90 = 301.572.
Blue	S. of 34°27′ N. lat.	3	0.45	21.80	16.96	16.96	2017	Appendix G of the 2017 blue and deacon assessment describes calculation of the OFL proxy (pg 376).
Brown	S. of 40°10′ N. lat.	2	0.45	179.80	142.94	142.94	2013	OFL from the 2019 harvest projection update (Table 1 pg 3; Agenda Item H.6 Attachment 2 November 2019). The portion of the coastwide stock South of 40`10 N lat. based on the proportion of cumulative removals by area during 1916-2012 (~98.8%).S of 40°10’ N lat. 2025 OFL = 181.9 * 0.988 = 179.8; 2026 OFL = 182.5 * 0.988 = 180.39.
Calico	S. of 40°10′ N. lat.	3	0.45					
China	S. of 40°10′ N. lat.	2	0.45	17.23	13.96	13.96	2015	OFLs projected from the South Model in the 2015 assessment updated with 2019 catch-only projections (Table r pg 34; Agenda Item H.5 Supp Revised Attachment 19 September 2019).

Stock/Complex	Area	Category	P*	2025 OFL	2025 ABC	2025 ACL	Assess Year	Notes
Copper	**S. of 40°10′ N. lat.**	**1**	**0.45**	**136.06**	**127.22**	**125.08**	**2023**	**OFL projected from the 2023 full assessment; stock defined as CA (S of 42), apportioned to complex (N 4010 = 5.86%) based on estimates of rocky habitat and density of copper rockfish in the area (Table xv, pg xxvii, version Sept2023).**
Gopher	S. of 40°10′ N. lat.	2	0.45	155.00	130.36	130.36	2019	Gopher and black-and-yellow rockfishes are now combined in the 2019 assessment and resulting harvest specifications (documented in the gopher specifications). OFL based on a 50% SPR harvest rate projected in the 2019 assessment (Table g pg xix).
Grass	S. of 40°10′ N. lat.	3	0.45	59.63	46.39	46.39	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Kelp	S. of 40°10′ N. lat.	3	0.45	27.66	21.52	21.52	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Olive	S. of 40°10′ N. lat.	3	0.45	224.64	174.77	174.77	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Treefish	S. of 40°10′ N. lat.	3	0.45	13.23	10.29	10.29	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Other Fish	CW			286.00	223.00	223.00		Sum of harvest specification contributions of component stocks in the complex.
Kelp Greenling	CA	3	0.45	118.90	92.50	92.50	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).

Stock/Complex	Area	Category	P*	2025 OFL	2025 ABC	2025 ACL	Assess Year	Notes
Leopard Shark	CW	3	0.45	167.10	130.00	130.00	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Other Flatfish	CW			10,894.36	7,391.30	7,391.30		Sum of harvest specification contributions of component stocks in the complex.
Butter Sole	CW	3	0.40	4.63	2.79	2.79		Based on the average catch during 1994-1998 + a 60% discard rate estimated from the EDCP study (2020 SAFE; Table 2-19 pg 260).
Curlfin Sole	CW	3	0.40	8.24	4.96	4.96		Based on the average catch during 1994-1998 + a 60% discard rate estimated from the EDCP study (2020 SAFE; Table 2-19 pg 260).
Flathead Sole	CW	3	0.40	35.00	21.07	21.07		Max. catch = 35 mt in 2005 (2020 SAFE; Table 2-19 pg 260).
Pacific Sanddab	CW	3	0.40	4,801.00	2,890.20	2,890.20	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Rex Sole	**CW**	**2**	**0.40**	**5,205.59**	**3,966.66**	**3,966.66**	**2023**	**OFL projected using a 30% SPR harvest rate in the 2023 data moderate assessment, with revised projections per Council September 2023 request (Table 4; Agenda Item E.2 Attachment 4 Nov 2023).**
Rock Sole	CW	3	0.40	66.70	40.15	40.15	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Sand Sole	CW	3	0.40	773.20	465.47	465.47	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Shelf Rockfish North	N of 40°10′ N. lat.			1,747.35	1391.95	1391.52		Sum of harvest specification contributions of component stocks in the complex.

Stock/Complex	Area	Category	P*	2025 OFL	2025 ABC	2025 ACL	Assess Year	Notes
Bocaccio	N. of 40°10′ N. lat.	3	0.45	284.00	220.95	220.95	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Bronzespotted	N. of 40°10′ N. lat.	3	0.45					
Chameleon	N. of 40°10′ N. lat.	3	0.45					
Chilipepper	**N. of 40°10′ N. lat.**	**1**	**0.45**	**235.45**	**211.9**	**211.9**	**2015**	**OFL from a 2023 catch-only projection update of the 2015 assessment, based on the corrected 2017 catch-only update to the assessment to correct errors in historical catch estimates between 1916-2016 (based on the 2017 model with time-varying buffers starting in 2015). (Table 1 pg 2; Agenda Item E.2 Attachment 2 Nov 2023). OFLs are apportioned to the North (7%) and South (93%) of 40°10' N lat. based on average historical landings. N of 40°10' N lat. 2025 OFL = 3363.5 * 0.07 = 235.45; 2026 OFL = 3171.2 * 0.07 = 221.98.**
Cowcod	N. of 40°10′ N. lat.	3	0.45	0.57	0.44	0.44	2019	OFL is based on the 2019 DB-SRA estimate in Appendix B of the 2019 cowcod assessment (Table F2 pg 179; Percentile 50% (Median)). OFLs are apportioned to the north of 40°10' N lat. (3%) and 40°10' – 34°27' N lat. (97%) based on cumulative historical catch (Table F3 pg 179; 1916-2018).
Flag	N. of 40°10′ N. lat.	3	0.45	0.10	0.08	0.08	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Freckled	N. of 40°10′ N. lat′ N. lat.	3	0.45					

Stock/Complex	Area	Category	P*	2025 OFL	2025 ABC	2025 ACL	Assess Year	Notes
Greenblotched	N. of 40°10′ N. lat.	3	0.45	1.30	1.01	1.01	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Greenspotted	**42° – 40°10′ N. lat.**	**2**	**0.45**	**88.44**	**69.70**	**69.27**	**2011**	**2024 OFL and ABC values (per SSC recommendation and Council adopted Sept 2023; Agenda Item G.6.a. Supp SSC Rpt 1).**
Greenspotted	WA – OR	3	0.45	6.10	4.75	4.75	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Greenstriped	N. of 40°10′ N. lat.	3	0.45	623.61	485.17	485.17	2009	OFL based on the MSY associated with the FMSY proxy in the 2009 assessment (Table d pg vii; Yield with SPR50% at SBSPR). The portion of the coastwide stock North (84.5%) and South (15.5%) of 40°10' N lat. is based on the mean of the 2003-2008 swept area biomass estimates from the NMFS trawl survey.
Halfbanded	N. of 40°10′ N. lat.	3	0.45					
Harlequin	N. of 40°10′ N. lat.	3	0.45					
Honeycomb	N. of 40°10′ N. lat.	3	0.45					
Mexican	N. of 40°10′ N. lat.	3	0.45					
Pink	N. of 40°10′ N. lat.	3	0.45	0.004	0.003	0.003	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Pinkrose	N. of 40°10′ N. lat.	3	0.45					

Stock/Complex	Area	Category	P*	2025 OFL	2025 ABC	2025 ACL	Assess Year	Notes
Puget Sound	N. of 40°10′ N. lat.	3	0.45					
Pygmy	N. of 40°10′ N. lat.	3	0.45					
Redstripe	N. of 40°10′ N. lat.	3	0.45	269.90	209.98	209.98	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Rosethorn	N. of 40°10′ N. lat.	3	0.45	12.90	10.04	10.04	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Rosy	N. of 40°10′ N. lat.	3	0.45	3.00	2.33	2.33	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Silvergray	N. of 40°10′ N. lat.	3	0.45	159.40	124.01	124.01	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Speckled	N. of 40°10′ N. lat.	3	0.45	0.20	0.16	0.16	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Squarespot	42° – 40°10′ N. lat.	2	0.45				2021	An OFL is not provided in this geographic area, per Section 4.3 (pg 21) of the 2021 squarespot rockfish data-moderate assessment in California, as after 2000 it is assumed that 100% of removals are from South of 40°10’ N lat. and thus no apportionment of the overall OFL was made to this area.
Starry	N. of 40°10′ N. lat.	3	0.45	0.004	0.003	0.003	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).

Stock/Complex	Area	Category	P*	2025 OFL	2025 ABC	2025 ACL	Assess Year	Notes
Stripetail	N. of 40°10′ N. lat.	3	0.45	40.40	31.43	31.43	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Swordspine	N. of 40°10′ N. lat.	3	0.45	0.0001	0.0001	0.0001	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Tiger	N. of 40°10′ N. lat.	3	0.45	1.00	0.78	0.78	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Vermilion	**N. of 42°**	**1 and 2**	**0.45**	**13.97**	**13.01**	**13.01**	**2021**	**OFL from the 2023 projection update of the 2021 assessments, based on a stock definition of OR and WA (N of 42) (Table 6 pg 4; Agenda Item G.6 Supp Revised Attachment 2 September 2023).**
Vermilion	**42° – 40°10′ N. lat.**	**1 and 2**	**0.45**	**7.0**	**6.2**	**6.2**	**2021**	**OFL from the 2023 projection update of the 2021 assessments, based on a stock definition of CA (S of 42) (Table 3; Agenda Item E.2 Supp Revised Attachment 5 November 2023). Stock apportioned to complex based on yield from the northern assessment model (4.4%) and southern complex is the remainder (95.6%) of the northern model yields plus the southern model yields.**
Shelf Rockfish South	S. of 40°10′ N. lat.			1,837.05	1,465.15	1,464.47		Sum of harvest specification contributions of component stocks in the complex.
Bronzespotted	S. of 40°10′ N. lat.	3	0.45	3.60	2.80	2.80	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Chameleon	S. of 40°10′ N. lat.	3	0.45					

Stock/Complex	Area	Category	P*	2025 OFL	2025 ABC	2025 ACL	Assess Year	Notes
Flag	S. of 40°10′ N. lat.	3	0.45	23.40	18.21	18.21	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Freckled	S. of 40°10′ N. lat.	3	0.45					
Greenblotched	S. of 40°10′ N. lat.	3	0.45	23.10	17.97	17.97	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Greenspotted	**40°10 – 34°27′ N. lat.**	**2**	**0.45**	**42.58**	**33.55**	**33.12**	**2011**	**2024 OFL and ABC values (per SSC recommendation and Council adopted Sept 2023; Agenda Item G.6.a. Supp SSC Rpt 1).**
Greenspotted	**S. of 34°27′ N. lat.**	**2**	**0.45**	**45.86**	**36.14**	**36.14**	**2011**	**2024 OFL and ABC values (per SSC recommendation and Council adopted Sept 2023; Agenda Item G.6.a. Supp SSC Rpt 1).**
Greenstriped	S. of 40°10′ N. lat.	3	0.45	114.39	89.00	89.00	2009	OFL based on the MSY associated with the FMSY proxy in the 2009 assessment (Table d pg vii; Yield with SPR50% at SBSPR). The portion of the coastwide stock North (84.5%) and South (15.5%) of 40°10’ N lat. is based on the mean of the 2003-2008 swept area biomass estimates from the NMFS trawl survey.
Halfbanded	S. of 40°10′ N. lat.	3	0.45					
Harlequin	S. of 40°10′ N. lat.	3	0.45					
Honeycomb	S. of 40°10′ N. lat.	3	0.45	9.90	7.70	7.70	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).

Stock/Complex	Area	Category	P*	2025 OFL	2025 ABC	2025 ACL	Assess Year	Notes
Mexican	S. of 40°10′ N. lat.	3	0.45	5.10	3.97	3.97	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Pink	S.of 40°10′ N. lat.	3	0.45	2.50	1.95	1.95	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Pinkrose	S. of 40°10′ N. lat	3	0.45					
Pygmy	S. of 40°10′ N. lat	3	0.45					
Redstripe	S. of 40°10′ N. lat.	3	0.45	0.50	0.39	0.39	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Rosethorn	S. of 40°10′ N. lat.	3	0.45	2.10	1.63	1.63	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Rosy	S. of 4°010′ N. lat.	3	0.45	44.50	34.62	34.62	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Silvergray	S. of 40°10′ N. lat.	3	0.45	0.50	0.39	0.39	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Speckled	S. of 40°10′ N. lat.	3	0.45	39.40	30.65	30.65	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).

Stock/Complex	Area	Category	P*	2025 OFL	2025 ABC	2025 ACL	Assess Year	Notes
Squarespot	S .of 40°10′ N. lat.	2	0.45	6.58	5.64	5.39	2021	OFL projected using a 50% SPR harvest rate from the 2021 squarespot rockfish data-moderate assessment in CA (Table 17 pg 47 – table incorrectly labeled ACL as ABC and buffer calculations were corrected in final projection values Agenda Item G.6 Attachment 2 September 2023).
Starry	S. of 40°10′ N. lat.	3	0.45	62.60	48.70	48.70	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Stripetail	S. of 40°10′ N. lat.	3	0.45	23.60	18.36	18.36	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Swordspine	S. of 40°10′ N. lat.	3	0.45	14.20	11.05	11.05	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Tiger	S. of 40°10′ N. lat.	3	0.45	0.04	0.03	0.03	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Vermilion	**S. of 40°10′ N. lat.**	**1 and 2**	**0.45**	**308.2**	**274.3**	**274.3**	**2021**	**OFL from the 2023 projection update of the 2021 assessments, based on a stock definition of CA (S of 42) (Table 3; Agenda Item E.2 Supp Revised Attachment 5 November 2023). Stock apportioned to complex based on yield from the northern assessment model (4.4%) and southern complex is the remainder (95.6%) of the northern model yields plus the southern model yields.**
Yellowtail Rockfish	S. of 40°10′ N. lat.	3	0.45	1,064.40	828.10	828.10	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).

Stock/Complex	Area	Category	P*	2025 OFL	2025 ABC	2025 ACL	Assess Year	Notes
Slope Rockfish North	N. of 40°10′ N. lat.			1,778.83	1,487.97	1,487.97		Sum of harvest specification contributions of component stocks in the complex.
Aurora	N. of 40°10′ N. lat.	1	0.45	17.29	15.42	15.42	2013	OFL is based on the 2013 assessment, with a category 1 sigma, P* = 0.45, ACL=ABC in projections provided in 2023 (Table 2 pg 3; Agenda Item G.6 Attachment 2 September 2023). The portion of the coastwide stock north (19%) and south (81%) of 40º10' N lat. is based on average survey biomass.
Bank	N. of 40°10′ N. lat.	3	0.45	17.20	13.38	13.38	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Blackgill Rockfish	N. of 40°10′ N. lat.	3	0.45	4.70	3.66	3.66	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Redbanded	N. of 40°10′ N. lat.	3	0.45	45.30	35.24	35.24	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Rougheye/Blackspotted	N. of 40°10′ N. lat.	2	0.45	233.24	185.43	185.43	2013	OFL based on the 2019 catch-only update of the 2013 assessment (Table f pg xi; Agenda Item H.5 Supp Revised Attachment 24 Sept 2019). The coastwide OFLs are apportioned north (98%) and south (2%) based on average landings during 1985-2012. N of 4010 2025 OFL = 238 * 0.98 = 233.24; 2026 OFL = 237 * 0.98 = 232.26.

Stock/Complex	Area	Category	P*	2025 OFL	2025 ABC	2025 ACL	Assess Year	Notes
Sharpchin	N. of 40°1′ N. lat.	2	0.45	280.00	222.60	222.60	2013	OFL from the 2019 projection update of the 2013 assessment (Table 15 pg 8; Agenda Item H.8 Supp Attachment 2 September 2019). OFLs are apportioned to the North (80%) and South (20%) of 40°10' N lat. based on average swept area biomass estimates from the triennial survey. N of 40°10' N lat. 2025 OFL = 350 * 0.8 = 280; 2026 OFL = 348 * 0.8 = 278.4.
Shortraker	N. of 40°10′ N. lat.	3	0.45	18.70	14.55	14.55	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Splitnose	N. of 40°10′ N. lat.	1	0.45	970.00	848.00	848.00	2009	Projections based on the 2009 assessment using the sigmas for 2020 and beyond (Table 3 pg 3; Agenda Item G.6 Attachment 2 September 2023).
Yellowmouth	N. of 40°10′ N. lat.	3	0.45	192.40	149.69	149.69	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Slope Rockfish South	S. of 40°10′ N. lat.			865.97	693.14	693.14		Sum of harvest specification contributions of component stocks in the complex.
Aurora	S. of 40°10′ N. lat.	1	0.45	73.71	65.75	65.75	2013	OFL is based on the 2013 assessment, with a category 1 sigma, P* = 0.45, ACL=ABC in projections provided in 2023 (Table 2 pg 3; Agenda Item G.6 Attachment 2 September 2023). The portion of the coastwide stock north (19%) and south (81%) of 40º10' N lat. is based on average survey biomass.
Bank	S. of 40°10′ N. lat.	3	0.45	503.20	391.49	391.49	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).

Stock/Complex	Area	Category	P*	2025 OFL	2025 ABC	2025 ACL	Assess Year	Notes
Blackgill Rockfish	S. of 40°10′ N. lat.	2	0.45	203.00	167.68	167.68	2017	Values from a 2019 catch-only update/projection from the 2017 assessment update of blackgill rockfish in the Conception and Monterey INPFC areas (Table f pg x; Agenda Item H.5 Attachment 16 September 2019).
Pacific Ocean Perch	S. of 40°10′ N. lat.	3	0.45					
Redbanded	S. of 4°010′ N. lat.	3	0.45	10.40	8.09	8.09	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Rougheye/Blackspotted	S. of 40°10′ N. lat.	2	0.45	4.76	3.78	3.78	2013	OFL based on the 2019 catch-only update of the 2013 assessment (Table f pg xi; Agenda Item H.5 Supp Revised Attachment 24 Sept 2019). The coastwide OFLs are apportioned north (98%) and south (2%) based on average landings during 1985-2012. S of 4010 2025 OFL = 238 * 0.02 = 4.76; 2026 OFL = 237 * 0.02 = 4.74.
Sharpchin	S. of 40°10′ N. lat.	2	0.45	70.00	55.65	55.65	2013	OFL from the 2019 projection update of the 2013 assessment (Table 15 pg 8; Agenda Item H.8 Supp Attachment 2 September 2019). OFLs are apportioned to the North (80%) and South (20%) of 40°10’ N lat. based on average swept area biomass estimates from the triennial survey. S of 40°10’ N lat. 2025 OFL = 350 * 0.2 = 70; 2026 OFL = 348 * 0.2 = 69.6.
Shortraker	S. of 40°10′ N. lat.	3	0.45	0.10	0.08	0.08	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Yellowmouth	S. of 40°10′ N. lat.	3	0.45	0.80	0.62	0.62	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).

Appendix 2

APPENDIX 2. Alternative 1 Default Harvest Control Rules: 2026 harvest specifications (overfishing limit (OFL), acceptable biological catch (ABC), and annual catch limit (ACL); units in mt) under default harvest control rules, for U.S. West Coast groundfish stocks and stock complexes. Stocks with new 2023 assessments/catch projections in bold; stocks defined under Groundfish FMP Amendment 31 are in blue highlight with the adopted stock area (area) definition. Provisional values yet to be considered by the SSC/Council in italics.

Stock/Complex	Area	Category	P*	2026 OFL	2026 ABC	2026 ACL	Assess Year	Notes
Yelloweye Rockfish	**CW**	**1**	**0.40**	**108.30**	**88.50**	**56.60**	**2017**	**OFL based on the 2023 catch-only update of the 2017 rebuilding analysis (Table 1, Agenda Item G.2 Supp Revised Attachment 15 Sept 2023).**
Quillback Rockfish	**CA**	**2**	**0.45**	**1.77**	**1.47**	**1.47**	**2021**	**OFL based on 2023 rebuilding analysis (Table 5, Agenda Item F.2 Attachment 1 March 2024). SPR=0.55, ABC=ACL, P*=0.45**
Arrowtooth Flounder	CW	2	0.40	13,833.00	9,227.00	9,227.00	2017	OFL based on the 2021 catch-only update of the 2017 update assessment (Table 1; Correa et al. 2021; Agenda Item C.6 Attachment 9 Sept 2021).
Big Skate	CW	2	0.45	1,426.00	1,188.00	1,188.00	2019	OFL projected using a 50% SPR harvest rate in the 2019 big skate assessment (Table 15 pg 67).
Black Rockfish	**WA**	**1**	**0.45**	**259.38**	**241.22**	**241.22**	**2023**	**OFL projected using a 50% SPR harvest rate in the 2023 full assessment (Table vii, pg xix).**
Black Rockfish	**CA**	**1**	**0.45**	**265.30**	**246.80**	**235.7**	**2023**	**OFL projected using a 50% SPR harvest rate in the 2023 full assessment (Table 65, pg 142).**
Bocaccio	S of 40°10′ N. lat.	1	0.45	1,846.00	1,668.00	1,668.00	2017	OFL projected using a 50% SPR from the 2019 updated harvest specification projections based on new sigmas with a 7.4% reduction to subtract the portion of the assessed stock north of 40°10' N. lat. (Table 5 pg 3; Agenda Item H.8 Supp Attachment 2 Sept 2019).

Stock/Complex	Area	Category	P*	2026 OFL	2026 ABC	2026 ACL	Assess Year	Notes
Cabezon	CA	1	0.45	169.90	155.12	155.12	2019	OFL projected using a 45% SPR from the 2019 assessment (Table ES18 pg 41; Table ES19 pg 42).
Cabezon	S of 34°27′ N. lat.	1	0.45	20.20	18.44	18.44	2019	OFL projected using a 45% SPR from the 2019 assessment (Table ES18 pg 41).
Cabezon	34°27 - 42′ N. lat.	1	0.45	149.70	136.68	136.68	2019	OFL projected using a 45% SPR from the 2019 assessment (Table ES19 pg 42).
Cabezon/Kelp Greenling	WA			*18.69*	*14.54*	*14.54*		Sum of harvest specification contributions of component stocks in the complex.
Cabezon	*WA*	*3*	*0.45*	*11.59*	*9.02*	*9.02*	*2019*	**Provisional: OFL based on a 2023 catch-only update of the 2019 DB-SRA assessment (Table 2, Agenda Item F.2 Supp Revised Attachment 2 April 2024).*
Kelp Greenling	WA	3	0.45	7.10	5.52	5.52	2015	OFL based on a 2015 DB-SRA estimate using a low vulnerability prior (Table 11 pg 12, Delta option 4; Agenda Item I.4 Attachment 4 November 2015). Low vulnerability prior from data-moderate assessment document (Figure 54 in Cope et al. 2015).
Cabezon/Kelp Greenling	OR			193.63	174.38	174.38		Sum of harvest specification contributions of component stocks in the complex.
Cabezon	OR	1	0.45	52.00	47.48	47.48	2019	OFL projected using a 45% SPR from the 2019 assessment (Table ES20 pg 43).
Kelp Greenling	OR	1	0.45	141.63	126.90	126.90	2015	OFL projected in the 2021 catch-only update of the 2015 assessment (Table 5, Agenda Item C.8. Attachment 2 September 2021).
California Scorpionfish	CW		0.45	267.00	238.00	238.00	2017	OFL from the 2019 catch-only update of the 2017 assessment (Table 6 pg 4; Agenda Item H.8 Supp Attachment 2 Sept 2019).
Canary Rockfish	**CW**	**1**	**0.45**	**654.71**	**608.88**	**572.51**	**2023**	**OFL projected using a 50% SPR harvest rate in the 2023 full assessment (Table vii, pg xvi). Precautionary, ACL<ABC.**

Stock/Complex	Area	Category	P*	2026 OFL	2026 ABC	2026 ACL	Assess Year	Notes
Chilipepper	**S of 4010′ N. lat.**	**1**	**0.45**	**2949.22**	**2642.50**	**2642.50**	**2015**	**OFL from a 2023 catch-only projection update of the 2015 assessment, based on the corrected 2017 catch-only update to the assessment to correct errors in historical catch estimates between 1916-2016 (based on the 2017 model with time-varying buffers starting in 2015). (Table 1 pg 2; Agenda Item E.2 Attachment 2 Nov 2023). OFLs are apportioned to the North (7%) and South (93%) of 40°10' N lat. based on average historical landings. S of 40°10' N lat. 2025 OFL = 3363.5 * 0.93 = 3128.06; 2026 OFL = 3171.2 * 0.93 = 2949.22.**
Cowcod	S of 4010′ N. lat.			111.04	75.26	75.26	2019	Harvest specifications are the sum of assessed area projections (South of Pt Conception 34°27' N. lat.) and DBSRA estimates (40°10' to 34°27' N. lat.).
Cowcod	S of 3427′ N. lat.	2	0.40	92.42	64.05	64.05	2019	OFL is based on a 50% SPR harvest rate projected in the 2019 assessment, with a time varying category 2 sigma, P* = 0.4. in 2019 projections (Table 6 pg 5; error in caption as correction is South of 34°27' N. lat.; Agenda Item H.6 Attachment 2 November 2019).
Cowcod	4010 - 3427′ N. lat.	3	0.40	18.62	11.21	11.21	2019	OFL is based on the 2019 DB-SRA estimate in Appendix B of the 2019 cowcod assessment (Table F2 pg 179; Percentile 50% (Median)). OFLs are apportioned to the north of 40°10' N lat. (3%) and 40°10' - 34°27' N lat. (97%) based on cumulative historical catch (Table F3 pg 179; 1916-2018).
Darkblotched Rockfish	CW	1	0.45	810.00	732.00	732.00	2017	OFL projected using a 50% SPR in the 2021 catch-only projection update (Table 1; Lee 2021; Agenda Item C.6 Attachment 12 Sept 2021).

Stock/Complex	Area	Category	P*	2026 OFL	2026 ABC	2026 ACL	Assess Year	Notes
Dover Sole	**CW**	**1**	**0.45**	**46,049**	**42,457**	**[50,000]**	**2021**	**OFL projected using a 30% SPR harvest rate in the 2021 full assessment, with assumed removals equal to the adopted ACL of 50,000 mt in 2023-24 (per September 2023 Council request) (Table 2; Agenda Item E.5 Attachment 4 Nov 2023). Default 50k mt ACL.**
English Sole	CW	2	0.45	11,192.00	8,819.00	8,819.00	2013	OFL is based on a 30% SPR harvest rate in the 2013 data-moderate assessment, with ACL = ABC (P* = 0.45) in 2019 projections (Table 3 pg 4; Agenda Item H.6 Attachment 2 November 2019).
Lingcod	N of 4010′ N. lat.	2	0.45	4,163.00	3,534.00	3,534.00	2021	OFLs projected using a 45% SPR harvest rate in the 2021 full assessment of lingcod North of 40°10' N lat. (Table vii pg xvi).
Lingcod	S of 4010′	2	0.45	937.00	795.00	773.00	2021	OFLs projected using a 45% SPR harvest rate in the 2021 full assessment of lingcod South of 40°10' N lat. (Table vii pg xvi). The southern stock of lingcod is below 40% (precautionary), so ACL<ABC with the 40-10 rule applied.
Longnose Skate	CW	2	0.45	1,895.00	1,579.00	1,579.00	2019	OFLs projected using a 45% SPR harvest rate in the 2019 assessment (Table ES-6 pg 20). ACL = ABC.
Longspine Thornyhead	CW	2	0.40	4,166.00	2,575.00	2,575.00	2013	Coastwide OFL projected using a 50% SPR harvest rate in the 2019 catch-only projection update (Table g pg 13). The coastwide ABC (P* = 0.4) is apportioned N (76%) and S (24%) of 34°27' N lat. to determine ACLs based on the 2003-2012 average swept area biomass from the NMFS trawl survey.

Stock/Complex	Area	Category	P*	2026 OFL	2026 ABC	2026 ACL	Assess Year	Notes
Longspine Thornyhead	S of 3427′	2	0.40			618.00	2013	Coastwide OFL projected using a 50% SPR harvest rate in the 2019 catch-only projection update (Table g pg 13). The coastwide ABC (P* = 0.4) is apportioned N (76%) and S (24%) of 34°27' N lat. to determine ACLs based on the 2003-2012 average swept area biomass from the NMFS trawl survey. S of 34°27' N lat. 2025 ACL = ABC 2,697.92 * 0.24 = 647.5; 2026 ACL = ABC 2,574.60 * 0.24 = 617.9.
Longspine Thornyhead	N of 3427′	2	0.40			1,957.00	2013	Coastwide OFL projected using a 50% SPR harvest rate in the 2019 catch-only projection update (Table g pg 13). The coastwide ABC (P* = 0.4) is apportioned N (76%) and S (24%) of 34°27' N lat. to determine ACLs based on the 2003-2012 average swept area biomass from the NMFS trawl survey. N of 34°27' N lat. 2025 ACL = ABC 2,697.92 * 0.76 = 2050.42; 2026 ACL = ABC 2,574.60 * 0.76 = 1956.70.
Pacific Ocean Perch	N of 4010′	2	0.45	3,937.00	3,220.00	3,220.00	2017	OFL projected using a 50% SPR harvest rate in the 2019 Pacific Ocean Perch Updated Harvest Specification Projections (Table 7, Agenda Item H.8 Supplemental Attachment 2 September 2019). ACL = ABC (P* = 0.45).
Petrale Sole	**CW**	**1**	**0.45**	**2,424.00**	**2,255.00**	**2,238.00**	**2023**	**OFL projected using a 30% SPR harvest rate in the 2023 full assessment (Table 30, pg 75). In 2026 only, depletion falls below 25% and 25-5 rule is applied, ACL<ABC.**
Sablefish	**CW**	**1**	**0.45**	**37,310.00**	**34,699.00**	**34,699.0**	**2023**	**OFL projected using a 45% SPR harvest rate in the 2023 limited update assessment (Table vii, pg xvi). ACL split N (78.5%) and S (21.5%) of 36° N. Lat. using a 5-yr rolling avg (2017-2022, no survey 2020) of biomass estimates by area from the NWFSC WCGBT survey.**
Sablefish	**S of 36**	**1**	**0.45**			**7460.20**	**2023**	
Sablefish	**N of 36**	**1**	**0.45**			**27238.4**	**2023**	

Stock/Complex	Area	Category	P*	2026 OFL	2026 ABC	2026 ACL	Assess Year	Notes
Shortspine Thornyhead	**CW**	**2**	**0.40**	**962.46**	**718.96**		**2023**	**OFL projected using a 50% SPR harvest rate in the 2023 full assessment (Table 7, pg 42). Precautionary ACL < ABC, 40-10 rule, ACL split N (70.6%) and S (29.4%) of 34° 27' N. Lat. 5-yr rolling avg of biomass estimates from WCGBT survey. P*=0.40.**
Shortspine Thornyhead	**S of 3427′**	**2**	**0.40**			**210**	**2023**	
Shortspine Thornyhead	**N of 3427′**	**2**	**0.40**			**503**	**2023**	
Spiny Dogfish	CW	2	0.40	1,833.00	1,318.00	1,318.00	2021	OFL is based on a 50% SPR harvest rate projected in the 2021 assessment, with a category 2 sigma, P* = 0.4, ACL=ABC in 2019 projections (Table 4 pg 5; Agenda Item E.3 Supp Revised Attachment 4 November 2021).
Splitnose	S of 4010′	1	0.45	1,686.00	1,469.00	1,469.00	2009	Projections based on the 2009 assessment using the sigmas for 2020 and beyond (Table 2 pg 3; Agenda Item G.2 Attachment 2 September 2023).
Widow Rockfish	**CW**	**1**	**0.45**	**11,382.00**	**10,392.00**	**10,392.00**	**2019**	**OFL based on the 2023 catch-only update of the 2019 update assessment (Table 2; Agenda Item G.2 Attachment 14 Sept 2023).**
Yellowtail Rockfish	**N of 4010′**	**1**	**0.45**	**6,662.14**	**6,022.57**	**6,022.57**	**2017**	**OFL based on the 2023 catch-only update of the 2017 update assessment (Table 1; Agenda Item E.2 Attachment 3 Nov 2023).**
Pacific Cod	CW	3	0.40	3,200.00	1,926.00	1,600.00		OFL is based on the highest historical catch (in 1985). ACL = 50% of the OFL.
Starry Flounder	CW	3	0.40	652.00	392.00	392.00	2017	OFL based on the 2017 DB-SRA assessment of starry flounder (Agenda Item F.6.a Supp SSC Rpt1 November 2017).
Blue/Deacon/Black Rockfish	OR		0.45	471.95	428.07	428.07		Sum of harvest specification contributions of component stocks in the complex.
Black Rockfish	**OR**	**1**	**0.45**	**377.12**	**350.50**	**350.50**	**2023**	**OFL projected using a 50% SPR harvest rate in the 2023 full assessment (Table vii pg xix).**

Stock/Complex	Area	Category	P*	2026 OFL	2026 ABC	2026 ACL	Assess Year	Notes
Blue	OR	2	0.45	94.83	77.57	77.57	2017	OFL projected using a 50% SPR from the 2021 updated harvest specification projections for blue and deacon rockfishes (Table 3; Agenda Item C.8 Attachment 2 September 2021). HG = ABC/ACL for managing OR fisheries.
Nearshore Rockfish North	N of 4010′			104.64	86.16	86.06		Sum of harvest specification contributions of component stocks in the complex.
Black and Yellow	N of 4010′	3	0.45					
Blue	42 - 4010′	2	0.45	33.51	27.41	27.41	2017	OFL from the 2019 catch-only projection update (Table g pg 16; Agenda Item H.5 Supp Revised Attachment 17 September 2019). 10% of the CA OFL is apportioned North of 40°10' N lat. (see Appendix D of the 2017 Assessment, pg 361).N of 40°10' N lat. 2025 OFL = 335.61 * 0.10 = 33.561; 2026 OFL = 335.08 * 0.10 = 33.508.
Blue	WA	3	0.45	7.00	5.45	5.45	2017	Inferred Washington OFL provided in Appendix F (Table F2 pg 373) of the 2017 Blue and Deacon Rockfishes assessment.
Brown	N of 4010′	2	0.45	2.11	1.66	1.66	2013	OFL from the 2019 harvest projection update (Table 1 pg 3; Agenda Item H.6 Attachment 2 November 2019). The portion of the coastwide stock North of 40`10 N lat. based on the proportion of cumulative removals by area during 1916-2012 (~1.15%).N of 40°10' N lat. 2025 OFL = 181.9 * 0.0115 = 2.1; 2026 OFL = 182.5 * 0.0115 = 2.11.
Calico	N of 4010′	3	0.45					
China	WA	2	0.45	9.19	7.38	7.38	2015	OFLs projected from the North Model in the 2015 assessment updated with 2019 catch-only projections (Table r pg 34; Agenda Item H.5 Supp Revised Attachment 19 September 2019).

Stock/Complex	Area	Category	P*	2026 OFL	2026 ABC	2026 ACL	Assess Year	Notes
China	4010′ - 4616′	2	0.45	19.58	15.72	15.72	2015	OFLs projected from the Central Model in the 2015 assessment updated with 2019 catch-only projections (Table r pg 34; Agenda Item H.5 Supp Revised Attachment 19 September 2019).
Copper	**N of 42**	**2**	**0.45**	**18.63**	**15.82**	**15.82**	**2021**	**OFL from the 2023 projection update of the 2021 assessments, based on a stock definition of OR and WA (N of 42) (Table 5 pg 4; Agenda Item G.6 Supp Revised Attachment 2 September 2023).**
Copper	**42 - 4010′**	**1**	**0.45**	**7.37**	**6.85**	**6.75**	**2023**	**OFL projected from the 2023 full assessment; stock defined as CA (S of 42), apportioned to complex (N 4010 = 5.86%) based on estimates of rocky habitat and density of copper rockfish in the area (Table xv, pg xxvii, version Sept2023).**
Gopher	N of 4010′	3	0.45				2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Grass	N of 4010′	3	0.45	0.66	0.51	0.51	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Kelp	N of 4010′	3	0.45	0.01	0.01	0.01	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Olive	N of 4010′	3	0.45	0.32	0.25	0.25	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).

Stock/Complex	Area	Category	P*	2026 OFL	2026 ABC	2026 ACL	Assess Year	Notes
Quillback	WA	3	0.45	2.86	2.23	2.23	2021	OFL projected using a 50% SPR harvest rate MSY proxy from the 2021 assessment of quillback rockfish in WA (November 2021 version Section 4.2 pg 20, per SSC recommendation as constant OFL = 2.86 mt, Category 3, P*=0.45, ABC = 2.22 mt).
Quillback	OR	2	0.45	3.18	2.70	2.70	2021	OFL projected using a 50% SPR harvest rate from the 2021 assessment of quillback rockfish in Oregon (December 2021 version, Table 14 pg 51, per Section 4.1 pg 23).
Treefish	N of 4010′	3	0.45	0.22	0.17	0.17	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Nearshore Rockfish South	S of 4010′			1,142.50	932.56	930.58		Sum of harvest specification contributions of component stocks in the complex.
Black and Yellow	S of 4010′	2	0.45				2019	Gopher and black-and-yellow rockfishes are now combined in the 2019 assessment and resulting harvest specifications (documented in the gopher specifications). OFL based on a 50% SPR harvest rate projected in the 2019 assessment (Table g pg xix).
Blue	4010′ - 3427′	2	0.45	301.57	246.69	246.69	2017	OFL from the 2019 catch-only projection update (Table g pg 16; Agenda Item H.5 Supp Revised Attachment 17 September 2019). 90% of the CA OFL is apportioned South of 40°10' N lat. (see Appendix D of the 2017 Assessment, pg 361).S of 40°10' N lat. 2025 OFL = 335.61 * 0.90 = 302.049; 2026 OFL = 335.08 * 0.90 = 301.572.
Blue	S of 3427′	3	0.45	21.80	16.96	16.96	2017	Appendix G of the 2017 blue and deacon assessment describes calculation of the OFL proxy (pg 376).

Stock/Complex	Area	Category	P*	2026 OFL	2026 ABC	2026 ACL	Assess Year	Notes
Brown	S of 4010′	2	0.45	180.39	142.15	142.15	2013	OFL from the 2019 harvest projection update (Table 1 pg 3; Agenda Item H.6 Attachment 2 November 2019). The portion of the coastwide stock South of 40`10 N lat. based on the proportion of cumulative removals by area during 1916-2012 (~98.8%).S of 40°10' N lat. 2025 OFL = 181.9 * 0.988 = 179.8; 2026 OFL = 182.5 * 0.988 = 180.39.
Calico	S of 4010′	3	0.45					
China	S of 4010′	2	0.45	17.61	14.14	14.14	2015	OFLs projected from the South Model in the 2015 assessment updated with 2019 catch-only projections (Table r pg 34; Agenda Item H.5 Supp Revised Attachment 19 September 2019).
Copper	**S of 4010′**	**1**	**0.45**	**137.97**	**128.31**	**126.33**	**2023**	**OFL projected from the 2023 full assessment; stock defined as CA (S of 42), apportioned to complex (N 4010 = 5.86%) based on estimates of rocky habitat and density of copper rockfish in the area (Table xv, pg xxvii, version Sept2023).**
Gopher	S of 4010′	2	0.45	158.00	131.61	131.61	2019	Gopher and black-and-yellow rockfishes are now combined in the 2019 assessment and resulting harvest specifications (documented in the gopher specifications). OFL based on a 50% SPR harvest rate projected in the 2019 assessment (Table g pg xix).
Grass	S of 4010′	3	0.45	59.63	46.39	46.39	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Kelp	S of 4010′	3	0.45	27.66	21.52	21.52	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).

Stock/Complex	Area	Category	P*	2026 OFL	2026 ABC	2026 ACL	Assess Year	Notes
Olive	S of 4010′	3	0.45	224.64	174.77	174.77	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Treefish	S of 4010′	3	0.45	13.23	10.29	10.29	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Other Fish	CW			286.00	222.50	222.50		Sum of harvest specification contributions of component stocks in the complex.
Kelp Greenling	CA	3	0.45	118.90	92.50	92.50	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Leopard Shark	CW	3	0.45	167.10	130.00	130.00	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Other Flatfish	CW			10,119.37	6,734.30	6,734.30		Sum of harvest specification contributions of component stocks in the complex.
Butter Sole	CW	3	0.40	4.63	2.79	2.79		Based on the average catch during 1994-1998 + a 60% discard rate estimated from the EDCP study (2020 SAFE; Table 2-19 pg 260).
Curlfin Sole	CW	3	0.40	8.24	4.96	4.96		Based on the average catch during 1994-1998 + a 60% discard rate estimated from the EDCP study (2020 SAFE; Table 2-19 pg 260).
Flathead Sole	CW	3	0.40	35.00	21.07	21.07		Max. catch = 35 mt in 2005 (2020 SAFE; Table 2-19 pg 260).
Pacific Sanddab	CW	3	0.40	4,801.00	2,890.20	2,890.20	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Rex Sole	**CW**	**2**	**0.40**	**4430.60**	**3309.66**	**3309.66**	**2023**	**OFL projected using a 30% SPR harvest rate in the 2023 data moderate assessment, with revised projections per Council September 2023 request (Table 4; Agenda Item E.2 Attachment 4 Nov 2023).**

Stock/Complex	Area	Category	P*	2026 OFL	2026 ABC	2026 ACL	Assess Year	Notes
Rock Sole	CW	3	0.40	66.70	40.15	40.15	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Sand Sole	CW	3	0.40	773.20	465.47	465.47	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Pacific Whiting	CW						2021	
Shelf Rockfish North	N of 4010′			1,733.53	1,378.55	1,378.12		Sum of harvest specification contributions of component stocks in the complex.
Bocaccio	N of 4010′	3	0.45	284.01	220.96	220.96	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Bronzespotted	N of 4010′	3	0.45					
Chameleon	N of 4010′	3	0.45					
Chilipepper	**N of 4010′**	**1**	**0.45**	**221.98**	**198.9**	**198.9**	**2015**	**OFL from a 2023 catch-only projection update of the 2015 assessment, based on the corrected 2017 catch-only update to the assessment to correct errors in historical catch estimates between 1916-2016 (based on the 2017 model with time-varying buffers starting in 2015). (Table 1 pg 2; Agenda Item E.2 Attachment 2 Nov 2023). OFLs are apportioned to the North (7%) and South (93%) of 40°10' N lat. based on average historical landings. N of 40°10' N lat. 2025 OFL = 3363.5 * 0.07 = 235.45; 2026 OFL = 3171.2 * 0.07 = 221.98.**

Stock/Complex	Area	Category	P*	2026 OFL	2026 ABC	2026 ACL	Assess Year	Notes
Cowcod	N of 4010′	3	0.45	0.58	0.45	0.45	2019	OFL is based on the 2019 DB-SRA estimate in Appendix B of the 2019 cowcod assessment (Table F2 pg 179; Percentile 50% (Median)). OFLs are apportioned to the north of 40°10' N lat. (3%) and 40°10' - 34°27' N lat. (97%) based on cumulative historical catch (Table F3 pg 179; 1916-2018).
Flag	N of 4010′	3	0.45	0.07	0.06	0.06	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Freckled	N of 4010′	3	0.45					
Greenblotched	N of 4010′	3	0.45	1.28	0.99	0.99	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Greenspotted	**42 - 4010′**	**2**	**0.45**	**88.44**	**69.70**	**69.27**	**2011**	**2024 OFL and ABC values (per SSC recommendation and Council adopted Sept 2023; Agenda Item G.6.a. Supp SSC Rpt 1).**
Greenspotted	WA – OR	3	0.45	6.10	4.75	4.75	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Greenstriped	N of 4010′	3	0.45	623.61	485.17	485.17	2009	OFL based on the MSY associated with the FMSY proxy in the 2009 assessment (Table d pg vii; Yield with SPR50% at SBSPR). The portion of the coastwide stock North (84.5%) and South (15.5%) of 40°10' N lat. is based on the mean of the 2003-2008 swept area biomass estimates from the NMFS trawl survey.
Halfbanded	N of 4010′	3	0.45					
Harlequin	N of 4010′	3	0.45					
Honeycomb	N of 4010′	3	0.45					
Mexican	N of 4010′	3	0.45					

Stock/Complex	Area	Category	P*	2026 OFL	2026 ABC	2026 ACL	Assess Year	Notes
Pink	N of 4010′	3	0.45	0.004	0.003	0.003	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Pinkrose	N of 4010′	3	0.45					
Puget Sound	N of 4010′	3	0.45					
Pygmy	N of 4010′	3	0.45					
Redstripe	N of 4010′	3	0.45	269.91	209.99	209.99	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Rosethorn	N of 4010′	3	0.45	12.90	10.03	10.03	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Rosy	N of 4010′	3	0.45	3.03	2.36	2.36	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Silvergray	N of 4010′	3	0.45	159.42	124.03	124.03	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Speckled	N of 4010′	3	0.45	0.17	0.13	0.13	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Squarespot	42 - 4010′	2	0.45				2021	An OFL is not provided in this geographic area, per Section 4.3 (pg 21) of the 2021 squarespot rockfish data-moderate assessment in California, as after 2000 it is assumed that 100% of removals are from South of 40°10' N lat. and thus no apportionment of the overall OFL was made to this area.

Stock/Complex	Area	Category	P*	2026 OFL	2026 ABC	2026 ACL	Assess Year	Notes
Starry	N of 4010′	3	0.45	0.004	0.003	0.003	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Stripetail	N of 4010′	3	0.45	40.40	31.43	31.43	2011	
Swordspine	N of 4010′	3	0.45	0.0001	0.0001	0.0001	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Tiger	N of 4010′	3	0.45	0.97	0.75	0.75	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Vermilion	**N of 42**	**1 and 2**	**0.45**	**13.65**	**12.64**	**12.64**	**2021**	**OFL from the 2023 projection update of the 2021 assessments, based on a stock definition of OR and WA (N of 42) (Table 6 pg 4; Agenda Item G.6 Supp Revised Attachment 2 September 2023).**
Vermilion	**42 - 4010′**	**1 and 2**	**0.45**	**7.0**	**6.2**	**6.2**	**2021**	**OFL from the 2023 projection update of the 2021 assessments, based on a stock definition of CA (S of 42) (Table 3; Agenda Item E.2 Supp Revised Attachment 5 November 2023). Stock apportioned to complex based on yield from the northern assessment model (4.4%) and southern complex is the remainder (95.6%) of the northern model yields plus the southern model yields.**
Shelf Rockfish South	S of 4010′			1,836.57	1,462.83	1,462.26		Sum of harvest specification contributions of component stocks in the complex.
Bronzespotted	S of 4010′	3	0.45	3.65	2.84	2.84	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Chameleon	S of 4010′	3	0.45					

Stock/Complex	Area	Category	P*	2026 OFL	2026 ABC	2026 ACL	Assess Year	Notes
Flag	S of 4010′	3	0.45	23.42	18.22	18.22	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Freckled	S of 4010′	3	0.45					
Greenblotched	S of 4010′	3	0.45	23.13	18.00	18.00	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Greenspotted	**4010′ - 3427′**	**2**	**0.45**	**42.58**	**33.55**	**33.12**	**2011**	**2024 OFL and ABC values (per SSC recommendation and Council adopted Sept 2023; Agenda Item G.6.a. Supp SSC Rpt 1).**
Greenspotted	**S of 3427′**	**2**	**0.45**	**45.86**	**36.14**	**36.14**	**2011**	**2024 OFL and ABC values (per SSC recommendation and Council adopted Sept 2023; Agenda Item G.6.a. Supp SSC Rpt 1).**
Greenstriped	S of 4010′	3	0.45	114.39	89.00	89.00	2009	OFL based on the MSY associated with the FMSY proxy in the 2009 assessment (Table d pg vii; Yield with SPR50% at SBSPR). The portion of the coastwide stock North (84.5%) and South (15.5%) of 40°10’ N lat. is based on the mean of the 2003-2008 swept area biomass estimates from the NMFS trawl survey.
Halfbanded	S of 4010′	3	0.45					
Harlequin	S of 4010′	3	0.45					
Honeycomb	S of 4010′	3	0.45	9.87	7.68	7.68	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Mexican	S of 4010′	3	0.45	5.05	3.93	3.93	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Pink	S of 4010′	3	0.45	2.50	1.95	1.95	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).

Stock/Complex	Area	Category	P*	2026 OFL	2026 ABC	2026 ACL	Assess Year	Notes
Pinkrose	S of 4010′	3	0.45					
Pygmy	S of 4010′	3	0.45					
Redstripe	S of 4010′	3	0.45	0.49	0.38	0.38	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Rosethorn	S of 4010′	3	0.45	2.13	1.66	1.66	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Rosy	S of 4010′	3	0.45	44.51	34.63	34.63	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Silvergray	S of 4010′	3	0.45	0.54	0.42	0.42	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Speckled	S of 4010′	3	0.45	39.38	30.64	30.64	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Squarespot	S of 4010′	2	0.45	7.12	6.04	5.90	2021	OFL projected using a 50% SPR harvest rate from the 2021 squarespot rockfish data-moderate assessment in CA (Table 17 pg 47 – table incorrectly labeled ACL as ABC and buffer calculations were corrected in final projection values Agenda Item G.6 Attachment 2 September 2023).
Starry	S of 4010′	3	0.45	62.57	48.68	48.68	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).

Stock/Complex	Area	Category	P*	2026 OFL	2026 ABC	2026 ACL	Assess Year	Notes
Stripetail	S of 4010′	3	0.45	23.62	18.38	18.38	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Swordspine	S of 4010′	3	0.45	14.22	11.06	11.06	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Tiger	S of 4010′	3	0.45	0.04	0.03	0.03	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Vermilion	**S of 4010′**	**1 and 2**	**0.45**	**307.1**	**271.5**	**271.5**	**2021**	**OFL from the 2023 projection update of the 2021 assessments, based on a stock definition of CA (S of 42) (Table 3; Agenda Item E.2 Supp Revised Attachment 5 November 2023). Stock apportioned to complex based on yield from the northern assessment model (4.4%) and southern complex is the remainder (95.6%) of the northern model yields plus the southern model yields.**
Yellowtail Rockfish	S of 4010′	3	0.45	1,064.40	828.10	828.10	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011).
Slope Rockfish North	N of 4010′			1,754.23	1,460.22	1,460.22		Sum of harvest specification contributions of component stocks in the complex.
Aurora	N of 4010′	1	0.45	17.22	15.27	15.27	2013	OFL is based on the 2013 assessment, with a category 1 sigma, P* = 0.45, ACL=ABC in projections provided in 2023 (Table 2 pg 3; Agenda Item G.2 Attachment 2 September 2023). The portion of the coastwide stock north (19%) and south (81%) of 40°10' N lat. is based on average survey biomass.
Bank	N of 4010′	3	0.45	17.24	13.41	13.41	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).

Stock/Complex	Area	Category	P*	2026 OFL	2026 ABC	2026 ACL	Assess Year	Notes
Blackgill Rockfish	N of 4010′	3	0.45	4.70	3.66	3.66	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Redbanded	N of 4010′	3	0.45	45.26	35.21	35.21	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Rougheye/Blackspotted	N of 4010′	2	0.45	232.26	183.02	183.02	2013	OFL based on the 2019 catch-only update of the 2013 assessment (Table f pg xi; Agenda Item H.5 Supp Revised Attachment 24 Sept 2019). The coastwide OFLs are apportioned north (98%) and south (2%) based on average landings during 1985-2012.N of 40°10' N. lat. 2025 OFL = 238 * 0.98 = 233.24; 2026 OFL = 237 * 0.98 = 232.26.
Sharpchin	N of 4010′	2	0.45	278.40	219.38	219.38	2013	OFL from the 2019 projection update of the 2013 assessment (Table 15 pg 8; Agenda Item H.8 Supp Attachment 2 September 2019). OFLs are apportioned to the North (80%) and South (20%) of 4010 N lat. based on average swept area biomass estimates from the triennial survey.N of 40°10' N lat. 2025 OFL = 350 * 0.8 = 280; 2026 OFL = 348 * 0.8 = 278.4.
Shortraker	N of 4010′	3	0.45	18.70	14.55	14.55	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Splitnose	N of 4010′	1	0.45	948.00	826.00	826.00	2009	Projections based on the 2009 assessment using the sigmas for 2020 and beyond (Table 3 pg 3; Agenda Item G.2 Attachment 2 September 2023).
Yellowmouth	N of 4010′	3	0.45	192.45	149.72	149.72	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).

Stock/Complex	Area	Category	P*	2026 OFL	2026 ABC	2026 ACL	Assess Year	Notes
Slope Rockfish South	S of 4010′			865.32	690.08	690.08		Sum of harvest specification contributions of component stocks in the complex.
Aurora	S of 4010′	1	0.45	73.40	65.11	65.11	2013	OFL is based on the 2013 assessment, with a category 1 sigma, P* = 0.45, ACL=ABC in projections provided in 2023 (Table 2 pg 3; Agenda Item G.2 Attachment 2 September 2023). The portion of the coastwide stock north (19%) and south (81%) of 40°10' N. lat. is based on average survey biomass.
Bank	S of 4010′	3	0.45	503.22	391.50	391.50	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Blackgill Rockfish	S of 4010′	2	0.45	203.00	166.05	166.05	2017	Values from a 2019 catch-only update/projection from the 2017 assessment update of blackgill rockfish in the Conception and Monterey INPFC areas (Table f pg x; Agenda Item H.5 Attachment 16 September 2019).
Pacific Ocean Perch	S of 4010′	3	0.45					
Redbanded	S of 4010′	3	0.45	10.41	8.10	8.10	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Rougheye/Blackspotted	S of 4010′	2	0.45	4.74	3.74	3.74	2013	OFL based on the 2019 catch-only update of the 2013 assessment (Table f pg xi; Agenda Item H.5 Supp Revised Attachment 24 Sept 2019). The coastwide OFLs are apportioned north (98%) and south (2%) based on average landings during 1985-2012.S of 40°10' N. lat. 2025 OFL = 238 * 0.02 = 4.76; 2026 OFL = 237 * 0.02 = 4.74.

Stock/Complex	Area	Category	P*	2026 OFL	2026 ABC	2026 ACL	Assess Year	Notes
Sharpchin	S of 4010′	2	0.45	69.60	54.84	54.84	2013	OFL from the 2019 projection update of the 2013 assessment (Table 15 pg 8; Agenda Item H.8 Supp Attachment 2 September 2019). OFLs are apportioned to the North (80%) and South (20%) of 40°10' N lat. based on average swept area biomass estimates from the triennial survey.S of 40°10' N lat. 2025 OFL = 350 * 0.2 = 70; 2026 OFL = 348 * 0.2 = 69.6.
Shortraker	S of 4010′	3	0.45	0.10	0.08	0.08	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).
Yellowmouth	S of 4010′	3	0.45	0.85	0.66	0.66	2011	Revisions to OFL Contributions for Category 3 Stocks (Dick 2011). Original NOAA Technical Memo NOAA-TM-NMFS-SWFSC-460 (Dick and MacCall 2010).