Agenda Item H.7
Attachment 1 (***Electronic Only***)
March 2025

INITIAL REVIEW DRAFT

Preliminary Draft Environmental Assessment/Regulatory Impact Review/ Regulatory Flexibility Analysis/MSA Analysis for Proposed Amendment to the Groundfish Fishery Management Plan

Limited Entry Fixed Gear Actions

February 2025

Lead Agency:	National Marine Fisheries Service, West Coast Region National Oceanic and Atmospheric Administration
Responsible Official:	Jennifer Quan, Regional Administrator West Coast Regional Office, National Marine Fisheries Service
For further information contact:	Jessi Waller, Pacific Fishery Management Council Megan Mackey, National Marine Fisheries Service West Coast Region

Abstract: This Preliminary Draft Environmental Assessment/Regulatory Impact Review/Regulatory Flexibility Act Analysis/Magnuson-Stevens Fishery Conservation and Management Act Analysis document analyzes proposed management measures that would apply to vessels registered to limited entry fixed gear (LEFG) endorsed permits and LEFG permit owners in the Pacific Coast groundfish fishery. This action is a follow up to the LEFG tier sablefish program review that was completed in 2021. However, aspects of this action are proposed to be extended to all LEFG participants (including those not endorsed for sablefish tiers). The measures under consideration include: adding flexibility to gear endorsements, removing the base permit designation of LEFG permits, requiring reporting of permit prices when a permit is sold, removing the start and end times of the primary tier season in regulations, and developing a cost recovery program for the LEFG tier fishery.

List of Acronyms and Abbreviations

Table 1. List of Acronyms and Abbreviations.

Acronym or Abbreviation	Meaning
ABC	acceptable biological catch
ACL	annual catch limit
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
Council	Pacific Fishery Management Council
DPS	distinct population segment
E.O.	Executive Order
EA	Environmental Assessment
EEZ	Exclusive Economic Zone
EFH	essential fish habitat
ESA	Endangered Species Act
FMP	fishery management plan
FONSI	Finding of No Significant Impact
FR	*Federal Register*
FRFA	Final Regulatory Flexibility Analysis
ft	foot or feet
IFQ	Individual fishing quota
IRFA	Initial Regulatory Flexibility Analysis
lb(s)	pound(s)
LE	limited entry
LEFG	limited entry fixed gear
LOA	length overall
m	meter or meters
Magnuson-Stevens Act	Magnuson-Stevens Fishery Conservation and Management Act
MMPA	Marine Mammal Protection Act
t	tonne, or metric ton
NAO	NOAA Administrative Order
NEPA	National Environmental Policy Act
NMFS	National Marine Fishery Service
NOAA	National Oceanic and Atmospheric Administration
OA	open access
OFL	Overfishing limit
OMB	Office of Management and Budget
PBR	potential biological removal
PPA	Preliminary preferred alternative
PRA	Paperwork Reduction Act
RCA	Rockfish Conservation Area
RFA	Regulatory Flexibility Act
RFFA	reasonably foreseeable future action
RIR	Regulatory Impact Review
SAFE	Stock Assessment and Fishery Evaluation
SBA	Small Business Act
Secretary	Secretary of Commerce
TAC	total allowable catch
U.S.	United States
USFWS	United States Fish and Wildlife Service
WCGOP	West Coast Groundfish Observer Program

Table of Contents

List of Tables

List of Figures

1 Introduction

This document analyzes proposed management measures that would apply to vessels registered to limited entry fixed gear (LEFG) endorsed permits and LEFG permit owners in the Pacific Coast groundfish fishery. The measures under consideration include: adding flexibility to gear endorsements, removing the base permit designation of LEFG permits, requiring reporting of permit prices when a LEFG permit is sold, removing the start and end times of the primary tier season in regulations, and developing a cost recovery program for the LEFG tier fishery.

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

This EA implements the NEPA statute (42 U.S.C. §§ 4321 et seq.).

1.1 Purpose and Need

The Council adopted the following purpose and need in September 2024:

> Based on the most recent limited entry fixed gear (LEFG) primary sablefish program review, the program is working effectively. However, with changing and unpredictable ocean and market conditions, and an aging fleet, there is a continued need to increase the flexibility to all LEFG participants to utilize their quota in the most efficient way possible and encourage new participation. The purposes of this action are to (1) consider allowing LEFG permitted vessels to use different non-trawl gear(s) (besides the gear endorsed on their permit) to harvest their LEFG quotas, (2) increase efficiency and opportunity for LEFG sablefish tier vessels and participants, (3) gather additional socioeconomic information to support future program changes, and (4) reduce administrative burdens, where practicable. This action is needed to provide increased flexibility to LEFG participants while reducing administrative burdens.
>
> Additionally, the NMFS has determined that elements of the LEFG sablefish primary fishery (i.e., tier program) are considered cost recoverable. The purpose of this action is to also develop a cost recovery program. The action is needed to meet the Magnuson-Stevens Act requirements for limited access privilege programs (LAPP) (16 U.S.C. §§ 1853a(e) and 1854(d)(2)).

1.2 History of the LEFG Fishery

In 1986 and 1987, the Groundfish Advisory Subpanel (GAP) raised concerns about the future of the West Coast groundfish fishery to the Council. To address some of those concerns, the Council initiated considerations of a limited entry (LE) program and appointed the Limited Entry Committee (LEC), in April of 1987, to study the issue. The LEC consisted of stakeholders both in support of and against limited entry in the groundfish fishery. In July of that year, the LEC recommended and the Council adopted a control or

"cut off" date of July 11, 1987. The intention of the control date was to signal to new entrants that they may be at risk of not receiving a permit. While their ultimate recommendation was complex, the LEC noted in their final report to the Council that the complexity of the recommendation was due to the complexity of the fishery being managed, and of the efforts to make the fishery as fair and equitable as possible.

There were three approaches proposed to designing the LE system:

1. Issue a separate permit for each gear (trawl, pot/trap, longline), allowing expansion of vessel numbers as vessels issued multiple permits could sell permits,
2. Issue a single permit for all gears, allowing expansion of effort as vessels shift from less powerful (longline) to more powerful gears (trawl), and
3. Issues permits good for only certain gears and create one permit for each vessel covering historical gears used.

   (Amendment 6 to the Groundfish Fishery Management Plan (FMP) Final Environmental Impact Statement, FEIS).

Ultimately, the LEC recommended the third approach (which was adopted by the Council), as it was "anticipated to be the most effective of the three in that it more tightly controls two aspects of effort: the number of vessels and type of gear used" (page 4-2 of Amendment 6 FEIS). Amendment 6 to the Groundfish FMP created three LE permits: trawl endorsed, longline endorsed, and pot/trap endorsed. For all other gear types (called "exempted gears" in Amendment 6 and now known as open access (OA) gears), there would be a separate allocation for those gears where acceptable biological catch (ABC) limits were fully harvested based on historical participation. For those species that were under-attained, no immediate allocations were made, although criteria were developed if allocations ever needed to be established (Section 11.2.2 of the Groundfish FMP). Amendment 6 also allowed for vessels registered to LE permits to use OA gears for which they were not endorsed, but any catch would count towards the LE allocation (known as "crossover provisions").

Recognizing that a license limitation program would only slow the growth in fishery capacity, the Council moved immediately to consideration of an individual fishing quota (IFQ) program for the fixed gear sablefish fishery (Amendment 8). Work on this program continued from 1991 through 1994. In the fall of 1994, the Council set its deliberations aside in response to a request from the West Coast Congressional delegation to defer action until the Magnuson-Stevens Act reauthorization was completed. In its 1996 re-authorization of the Magnuson-Stevens Act, Congress included a moratorium on implementing new, individual quota programs through October 1, 2000, bringing deliberations on a sablefish IFQ Program to a complete halt.

With no IFQ program able to be developed at the time, the Council looked to other methods to address what had become a derby fishery. Over the course of a decade (1985 to 1995), the fixed gear season for sablefish had changed from year-round to seven days. The 1996 season was set at only five days. Both 1995 and 1996 seasons were followed by a "mop up" season with trip limits. The EA/RIR for Amendment 9 to the Groundfish FMP described the issue as follows:

> "While the license limitation program has limited the number of vessels which may participate in the groundfish fishery, there is still substantial opportunity for vessels to move from a non-sablefish segment of the limited entry groundfish fishery to the sablefish fishery."

To address concerns of expanding participation in the fixed gear sablefish fishery, Amendment 9 to the FMP established a sablefish endorsement for LEFG permits in 1997. This endorsement was required for LEFG permitted vessels to access the primary fishery. Amendment 9 recognized that many of the problems associated with the derby fishery could be alleviated with cumulative limits, but there would still be a

potential issue with increasing capacity and participation in the fishery at the time (and even under the cumulative limit system being considered by the Council). Ultimately, 168 LEFG permits were issued a sablefish endorsement. Even with the sablefish endorsements, the season was anticipated to be as short as three days in 1997, so equal limits were placed on each permit to try and extend the season. Due to the Congressional moratorium on LAPPs, this was seen as the only way to lengthen the season and start to address safety issues associated with the derby style fishery.

A 1998 regulatory amendment established permit tiers for fixed gear sablefish endorsed vessels. Permits were assigned to one of three tiers based on catch history. The highest tier (Tier 1) received fishing opportunities in the form of cumulative limits that were 3.85 times the lowest tier (Tier 3); the middle tier limits (Tier 2) were 1.75 times the lowest tier limits. This change to a tier system was intended to address the inequitable allocation system (i.e., the equal limits placed on all permits no matter the history) that was implemented with Amendment 9. While this did not solve the entire issue with the derby style nature of the tier fishery, it did allocate opportunity based on the history of the participant.

Amendment 14 to the Groundfish FMP then established the permit stacking program, which allowed up to three tier permits to be placed on a vessel and for the vessel to fish up to the combined limits for all three permits. It also authorized extension of the season (once the Congressional moratorium on catch share programs was lifted). Amendment 14 was implemented August 7, 2001, and the primary fishery ran from August 15 to October 31. Beginning in 2002, the fishery was able to run for its full intended length (April 1 through October 31).

A 2006 regulatory amendment required the submission of ownership information and fully implemented the owner-on-board requirement. This amendment implemented final portions of Amendment 14 and included elements that "prevent[ed] excessive fleet consolidation, ensuring processor access to sablefish landings from the primary season, and maintaining the character of the fleet through owner-on-board requirements." There were six components to this rule:

1. Requirement for permit owners and holders to document their ownership interests to ensure that no person holds or has ownership interests in more than three permits;
2. Owner-on-board requirement for permit owners that didn't own a sablefish-endorsed permit prior to November 1, 2000;
3. Opportunity for permit owners to add spouse as co-owner;
4. Vessels that did not meet minimum historic frozen sablefish landing requirements would be allowed to process at sea;
5. Requirement of certification of sablefish landing midseason for permit transfers; and
6. Defined "base permit".

The first review of the LEFG program was finalized in June 2014. From that review, there were a series of research needs and recommendations made by the Council for future consideration as well as recommendations regarding the three permit own-and-hold regulations and requirements for electronic reporting. One of the recommendations was to combine the pot and longline endorsements into a single fixed gear endorsement; however, it was removed from the groundfish workload list in November 2018 as it was considered too controversial at the time. A regulatory amendment in 2016 implemented these latter two recommendations along with six other major actions as follows:

1. Required electronic fish tickets (e-tix) for all commercial landings of sablefish delivered to West Coast buyers;
2. Provided qualified vessel owners an exemption to the ownership limitation of three permits in the LEFG fishery;
3. Allowed a single vessel to jointly register a trawl and LEFG endorsed permit(s);
4. Prohibited vessels granted exemptions for processing sablefish at-sea in the 2006 amendment from doing so in the shorebased IFQ fishery;

5. Clarified that sablefish catch in incidental OA fisheries is counted against the OA allocation and not deducted from the commercial harvest guidelines (HG);
6. Required any vessel with VMS to send in a declaration;
7. Updated and simplified equipment requirements for e-tix; and
8. Clarified language prohibiting retention of groundfish species taken in the LEFG fishery beyond allowable quota.

In 2023-2024 harvest specifications, the Council recommended and NMFS approved an extension to the end of primary tier season from October 31 to December 31. As described in the proposed rule (87 FR 62676), the "seven-month season structure, as opposed to a year-long season, was intended to allow for timely catch accounting so that the sector allocation was not exceeded. As of 2017, commercial vessels landing sablefish are required to submit e-tickets within 24 hours of offload, "to improve timeliness and accuracy of sablefish catch reporting in the limited entry fixed gear fisheries and open access fisheries" (§ 660.213). Given the increase in speed of modern catch accounting, the original reason for the seven-month season is no longer applicable." A season extension (which had occurred via emergency rule in 2020 and 2021) was anticipated to provide opportunity and flexibility for vessels to fish their full tier limits and maximize economic benefits.

The latest groundfish FMP amendment that affected the species and limits that could be caught by LEFG endorsed permits was Amendment 32. In the 2023-24 harvest specifications, the Council approved the use of select non-bottom contact gear within the non-trawl rockfish conservation area (RCA) to target midwater rockfish. Those non-bottom contact gears are not defined as fixed gear and, therefore, under the crossover provisions in place at the time, LEFG vessels would have been required to fish under OA limits with the catch counting towards the LE allocations. Amendment 32 expanded the crossover provision to allow LEFG vessels to fish non-bottom contacts gears up to the LEFG limit, regardless of the gear endorsed on their permit.

1.3 History of this Action

The Council began its second review of the LEFG permit stacking program in September 2020. In June 2022, the Council completed its review with the adoption of the final report, including research and data needs and recommendation for program changes.

In March 2023, under Workload and New Management Measure Priorities, the Council prioritized a series of potential management measures off the groundfish workload list related to the LEFG program and to gear marking and other entanglement risk reduction measures, for vessels operating under the Groundfish FMP that use pot and bottom longline gear.

In June 2023, the Council considered those management measures and provided guidance on the development of a range of alternatives (ROA) for these measures. The Council also recommended that these items be split into two packages: 1) fixed gear marking and entanglement risk reduction, and 2) LEFG follow-on actions. The Council took final action on the fixed gear marking and entanglement risk reduction measures in June 2024, and the associated regulations are anticipated to be in place by the start of 2026.

In September 2023, the Council adopted a purpose and need and ROA for this action. At its March 2025 meeting, the Council is scheduled to adopt a preliminary preferred alternative (PPA) for this action, with a final preferred alternative (FPA) tentatively scheduled for June 2025.

1.4 Description of Management Area

The management area for this action is the Exclusive Economic Zone (EEZ) –defined as the waters in the area 3–200 nautical miles off the coasts of Washington, Oregon, and California –and the communities that engage in fishing in the EEZ off these states. Figure 3-1 in the Groundfish FMP depicts this management area and is incorporated by reference.

1.5 Description of the Fishery

1.5.1 Regulatory Requirements

To fish in the LEFG sector, vessels are required to be registered to a LEFG permit. Currently, each LEFG permit has a gear endorsement which designates the allowable gear type, bottom longline and/or pot/trap (§660.25(3)(ii)), that can be used by the vessel. Meaning, if an LEFG vessel is to harvest the LEFG trip limit (or tier limit) for a particular species or complex, it must use the gear for which it is endorsed. Specific management measures for the LEFG sector are defined at 50 CFR subpart E with LEFG groundfish trip limits found under the same subpart in Table 2 North and Table 2 South.

There are two fisheries within the LEFG sector:

1. LEFG sablefish primary (tier) fishery, which is managed with tier limits (§660.25(b)(vi)(A)) for sablefish north of 36° N. lat. ("sablefish north") rather than cumulative trip limits (§660.231); and
2. LEFG trip limit fishery, which is managed by cumulative trip limits.

In addition to endorsed bottom longline and pot gear, LEFG vessels are permitted to fish inside or outside the non-trawl RCA using non-bottom contact gear (stationary vertical jig gear or groundfish troll gear; 50 CFR 660.60(h)(7)(ii)(A)(2)) up to their LEFG trip limits. If a vessel chooses to fish gears other than that endorsed on their permit (or the two non-bottom contact gear types), then crossover provisions would apply (§660.60(h)(7)). Crossover provisions mean that vessels are restricted to the lower trip limit or other management measures, if they are fishing in a different area or using a gear for which they are not endorsed. For all other gears and areas, if vessels registered to an LEFG permit fish with OA gear[1] at any time, they would be subject to the lower, more restrictive trip limit for that fishing period. In most cases, this would be the OA trip limits (§660.230(b)(2)). In select situations, if the OA trip limit is higher than the LEFG limit, LEFG vessels would be restricted to the LEFG trip limit (§660.60(h)(7)(ii)). Regardless of the gear type used by a vessel registered to an LEFG permit, any groundfish retained while using OA gear and/or during a crossover trip would count against the LEFG sector allocation (§660.60(h)(7)(ii)(A)). Finally, vessels are not allowed to retain two separate (i.e., LEFG and OA) trip limits (§660.60(h)(7)(ii)(A)) on the same trip. For example, if an LEFG vessel targets sablefish using its endorsed gear (e.g., bottom longline) and then switches to OA gear (e.g., vertical hook-and-line gear anchored to the bottom) to target rockfish on the same trip, the vessel could only retain the OA trip limit of that rockfish and sablefish (if applicable) (§660.60(h)(7)(ii)(A)). LEFG fishery participants are prohibited from operating within the boundaries of the non-trawl RCA, unless using the non-bottom contact gear types, and other specified groundfish conservation areas (GCAs) and essential fish habitat conservation areas (EFHCAs), regardless of gear type, unless transiting (§§660.212(c) and 660.230(d)(11)(iii)). Under §660.230(d), LEFG vessels allowed to operate "within a GCA (e.g., fishing for "other flatfish" with hook-and-line gear only) may not simultaneously have other gear on board the vessel that is unlawful to use in the [LEFG] fishery." LEFG vessels are required to use vessel monitoring systems (VMS; §660.14(b)(1)) as well as carry an observer if

[1] OA gear is defined under §660.11 as "all gear types except 1) bottom longline or trap (or pot) gear fished with a vessel that has a limited entry permit affixed with a gear endorsement for that gear 2) Groundfish trawl."

selected for coverage (§660.18).

1.5.2 Participants

There are currently a total of 223 LEFG endorsed permits; the majority of which are endorsed for bottom longline gear (Table 1-1). All pot and dual-endorsed (i.e., registered to both pot and bottom longline) LEFG permits are endorsed to fish in the sablefish tier fishery. Only 132 of the 191 bottom longline permits include a sablefish endorsement. The remaining 59 permits are only permitted to fish in the LE trip limit fishery with bottom longline gear (noting exceptions described above). The majority of LEFG permits were registered to a vessel (69 percent of all LEFG permits in 2024 and 62 percent in 2023). However, this was a significant drop compared to 2022, where 86 percent of all LEFG permits were registered to a vessel (see Table 1 of Agenda Item G.4, Attachment 2, September 2023).

Table 1-1: Number of LEFG endorsed permits by gear type and number of permits with a sablefish endorsement by gear endorsement in 2024.

Gear Endorsement	Number of Permits	Registered[a/]	Number with Sablefish Endorsement	Registered[b/]
Bottom Longline	191	130	132	128
Pot	28	22	28	28
Bottom Longline and Pot	4	2	4	4

a/Registered for full year as of 12/3. There were 72 permits that were registered for part of the year (61 bottom longline, 10 pot, 1 bottom longline/pot) and the remaining 12 bottom longline permits were latent (i.e., not registered to a vessel for the entire year).
b/ Registered at some point during the primary season of April 1-December 2024.

Each permit is endorsed for a specific vessel length, which was established during Amendment 6, when the LE system was established. Vessel length was used to put an upward limit on capacity of the LE fleet instead of horsepower or a combination of length and volume. Each length is associated with a given harvest capacity rating (Table 3 of 50 CFR 660 Subpart C). Permits may be used on vessels up to five feet longer than the endorsed length to provide flexibility and, for the sablefish tier fishery, at least one permit (of the maximum three) must meet this requirement (50 CFR 660.25(b)(3)(iii)(C)). If permits are combined, then the resulting endorsement will be the sum of the permits (50 CFR 660.25(b)(3)(iii)(A)). For sablefish endorsements specifically, a combination of permits would only maintain a sablefish endorsement if both permits were already endorsed, and the resulting permit would be the same as the largest cumulative landing of the permits being combined (50 CFR 660.25(b)(4)(ii)(A)).

Pot endorsed permits on average are longer than bottom longline or dual-endorsed permits, with the maximum length of a pot permit exceeding the longest bottom longline permit by over 40 ft length overall (LOA). Dual endorsed permits have a smaller range of lengths and are on average with bottom longline permits.

Table 1-2. Average, minimum, and maximum endorsement length (LOA) by gear for LEFG endorsed permits.

Gear Endorsement	Average Length	Minimum Length	Maximum Length
Bottom Longline	46.2	17	97.3
Pot	59.4	32	138.0
Bottom Longline and Pot	49.3	40	55.3

The number of participating vessels in the LEFG fishery has varied over time since the implementation of the tier fishery in 2002 (Figure 1-1). Recently (2020-2024), overall participation has declined to its lowest level since 2005. Participation by gear has varied over time, with the number of vessels using only bottom longline vessels declining and the number of vessels using only pot gear being variable. The number of vessels using other hook-and-line gears (i.e., OA gears) has been increasing over the time series. In the last ten years (2015-2024), the number of vessels using both bottom longline and pot gears has ranged from six to 12, or between 4-9 percent of the active fishing fleet annually (second column from the left; Table 1-3). Fewer than three vessels annually (five in total) utilized pot gear and other styles of hook-and-line gear from 2015-2024.

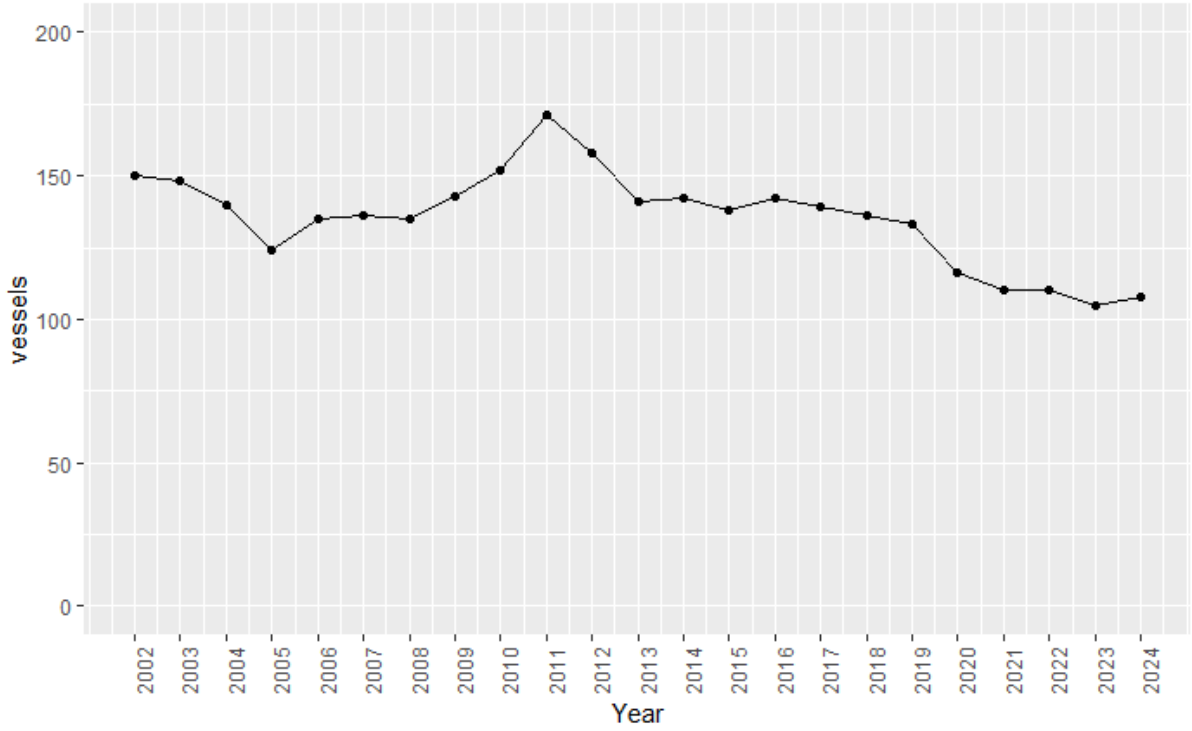

Figure 1-1. Number of LEFG vessels by year 2002-2024.

Table 1-3. Number of LEFG vessels by gear type used in a single year, 2015-2024

Year	Bottom Longline Only	Pot Only	Other Hook-and-Line Gear Only	Bottom Longline/ Other Hook-and Line	Pot/ Bottom Longline [a/]	Total
2015	88	12	5	27	6	138
2016	94	10		31	7	142
2017	89	11	5	27	7	139
2018	91	10	4	20	11	136
2019	85	8	4	24	12	133
2020	76	13		21	6	116
2021	69	11	6	15	9	110
2022	62	11	8	19	10	110
2023	63	11	8	16	6	104
2024	62	6	13	16	8	105

a/ Due to confidentiality, these counts include vessels that fished pot and other hook-and-line gears in a single year and fished all three gear types (pot, bottom longline, and other hook-and-line gears) in a single year

Looking at a recent period (2015-2024), in terms of gear utilization, the proportion of groundfish taken in the LEFG sector by bottom longline versus pot gear has declined with pot gear landings increasing since 2020. From 2015-2019, bottom longline gears accounted for approximately 81 percent of landings whereas since 2020, it has been 70 percent. The decline in the proportion of bottom longline landings corresponds with the decline in the number (and proportion) of vessels using bottom longline gear seen above in Table 1-3. The number of pot vessels has varied (14-24 annually) yet, as the proportion of vessels using pot gear has generally been increasing, so have the absolute and proportional landings of pot gear landings. Bottom longline landings have decreased overall when comparing pre-2020 to 2020 and beyond, but there has been an uptick in the amount of other hook and line gear landings in the LEFG sector since that time.

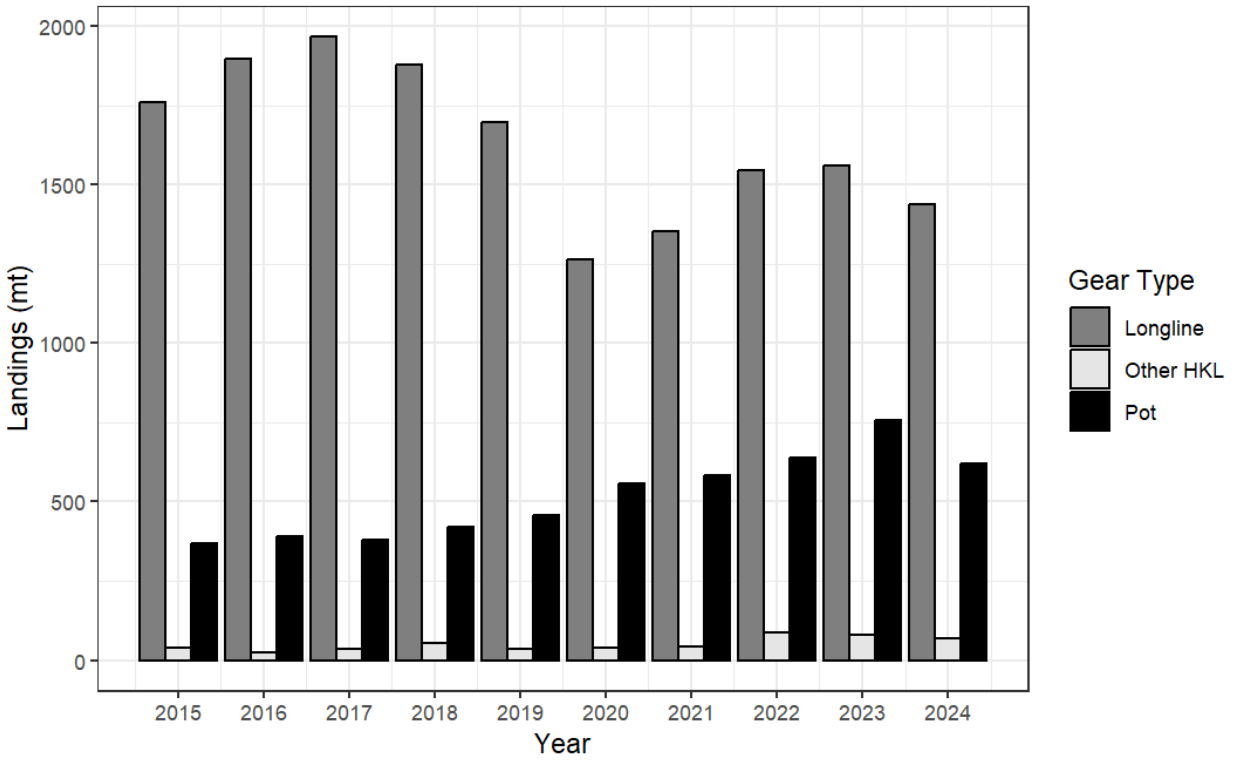

Figure 1-2. Landings by gear type by LEFG vessels, 2015-2024 (12/6).

Vessels fishing for sablefish (north or south of 36° N. lat.) with non-sablefish endorsed permits (the "trip limit" fishery) or those with sablefish endorsed permits outside of the tier season (i.e., before April 1 or after a vessel has caught its tier limits) are subject to cumulative landing limits (weekly and bimonthly). Vessels registered to sablefish-endorsed permits (primary vessels) can fish their tier(s) for sablefish north any time after April 1, when and how they choose. Other non-sablefish species are subject to trip limits at the vessel level. LEFG vessels using pot gear primarily harvest sablefish (98 percent of total revenue on average from 2020-2024), with landings by pot gear coinciding generally with the start of the tier season (Figure 1-3, dashed line). This trend is likely due to all pot-endorsed permits having a sablefish endorsement (i.e. tier permit) and pot gear being more selective to sablefish compared to bottom longline (and other hook-and-line) gears. Vessels using bottom longline gear, on the other hand, see an average of 25 percent of revenue come from landings of non-sablefish species. Landings of groundfish (sablefish and non-sablefish) with bottom longline gears begin at the start of the year and are not tied directly to the tier season opening (Figure 1-3, solid line). Other non-trawl gear landings are not included in the figure below, but represent a very limited total landings.

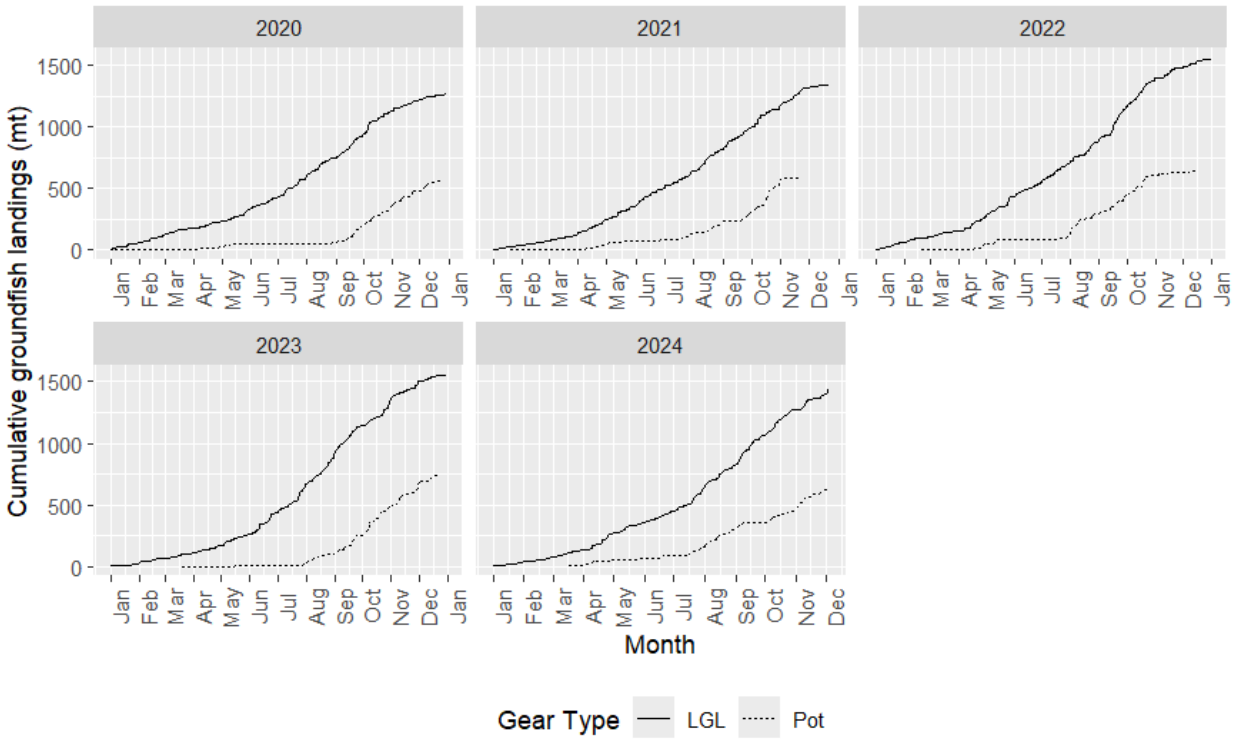

Figure 1-3. Cumulative groundfish landings by gear type (bottom longline (LGL) and pot gear), from LEFG vessels, 2020-2024. Landings by other hook-and-line gears not included.

Spatially, there is a difference in the location in where the hook-and-line gear and pot gear in the non-catch shares sector are fished. Figure 1-4 and Figure 1-5 below are reproduced from the West Coast Groundfish Observer Program (WCGOP) Fishing Effort Report (Somers, et al. 2023). While these maps combine all non-catch-shares fishing activity (LEFG and OA), they also show the likely distribution of effort by LEFG vessels. Hook-and-line effort (which includes all bottom longline) has a more coastwide distribution compared to pot activity, which is concentrated more to the north. This is especially true for 2021, where the effort was concentrated near the Oregon/Washington border and northern California (right panel).

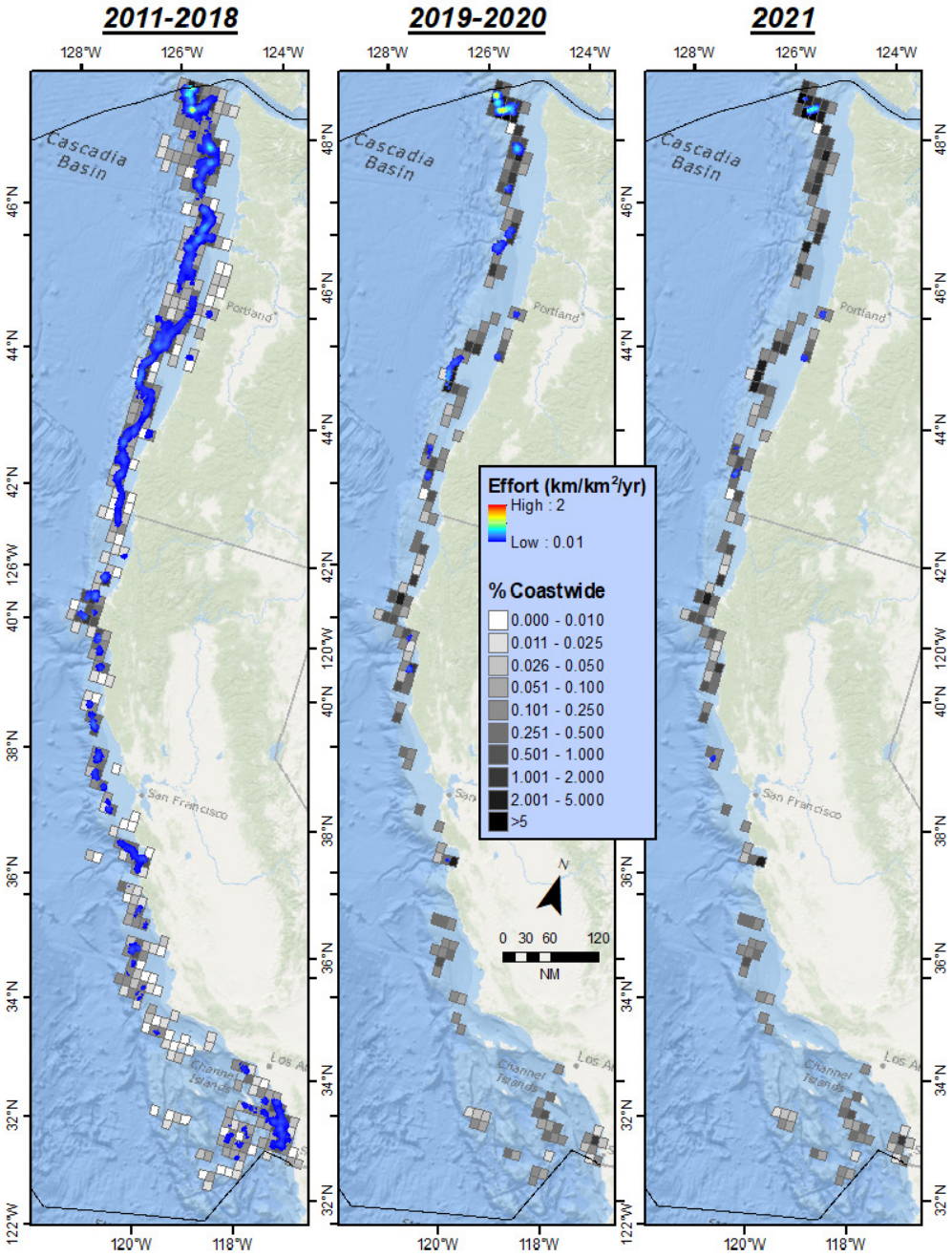

Figure 35. Spatial distribution and intensity of fishing effort by the non-catch shares hook-and-line sector. Intensity (units: km/km²/yr) is depicted by a color ramp of cool (low) to warm (high) colors. The overall footprint of fishing for each time period is depicted in grayscale, with darker (black) tones depicting a higher relative contribution to coastwide effort within 10 × 10-min cells.

52

Figure 1-4. Spatial distribution and intensity of fishing effort by non-catch shares hook-and-line sector, 2011-2021. Reproduction of Figure 35 from Somers, et. al 2023.

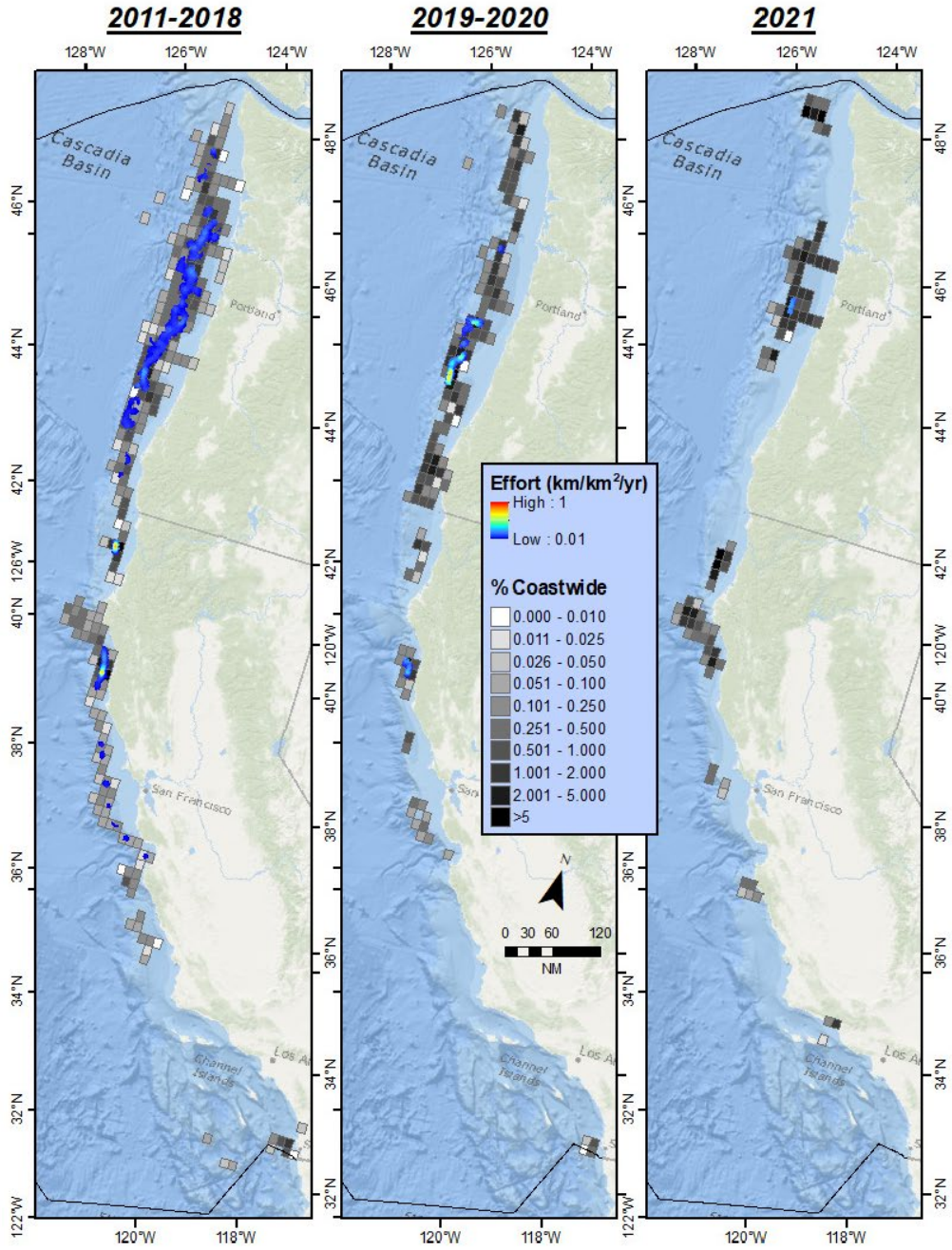

Figure 28. Spatial distribution and intensity of fishing effort by the non-catch shares pot sector. Intensity (units: km/km²/yr) is depicted by a color ramp of cool (low) to warm (high) colors. The overall footprint of fishing for each time period is depicted in grayscale, with darker (black) tones depicting a higher relative contribution to coastwide effort within 10 × 10-min cells.

47

Figure 1-5. Spatial distribution and intensity of fishing effort by non-catch shares pot sector. Reproduction of Figure 28 from Somers, et. al 2023.

1.5.3 LEFG and Community

The LEFG fishery occurs coastwide, noting that the primary tier fishery for sablefish north occurs only north of 36° N. lat. Table 1-4 shows the average landings, proportion of landings, average ex-vessel revenue (2024$), and average proportion of ex-vessel revenue from the LEFG fishery (sablefish and non-sablefish) from 2015-2019 and 2020-2024 (through December 9, 2024). Additionally, it shows the number of vessels and dealers that delivered or purchased fish in that port, in total, for those two periods.

Table 1-4. Average landings (mt) and revenue (1000s of $2024) and associated percentages for LEFG landings by port group and time period (2015-2019, 2020- Dec. 9 2024). Number of distinct vessels and dealers by port group and time period.

	2015-2019						2020-2024					
Port Group	Avg. Land . (mt)	Avg.% of Land.	Avg. Ex-Ves. Rev. (2024$)	Avg. % of Rev	Dist. # of Ves	Dist. # of Deal	Avg. Land . (mt)	Avg.% of Land.	Avg. Ex-Ves. Rev. (2024$)	Avg. % of Rev	Dist. # of Ves	Dist. # of Deal
PUGET SOUND	266.4	11.7%	$2,121	11.8%	18	6	308.4	14.7%	$1,241	12.2%	20	4
NORTH WA COAST	99.5	4.3%	$680	3.7%	10	14	46.4	2.1%	$179	1.7%	8	10
SOUTH AND CENTRAL WA COAST	134.5	5.9%	$1,130	6.2%	20	14	106.9	4.9%	$412	4.1%	16	17
ASTORIA	90.5	4.0%	$756	4.1%	6	3	127.6	5.9%	$531	5.2%	11	6
NEWPORT	376.5	16.5%	$3,090	17.2%	26	20	436.2	20.4%	$1,700	16.7%	24	16
COOS BAY	154.1	6.8%	$1,359	7.6%	20	12	146.6	6.8%	$729	6.9%	13	13
BROOKINGS	98.8	4.4%	$641	3.6%	15	14	78.3	3.7%	$317	3.1%	7	18
CRESCENT CITY	52.6	2.3%	$331	1.8%	6	20	57.8	2.7%	$222	2.3%	4	17
EUREKA	65.4	2.9%	$415	2.3%	9	11	115.8	5.4%	$450	4.4%	9	14
FORT BRAGG	203.0	8.9%	$861	4.8%	17	26	190.6	8.9%	$637	6.3%	12	18
BODEGA BAY	44.0	1.9%	$390	2.1%	8	20	12.7	0.6%	$73	0.7%	3	6
SAN FRANCISCO	34.0	1.5%	$288	1.6%	11	41	27.3	1.3%	$122	1.2%	7	31
MONTEREY	127.7	5.6%	$730	4.2%	23	20	189.4	9.0%	$1,004	10.2%	17	16
MORRO	124.3	5.5%	$903	5.1%	20	29	71.5	3.3%	$493	5.0%	9	21
SANTA BARBARA	280.3	12.3%	$3,176	17.8%	35	66	149.8	7.2%	$1,463	14.8%	38	53
LOS ANGELES	50.3	2.2%	$492	2.8%	17	19	31.1	1.5%	$264	2.6%	10	10
SAN DIEGO	77.8	3.4%	$572	3.2%	11	23	29.0	1.4%	$247	2.5%	10	23

Port involvement and port dependence are two measures to evaluate the level of importance of the LEFG fishery on West Coast port communities. A port's involvement and dependence on a particular fishery is indicated by several factors, including landings made to the port, the degree to which the landings are processed in the port, whether the vessels making the landings are homeported there, and whether the owners and crew reside in the community or elsewhere. Port involvement is a measure of a port's contribution to the West Coast LEFG fishery landings (measured as the ex-vessel value from the fishery landed in the area as a share of the total ex-vessel value of the entire LEFG fishery – sablefish and non-sablefish). Dependence is measured as the ex-vessel value from the LEFG fishery relative to other fishery landings in that port; dependence is thereby affected by the activities associated with a particular fishery in comparison to other fisheries and the port economy as a whole, and whether the reduction of one activity is likely to result in an increase in some other activity.

For the last five years (2020 through December 2024), the communities that were the most involved in the LEFG fishery were Newport, Santa Barbara, and the Puget Sound port groups, with approximately 17, 15 and 12 percent of the total LEFG ex-vessel revenue was landed on average in those port groups, respectively. These three ports were also the most involved in the previous five years (2015 through 2019). However, the port group with the most change between 2015-2019 and 2020-2024 was Monterey, seeing more than double the involvement into the fishery (4.2 percent to 10.2 percent). For dependence, the Puget Sound port group had an average of nearly 1/3 of their total revenue coming from the LEFG fishery from 2020-2024. It was next closely followed by Morro Bay (15 percent) and Fort Bragg (9.2 percent).

The most recent California Current Integrated Ecosystem Assessment (CCIEA) report (Agenda Item H.1.a, CCIEA Team Report 1, March 2024) shows the recent assessment of commercial fishing community vulnerability and engagement in fisheries. With respect to the ports most involved in the LEFG fishery, Newport was recently rated (2019-2021) as Medium to Medium high social vulnerability. Santa Barbara was considered have low social vulnerability and the Puget Sound port group (which consists of several individual ports such as Bellingham, Seattle, and Olympia) was a mix of low to medium social vulnerability. For the dependent communities, Morro Bay was ranked with low social vulnerability, whereas Fort Bragg is considered to be highly socially vulnerable to changes in fishing conditions.

Given that permits are endorsed for specific gear types (which are under consideration to be changed through this action) it is important to understand the spatial distribution of landings by gear type into port communities. Due to confidentiality, statistics were unable to be provided. However, Figure 1-6 and Figure 1-7 shows the relative landings and ex-vessel revenue associated with pot, bottom longline, and other hook-and-line gears by port group and era (2015-2019, 2020-2024). For most ports, bottom longline landings and ex-vessel revenue exceed those for pot gear landings (with other hook-and-line landings being the smallest proportion, noting some exceptions). Port groups where pot gear landings and revenue are larger than bottom longline landings and revenue include Astoria, Newport (2020-2024 only), and Crescent City. Comparing 2015-2019 and 2020-2024, there have been new landings for pot gear into the North Washington ports, but ports such as Brookings and Morro Bay have not had any pot landings in recent years.

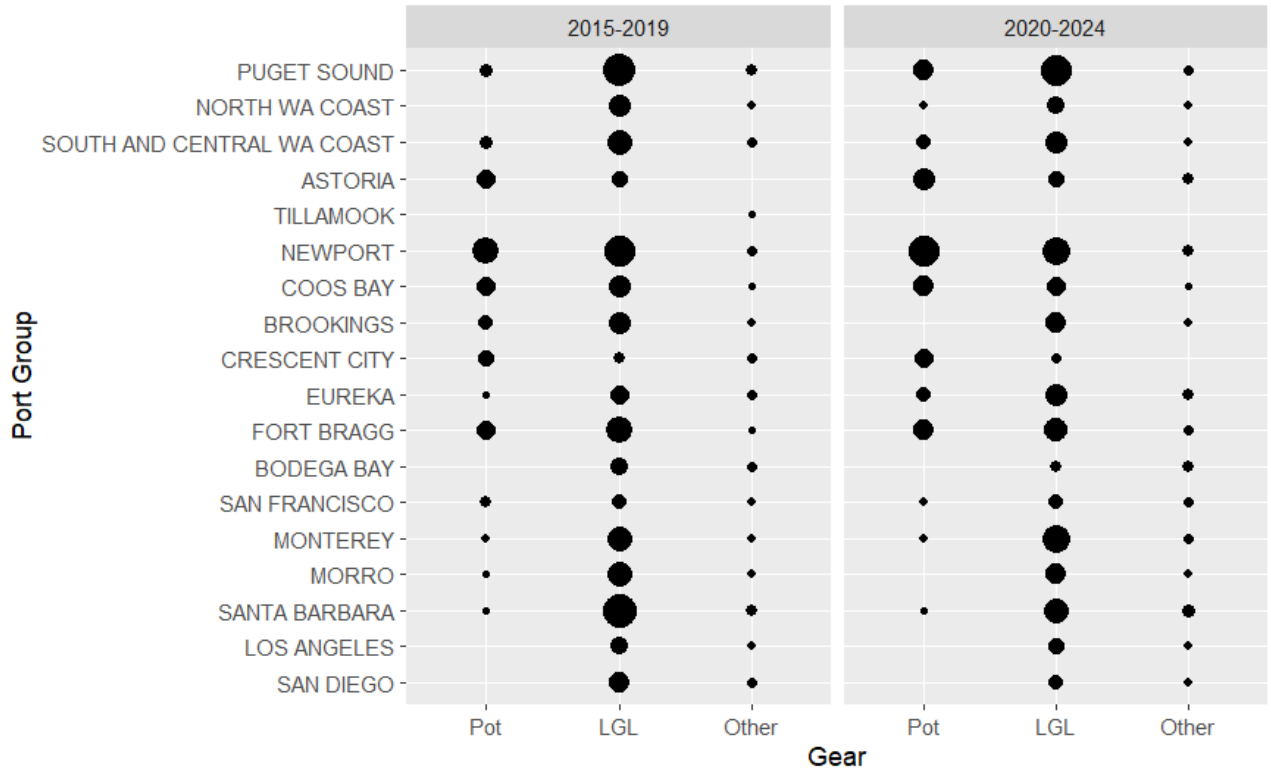

Figure 1-6. Relative average landings by port group, gear group, and era (2015-2019, 2020-2024) for LEFG sector. (LGL=bottom longline, Other= other hook-and-line gears)

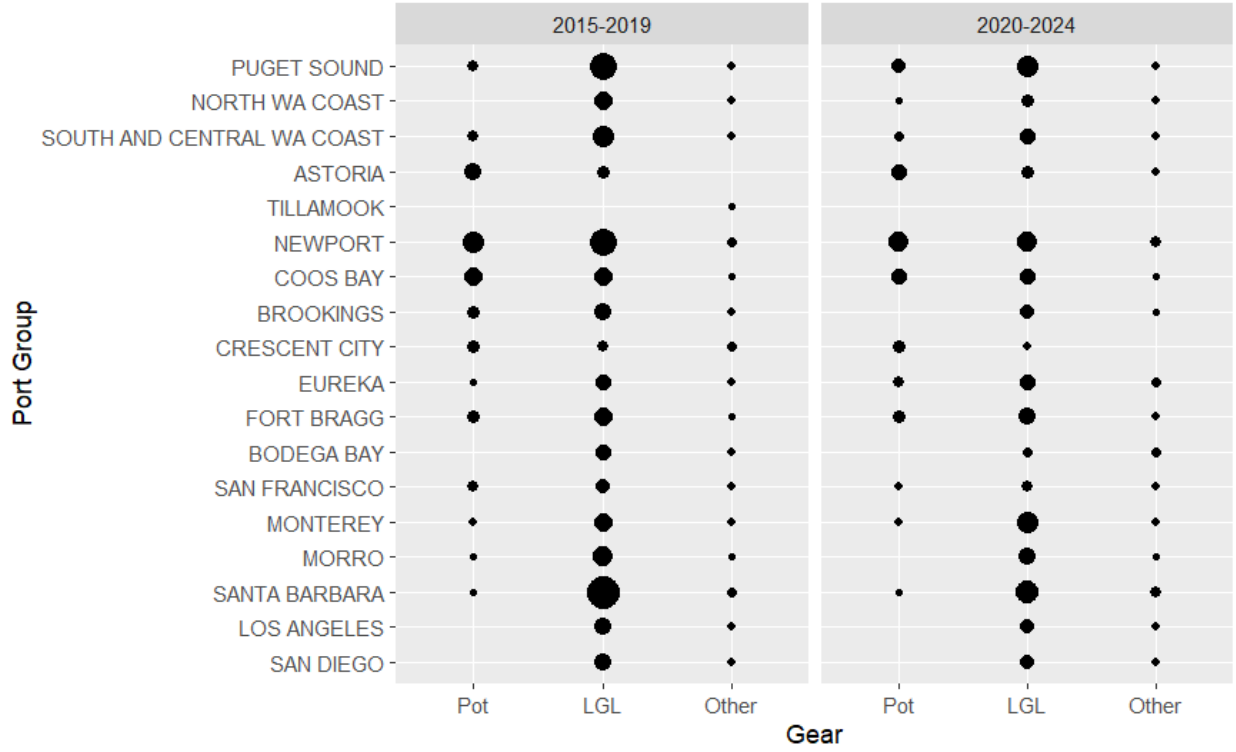

Figure 1-7. Relative average ex-vessel revenue by port group, gear group, and era (2015-2019, 2020-2024) for LEFG sector. (LGL=bottom longline, Other= other hook-and-line gears)

2 Description of Alternatives

The groundfish fishery management measures for vessels registered to LEFG endorsed permits and owners of LEFG endorsed permits that are under consideration as part of the proposed action include five action items:

1. Adding flexibility to LEFG permit gear endorsements,
2. Removing the base permit designation of LEFG permits,
3. Requiring reporting of permit prices when a LEFG permit is sold,
4. Removing the start and end times of the primary tier season in regulations, and
5. Developing a cost recovery program for the LEFG primary tier fishery.

The Council adopted the following alternatives for each component (i.e. action item) of the proposed action in September 2023. The action items are evaluated separately, and the Council may choose to select a distinct action alternative for each action item or could choose No Action for some or all of the items.

2.1 LEFG Permit Endorsement

No Action: Vessels registered to a LEFG permit(s) would only be able to harvest their limits/quotas with the gear endorsed on a permit, unless using non-bottom contact groundfish gear to harvest up to their LEFG trip limits.[2]

Alternative 1: Vessels registered to bottom longline-endorsed permits would be permitted to also use slinky pots to harvest their quotas.

Alternative 2: Create a single LEFG endorsed permit (i.e., remove the specific pot and bottom longline endorsements). Vessels registered to a LEFG endorsed permit could utilize either bottom longline or pot gear to harvest their quota.

Alternative 3: Create a single LE non-trawl endorsed permit. Vessels registered to a permit with this endorsement would be permitted to use any legal non-trawl groundfish gear to harvest their quota.

Under No Action, vessels registered to a LEFG permit(s) would only be able to harvest their limits/quotas with the gear endorsed on a permit, either bottom longline, pot/trap, or dual endorsement of bottom longline and pot/trap. The only exception to these restrictions is for those vessels using non-bottom contact groundfish gear to harvest up to their LEFG trip limits, regardless of the gear endorsement on their LEFG permit (see Amendment 32).

In response to the recent LEFG primary tier program review, industry asked for the allowance for vessels registered to bottom longline-endorsed permits to be able to use slinky pots to harvest their quotas. Slinky pots, which are lightweight collapsible pots currently used in Alaska to avoid whale depredation associated with bottom longline gear, are currently allowed off the West Coast for vessels registered to pot-endorsed permits and vessels fishing in the OA sector. While the review was specific to the LEFG primary tier fishery, the Council expanded the proposed measure to be applicable to all LEFG permits endorsed for bottom longline gear (i.e., Alternative 1), which represents the majority of LEFG endorsements (Table 1-1). By contrast, under No Action, vessels registered to permit(s) with only a bottom longline endorsement

[2] Note that the original alternative adopted in September 2023 included "within the non-trawl RCA" at the end of the description. Staff has removed that phrase as the non-bottom contact provision applies both inside and outside the non-trawl RCA (Amendment 32 to the Groundfish FMP).

could fish with slinky pots in the OA trip limit fishery, subject to any crossover provisions described above, but not while in the sablefish tier fishery (50 CFR 660.25(b)(3)(ii)).

In June 2023, the Council and its advisory bodies broadened this action item to consider a more holistic approach to considering gear restrictions. Alternative 2 would create a single LEFG gear endorsement, allowing the use of bottom longline or pot gear (including slinky pots) to harvest their tiers (if sablefish-endorsed) or LE trip limits. The Council initially considered this option in the original license limitation discussions in Amendment 6 to the Groundfish FMP in 1994 (see discussion in Section 1.2). Alternative 3, on the other hand, would create a single LE non-trawl permit, in which vessels would be permitted to use any legal non-trawl groundfish gear to harvest their LEFG sablefish tier limits and groundfish trip limits. This is currently what is allowed for vessels fishing in the directed OA sector and for vessels fishing IFQ under the gear switching provisions of the shorebased IFQ Program. Alternative 3 is most aligned with the Amendment 32 regulations that allow LEFG vessels to fish with non-bottom contact gears to harvest their LEFG groundfish trip limits. All LEFG vessels would be allowed to use pot and bottom longline gears, and vertical hook and line or other legal configurations. Alternative 3 would also remove applicable crossover provisions (e.g., those listed at 50 CFR 660.60(h)(7)(ii)(A)), reducing regulatory and enforcement complexity.

Any of the action alternatives would require an FMP amendment and change to Federal regulations.

2.2 Base Permit Designation

No Action: NMFS designates the base permit as the permit registered to the vessel for the longest period of time, so long as its length endorsement is sufficient for the vessel, and unless the vessel requests a different permit as described at 50 CFR 660.25(b)(3)(iii)(C).

Alternative 1: Remove the base permit designation and associated regulations at 50 CFR 660.25(b)(3)(iii)(C).

The base permit designation dates back to the development of Amendment 14 to the Groundfish FMP. As described in Agenda Item E.4.a, NMFS Report 2, March 2022, the provision was originally intended to assist in the administration of the gear restrictions and length restrictions then under consideration; most of which were ultimately not adopted. In order to operate in the primary tier fishery, vessels must be registered to a LEFG permit with a sablefish endorsement that is within five feet of the vessel length (i.e., endorsement length may be at maximum five feet shorter or longer than the vessel length; 50 CFR 660.25(b)(3)(iii)(B)(1)).

However, it was highlighted during the 2022 program review that the information on the base permit is incomplete, and the length requirement is already covered by a separate regulation within §660.25(b)(3)(iii), subpart C. Therefore, the base permit designation is not necessary to enforce the length requirement, and NMFS indicated that the designation of the base permit creates an unnecessary administrative burden on fishery participants and NMFS staff.

Alternative 1 would require an FMP amendment and change to Federal regulations.

2.3 Permit Price Reporting

No Action: No permit price information is collected when LEFG permits are sold.

Alternative 1: Owners of all LEFG permits (sablefish and non-sablefish endorsed) would be required to disclose the permit price upon sale to a new owner.

Currently, when LEFG permits (sablefish and non-sablefish endorsed) are sold, there is no information on the price of that permit collected. In order to gain further insight into the LEFG primary tier fishery, the Scientific and Statistical Committee (SSC) proposed in both the 2014 (Agenda Item F.6.b, Supplemental SSC Report, June 2014) and 2022 LEFG Program Reviews that the routine collection of permit sale prices would help to indicate the market value of the fishery. These data would also help evaluate the performance of the tier system during the Magnuson-Stevens Act required review of the LAPP, would contrast performance of this program with that of the trawl catch share program, and would help assess impacts of provisions of the trawl catch share program on those vessels that move between the fisheries. In June 2023, the GAP noted that this could be a simple addition to the permit transfer application when a permit is sold (Agenda Item H.4.a, Supplemental GAP Report 1, June 2023)

Alternative 1 would require a change to Federal regulations.

2.4 Season Start Time

No Action: The sablefish primary season would continue to start at noon on April 1 and close at noon on December 31.

Alternative 1: Remove the start and end times of the sablefish primary season dates in groundfish regulations.

Historically, the specification of the time of day of the primary season opening and closing was necessary for monitoring and enforcement, particularly when seasons were very short (Agenda Item H.4.a, NMFS Report 1, June 2023). Under Alternative 1, the time references (i.e., references to noon local time) would be removed from regulations. This would be an administrative change.

Alternative 1 would require a change to Federal regulations.

2.5 Cost Recovery

No Action: There would be no cost recovery program for the sablefish tier program, which is not consistent with the Magnuson-Stevens Act requirements for LAPPs (16 U.S.C. §§ 1853a(e) and 1854(d)(2)).

Alternative 1: Develop a cost recovery program for the LEFG primary tier program, with

Suboption a: The owner(s) or authorized representative of the vessel that makes landings of sablefish in the tier program would be responsible for paying the fee, and

Suboption b: The owner(s) or authorized representative of the sablefish-endorsed permit that makes landings of sablefish in the tier program would be responsible for paying the fee.

At the conclusion of the most recent program review, NMFS determined that the LEFG primary tier program had actions that were cost recoverable. While No Action is part of the ROA, NMFS has determined that it is not a viable alternative, as it is not consistent with Magnuson-Stevens Act requirements for LAPPs. Agenda Item H.4.a, NMFS Report 2 from June 2023 described the cost recovery program proposed under Alternative 1; a proposed program that would calculate costs and the fee percentage for the sector based on the ex-vessel value of the sablefish landed, as follows:

Structure

The fishery (tier program) would be treated as a single sector whereby costs are calculated for the sector and the fee percentage would be calculated for the sector.

Calculation of fishery value
Fishery value would be calculated using the ex-vessel value of sablefish landed in the most recent complete primary season based on PacFIN electronic fish ticket information, including any post-landing value adjustments.

Calculation of direct program costs
The direct program costs would be calculated using the actual incremental costs for the previous fiscal year directly related to the management, data collection and analysis, and enforcement of the tier program. Actual incremental costs are those costs that would not have been incurred but for the implementation of the tier program. Incremental costs may be accrued by the NMFS West Coast Region, the Northwest Fisheries Science Center, and/or the Office of Law Enforcement. This is the same methodology NMFS follows for the Trawl Rationalization Program (see page 3 of the 2023 Trawl Rationalization Program Cost Recovery Report). Recoverable costs include staff time (both full time employees and contractors), travel, supplies, and equipment related to incremental tasks. An initial evaluation of potential incremental tasks was provided in Agenda Item E.4.a., NMFS Report, March 2022.

How fee percentage is calculated
Fee percentage would be calculated by taking the direct program costs from the most recent complete fiscal year and dividing that by the fishery value from the most recent complete fishery season; not to exceed three percent of the ex-vessel value of fish harvested under the tier program.

When the fee percentage is announced
NMFS would calculate and publish through the Federal Register an annual fee percentage notice in the first quarter of the calendar year, prior to the start of the primary season on April 1.

How the fee amount is determined
The fee amount would be calculated from the ex-vessel value of applicable landings (including post-season adjustments) multiplied by the annual fee percentage.

How cost recovery fees are paid
The annual cost recovery fee percentage would be applied to sablefish landings in the tier program during the primary season. NMFS would generate an annual bill and provide that electronically to each vessel/permit owner that has applicable landings. For payment collection, the vessel/permit owner or authorized representative would remit fees through pay.gov on a yearly basis.

When fees are due
Fees would be due 30 days after bills are issued. Bills are projected to be due by March 1 in the calendar year following the applicable primary season.

Penalties
Failure to pay on time may result in a NMFS action against the vessel/permit owner and could result in additional monetary charges, fines, and/or sanctions. Before penalties are issued, NMFS Permits and Monitoring Branch would deliver an Initial Administrative Determination (IAD), to which the vessel/permit owner must respond within 30 days. If an account is unpaid for 30 days after the due date, administrative fees, interest, and penalties start to accrue. If the account is not paid within the 30 days provided by the IAD, in addition to fees, interest, and penalties, the vessel may not be registered to any new permits until the fee liability is satisfied. Additional fines may also apply.

Reporting
NMFS would generate a publicly available annual report. This annual report would include information on the fee percentage calculation, program costs, ex-vessel value for the fishery, and total fees collected by NMFS from the previous year.

The initial proposal by NMFS was that a bill would be generated annually to each vessel owner (Suboption a) with applicable landings. However, in June 2023, the GAP recommended that the permit owner (Suboption b), rather than the vessel owner, be responsible for the cost recovery payments because, in many cases, the vessel owner may be leasing the permit(s) (Agenda Item H.4.a, Supplemental GAP Report 1). From 2011-2020, approximately 25 percent of vessels leased their permits during the tier season, where 60 percent of vessels were thought to be registered to permits they owned. The remaining vessels were registered to a mix of permits that they owned or leased. For more information, see page 43 of the 2022 Program Review. Should the vessel owner not pay the cost recovery fee, the permit owner may not be able to utilize his permit for the next year and therefore the owner of the permit may have the biggest incentive to pay the cost recovery fee.

Alternative 1 would require an FMP amendment and a change to Federal regulations.

2.6 Preliminary Preferred Alternative

To be completed following Council's adoption of a PPA.

2.7 Additional Management Measure Alternatives Considered but not Analyzed Further

During the development of the follow-on actions, the Council scoped out two other potential management measures for the LEFG fishery:

1. Allowing cumulative non-sablefish trip limits for primary tier vessels, and
2. Allowing a fourth sablefish-endorsed permit to be stacked on a vessel as long as one of the permits was subject to the owner-on-board requirement.

Item 1, the allowance for cumulative trip limits, was removed during the June 2023 Council meeting. While the stacking of permits allows primary tier vessels to harvest sablefish north up to the cumulative amount allowed by the sum of the stacked permits' tiers, if vessels retain other species, each vessel is held to the per-vessel LEFG limits in the area and time that they are fishing, as the tier limits only apply to sablefish north. Any catch in excess of that limit would need to be discarded. Under the proposed change, a vessel would have been permitted to harvest a separate cumulative LEFG limit for each tier permit registered to the vessel. Preliminary analysis suggested that few vessels were achieving the trip limits for key non-sablefish species, like lingcod and shortspine thornyhead, and therefore inducing regulatory discards (Agenda Item H.4, Attachment 1, June 2023). The Council ultimately recommended that LEFG trip limits in general be assessed as a part of the biennial harvest specifications and management measures cycle and that this proposed measure be removed from consideration as part of this LEFG follow-on action. (June 2023 Decision Document)

The second item, fourth permit stacking, was removed in September 2023 after it was determined that to allow for the new management measure, the three-permit own and control limit would need to be modified as well (Agenda Item G.4, Attachment 2, September 2023). Given that this was not the intent, as proposed by the GAP in recommending this management measure, the GAP recommended (Agenda Item G.4.a, Supplemental GAP Report 1, September 2023) and the Council agreed with removing it from the ROA.

3 Preliminary Draft Environmental Assessment

The NOAA NEPA Companion Manual to NAO 216-6 lists four required components for an environmental assessment. The purpose and need for the proposed action is described in Chapter 1. This chapter addresses the probable environmental impacts of the proposed gear endorsement action item, and specifically the LEFG permit gear endorsement alternatives. The alternatives for the LEFG permit gear endorsement action item are described in Chapter 2 (i.e., No Action, and action Alternatives 1-3). The remaining action items contained in this LEFG follow-on action (Action Items 2-5, see Section 2 above) have been determined to be strictly administrative in nature or only have economic impacts (permit price reporting, cost recovery, etc.). Accordingly, those action items are not addressed in this EA.

The anticipated effects of the gear endorsement alternatives on resources would be caused by the potential shifts in vessels using currently endorsed gear types to a different gear type, and the nature and extent of those potential shifts under Alternatives 1-3. Most likely, a shift from bottom longline to pot gear (traditional or slinky pot) is expected. However, the degree to which this shift would be likely to occur under the different action alternatives is uncertain. Section 3.1.1 attempts to describe the likely scenarios (Scenarios 1-3) that could occur under Alternatives 1-3. These scenarios are used in this analysis to understand the potential impacts of the alternatives. It is important to note that multiple scenarios have the potential to occur under a single alternative (i.e., some combination of the scenarios) and a single scenario has the potential to occur under multiple alternatives.

Alternatives 1-3 would have the potential to affect marine mammals/turtles, seabirds, and habitat. Impacts to remaining resources (except economics) will be discussed in Section 3.6. Social and economic impacts will be discussed under the RIR (Section 4).

This EA tiers off of the 2025-2026 Harvest Specifications EA. For each resource, this analysis identifies the necessary information to understand the affected environment and the potential impacts of each alternative.

3.1 Methods

3.1.1 Methods Used for the Impact Analysis

In assessing the impacts of changing the LEFG permit gear endorsement, the key source of uncertainty is the nature and degree under Alternatives 1-3 to which vessels would alter their use of gear types as compared to those which they are currently endorsed to use (No Action). This section attempts to characterize the likelihood of vessels changing from bottom longline to pot gear, and the potential for use of slinky pots versus traditional pots, by identifying the likely scenarios that could occur under action Alternatives 1-3. Given the number of bottom longline endorsed permits currently available (i.e., not registered to a vessel; Table 1-1), it is likely that any vessels interested in using bottom longline gear could already acquire a bottom longline permit if they desired to use one. Therefore, the scenario examining a shift from pot gear to bottom longline gear is not anticipated under the action alternatives, and thus is not included in this impact analysis, as that scenario could occur under No Action. Additionally, the increased use of other types of non-fixed gears (i.e., vertical hook-and-line) might occur under Alternative 3. Given the limited data available, the degree of this change in use to other gear types is not quantifiable; however, some level of increased effort is expected under Alternative 3. This change in fishing effort to other types of hook-and-line gears is not the primary expected outcome of the gear endorsement action item for most LEFG vessels and, thus, is not covered in the following scenarios (which focus on the potential effort shift between bottom longline and pot gear). However, the potential environmental risks associated with these gear types is discussed in the analysis of the alternatives provided below.

Overall, it is likely that some combination of the three scenarios described below would occur under action Alternatives 1-3.

Scenario 1: No shift in activity (No action)
Under scenario 1, vessels would continue to use their current endorsed gears and not shift to slinky pots, standard pots, or use other OA non-trawl gears (except as permitted for non-bottom contact gear types).

Scenario 2: All bottom longline vessels shift to slinky pots (could occur under Alternatives 1-3).
Under scenario 2, all vessels currently using bottom longline gear would shift to using slinky pots (permissible under each action alternative). Slinky pots can be used on the same groundline as bottom longline and are relatively inexpensive (compared to traditional pots). Under this scenario, all vessels currently using bottom longline would switch to slinky pots for 100 percent of effort and vessels registered to pot endorsed permits would continue to use standard pots (or slinky pots if historically have done so).

Scenario 3: Bottom longline vessels shift to mix of traditional and slinky pots (only could occur under Alternatives 2 and 3).
Under Scenario 3, all bottom longline vessels over 50 ft LOA would shift to only traditional pots (not slinky pots), with the remaining vessels registered to bottom longline-endorsed permits transitioning to slinky pots (as in Scenario 2). Given the size, weight, and cost of traditional pots, it is highly unlikely that all vessels would shift from bottom longline to traditional pot gear. Looking at the number of vessels by vessel size class registered to LEFG permits in 2024 and whether they are registered to both types of endorsements (either through a dual LEFG permit or a combination of bottom longline and pot endorsed permits) or only one gear endorsement, it appears as though 50 ft LOA is the size threshold where pot gear is likely to be used (based on the highest number of vessels using both or pot gear; Table 3-1). This threshold, however, may be influenced by the length endorsements associated with pot permits, which show the average endorsement is 59.4 ft LOA and a minimum of 32 ft LOA (Table 1-2).

An analysis of profitability (more details described in Section 4.5.1.3) indicates that vessels less than 40 ft LOA are less likely to shift gears given that the increase in revenue from increased sablefish landings is not able to compensate for the revenue earned from non-sablefish species. However, the price per pound of the non-sablefish species does impact the potential profitability of larger vessels over 50 ft LOA and will be discussed in Section 4.5.1.3.

Given this information, 50 ft LOA was used as the breakpoint for Scenario 2, with respect to what size vessels might use slinky versus standard pot gear. This scenario could require a change in operational set-ups for bottom longline vessels given the size/weight of traditional pots and the need for different groundline, etc. While it is unlikely that all bottom longline endorsed vessels longer than 50 ft LOA would make the shift to traditional pot gear or that there would be no vessels less than 50 ft LOA to make the shift to traditional pot gears, the assumption that all vessels over 50ft LOA would shift to traditional pots only provides a bookend for the analysis to assess potential impacts. A further discussion of the potential for crossover from other fisheries to use pot gear will be discussed in Section 3.1.2.1.

Table 3-1. Number of LEFG vessels 2020-2023 by gear used to harvest quota by vessel length.

Vessel Length	Both	Longline	Pot
30 ft LOA or less	5	18	0
30-40 ft LOA		41	0
40-50 ft LOA		35	4
50 ft LOA or greater	17	27	

To further try and define the number of vessels that may use different gears under the various scenarios that are likely to occur under Alternatives 1-3, Table 3-2 below shows the maximum amount of vessels that would be permitted to use each gear type in each scenario (assuming 1:1 permit to vessel ratio), and the recent average (2023-2024) number of vessels by gear type applying the scenario assumptions. Note that the maximum number of vessels based on number of permits is an overestimate given that individual vessels can stack up to three sablefish-endorsed permits to participate in the LEFG primary fishery. Approximately half of participating LEFG primary vessels have stacked permits (2014-2020; see Table 6 of the 2021 LEFG Review); this proportion is reflective in the right set of columns, showing the recent average number of vessels by gear type in row one where 119 vessels used bottom longline gear compared to the available 191 LEFG permits (sablefish and non-sablefish endorsed). In 2023-2024, the years in which non-trawl logbook data is available, fewer than three LEFG participants (vessels that were registered to a LEFG permit at some point) utilized slinky pot gear (although not necessarily towards their LEFG quota). Ultimately, all of these scenario numbers are likely to be an overestimate given the investment required to switch gears and that pot gear may not suit a vessel's operational portfolio.

Table 3-2. Number of Vessels Expected to Fish by Gear Type Under Each Scenario Assuming Maximum or Average Participation

Scenario	Maximum			Average (2023-2024)		
	Bottom Longline	Slinky Pot	Pot	Bottom Longline	Slinky Pot	Pot
1 (No Action)	191	Included in pot	32[a]	119	Included in Pot	30
2 (Bottom Longline to Slinky Pot)	0	191	32[a]	0	119	30
3 (Mix of slinky pot/pot based on size)	0	97	94	0	92	57

[a] Includes 4 dual endorsed permits

3.1.2 Methods Used for the Cumulative Effects Analysis

This EA analyzes the impact on each resource that results from the incremental impact of this action item when added to other past, present, and reasonably foreseeable future actions (RFFA) regardless of what agency (federal or nonfederal) or person undertakes such other action.

The geographic scope for habitat, fish resources, and protected resources is the West Coast EEZ. For socioeconomic resources, the geographic scope is those United States fishing communities directly involved in the harvest or processing of Council-managed resources, particularly those of the states of Washington, Oregon, and California.

The temporal scope of selecting RFFA is based on the following three criteria.

1. Actions in the West Coast EEZ that affect the same resources impacted by the proposed action. Administrative fishery management actions that have no discernible effect are not included.

2. Actions that are not speculative, in that the action is defined to an extent that it can be analyzed and that some concrete step has been taken toward implementation. This includes actions for which the Council has at least decided on a PPA or if NMFS is anticipating publication of a proposed rule or issuance of a permit. Actions only "under consideration" have not generally been included, because they may change substantially or may not be adopted, and so cannot be reasonably described, predicted, or foreseen.

3. Actions being proposed by NOAA, NMFS or other entities which have been publicly announced, such as in announced with a Notice of Intent.

Given the Council's current agenda, the timeframe for the most distant, non-speculative action is 2026.

The anticipated effects of these actions, as they pertain to fisheries, extend into the future and are unlikely to decrease in magnitude. The direct, indirect, and cumulative effects of substantive future fishery actions, such as the 2027-2028 groundfish specifications, will be analyzed in future NEPA documents. Therefore, we do not quantify a temporal scope for the effects of the RFFA.

The following sections summarize the relevant past and present actions and RFFA that contribute to cumulative effects on the same resource components analyzed in this document. The selection of actions to include is guided by the same criteria listed above for selecting the temporal scope of the actions (impacts the same resources as this proposed action and are reasonably foreseeable). Actions are understood to be human actions (e.g., a designation of northern right whale critical habitat in the Pacific Ocean), as distinguished from natural events (e.g., an ecological regime shift). This EA includes consideration of actions, whether taken by a government or by private persons, that are reasonably foreseeable. In addition to these actions, the cumulative effects analysis includes the effects of climate change.

This part lists and summarizes the past and present actions that are noteworthy in that their effects are expected to be more than minor or negligible.

Past and present actions that are considered in the cumulative effects section in this chapter include:

- 2025-2026 Harvest Specifications and Management Measures (effective January 1, 2025)
- Amendment 32 Non-Trawl Area Management Measures (effective January 1, 2023)

RFFA that are considered in the cumulative effects section in this chapter include:

- Fixed Gear Marking and Entanglement Risk Reduction Measures (estimated January 1, 2026): Requires gear-specific markings for vessels using bottom longline or pot gear (OA, LEFG, or IFQ); Allows vessels to voluntarily use one set of surface gear rather than surface gear on both terminal ends of a set; Limits the amount of surface line to 10 fathoms (fm).
- Gear Switching Action (estimated 2027): Restricts gear switching to a maximum of 29 percent of the trawl allocation in years in which the annual catch limit (ACL) is less than 6,000 metric tons (mt).

3.1.2.1 Potential for crossover from other fisheries

In order to inform the analysis of how many vessels may switch gears if the permit endorsements were relaxed, a separate recent Council action provides some helpful context. During the deliberations on the gear switching action, one of the main factors that was discussed that could alter or indicate future levels of gear switching in the IFQ program was the opportunities in other non-trawl fisheries. Specifically, the draft analysis (Agenda Item F.4., Attachment 3, April 2024) describes the overlap between the IFQ gear

switching fleet and various other fisheries such as Dungeness crab, Alaska sablefish, and the LEFG tier fishery, describing how opportunities in those fisheries could result in different levels of gear switching. This section discusses a similar potential for the LEFG fishery.

With respect to vessels gear switching in the IFQ program ("gear switchers"), there has been considerable analysis and discussion regarding the reasons for crossover between the fisheries in both the gear switching action and the 2021 LEFG Review. Vessels are hypothesized to likely cross over to the IFQ sector from the LEFG tier fishery due to the three-permit stacking limit, historical seasonal constraints (although likely not as much of a factor with the permanent extension to December 31 starting in 2023), owner-on-board requirement for the LEFG tier fishery, and the limitation on pot permits. Historically, gear switchers used primarily pot gear to harvest IFQ sablefish, with all vessels using pot gear since 2019.[3] While the three permit limit and the owner-on-board requirement are proposed to stay in place under this action, the proposed changes in the allowances for pot gear in the LEFG fishery may impact the historical level of pot gear landings. The owner-on-board requirement in the LEFG fishery requires permit owners to be on board the vessel while fishing against the permit; however, high levels of exemptions are still present, which would allow participants to lease those permits and fish in the tier fishery (2021 LEFG Review). Furthermore, when future caps on the level of gear switching are set to 29 percent when the ACL for sablefish north of 36° lat. is less than 6,000 mt (as adopted by the Council in April 2024), those limitations could result in any gear switchers currently not participating in the LEFG fishery to cross over.

From 2019-2024, more than half of gear switching vessels participated in the LEFG tier fishery.[4] Of those vessels, fewer than three used bottom longline gear in the tier fishery, but pot gear while gear switching annually; suggesting that the majority of those vessels are already set up for traditional pot gear operations and highly likely to utilize traditional pot gear under action Alternatives 2 and 3. For the other gear switching vessels, there is the potential to access permits (including some that are latent or not recently registered) and fish in the tier fishery. The tier fishery has lower opportunity overall (3 Tier 1 permits combined have approximately 57 percent of the allowance of the IFQ vessel limit). However, the tier fishery also does not have a requirement for 100 percent observer coverage and may have a lower cost recovery fee than the shorebased IFQ sector, which has been at the maximum of 3 percent for most years of the program. It is difficult to ascertain how many of the gear switching vessels would buy into the tier fishery, particularly in the current market climate and with currently high allocations. In the future though, if ACLs were to be below 6,000 mt and gear switching were to be constrained, the tier fishery may pose a lower cost opportunity to fish traditional pot gear already purchased.

Future analysis will consider overlap between the LEFG and Alaska sablefish and Dungeness crab fisheries.

3.2 Marine Mammals

3.2.1 Status/Affected Environment

NMFS manages marine mammals that are primarily affected by fisheries through interactions with fishing gear, disturbance by fishing activity or vessel movement, or prey competition.

While marine mammals may be lawfully taken incidentally during commercial fishing operations, the 1994 Marine Mammal Protect Act (MMPA) Amendments established a requirement for commercial fishing operations to reduce incidental mortalities and serious injuries (MSI) of marine mammals to insignificant levels approaching a zero rate, commonly referred to as the Zero Mortality Rate Goal (ZMRG). ZMRG is

[3] See Table 14 in Agenda Item F.4., Attachment 3 for 2011-2022. All vessels used pot gear in 2023, 2024.
[4] Includes only vessels fishing for sablefish north of 36° lat. given that was the focus of the gear switching action.

considered to be met for a marine mammal stock when the MSI level from all commercial fisheries is 10 percent or below the Potential Biological Removal (PBR) level of that marine mammal stock (69 FR 43338, July 20, 2004). Likewise, the Endangered Species Act (ESA) was enacted to provide a means to conserve the ecosystems upon which endangered species and threatened species depend, provide a program for the conservation of endangered species and threatened species, and take steps as may be appropriate to achieve such conservation. In practice, the ESA outlines a program to protect endangered species on the brink of extinction and threatened species that are likely to be on the brink of extinction in the near future, pursuing their recovery. The ESA also requires designation of any critical habitat of endangered or threatened species, which is then considered to have physical or biological features essential to the conservation of the species and which may require special management considerations or protection.

Marine mammal Stock Assessment Reports (SARs) are published under the authority of the MMPA for all stocks that occur in state and federal waters off the West Coast.[5] All stocks are reviewed at least every three years or as new information becomes available. Stocks that are designated as "strategic" are reviewed annually.[6] Individual SARs provide information on each stock's geographic distribution, population estimates, population trends, and estimates of the PBR levels for each stock. The SARs identify sources of human-caused mortality, including serious injury and mortality in commercial fishery operations, by fishery, and whether the stock has met ZMRG for all fisheries. The SARs also include the stock's ESA listing status and MMPA depleted and strategic designations.

Using the List of Fisheries (LOF) from 2024 to determine the potential species that have historically interacted with the fisheries subject to this action, Table 3-3 describes the fishery, the fishery's category for MMPA interactions, the ESA or MMPA status for the relevant marine mammal species or stock, and whether that species or stock is at ZMRG, taking into account all commercial fisheries.

[5] See reports at https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-stock-assessment-reports-region

[6] Strategic means a marine mammal stock—

- For which the level of direct human-caused mortality exceeds the PBR level;
- Which, based on the best available scientific information, is declining and is likely to be listed as a threatened species under the ESA within the foreseeable future; or
- Which is listed as a threatened or endangered species under the ESA, or is designated as depleted under the MMPA.

Table 3-3. Groundfish fishery by LOF Category in 2024, Mammal Stock/Species, ESA or MMPA Status, and ZMRG Status.

Category	Fishery	Marine Mammal Species/Stocks	ESA or MMPA Status	ZMRG Status (all fisheries)
Category 2 (occasional interactions)	Sablefish Pot	Humpback whale, Central America/Southern Mexico	Endangered (ESA) Depleted/Strategic (MMPA)	Not met (MSI> PBR)
		Humpback whale, Mainland Mexico	Endangered (ESA) Depleted/Strategic (MMPA)	Not met (MSI>PBR)
Category 3 (remote likelihood of/no known interactions)	Groundfish bottom longline/setline	Bottlenose dolphin, CA/OR/WA offshore	Not listed (ESA) Not depleted/not strategic (MMPA)	Met
		California sea lion	Not listed (ESA) Not depleted/not strategic (MMPA)	Met
		Steller sea lion, Eastern U.S.	Not listed (ESA) Not depleted/not strategic (MMPA)	Met
		Northern elephant seal, CA breeding	Not listed (ESA) Not depleted/not strategic (MMPA)	Met
		Sperm whale, CA/OR/WA	Endangered (ESA) Depleted/Strategic (MMPA)	Not met (MSI> PBR)
Category 3 (remote likelihood of/no known interactions)	Groundfish hook and line	California sea lion	Not listed (ESA) Not depleted/not strategic (MMPA)	Met
		Humpback whale, Central America/Southern Mexico	Endangered (ESA) Depleted/Strategic (MMPA)	Not met (MSI> PBR)
		Humpback whale, Mainland Mexico	Endangered (ESA) Depleted/Strategic (MMPA)	Not met (MSI>PBR)

Note that a take reduction team (TRT) is being developed related to humpback whales and blue whales, and the TRT's review will include the sablefish pot fishery, all three state Dungeness crab fisheries, and the California spot prawn fishery. It is expected that discussions will begin in spring 2025. For details, please visit https://www.fisheries.noaa.gov/west-coast/marine-mammal-protection/west-coast-take-reduction-team.

While sperm whales are considered endangered by the ESA, the groundfish bottom longline/setline fishery is a category 3 fishery (remote likelihood of/no known interactions), and it was determined by the 2012 biological opinion evaluating the continued operation of the Pacific Coast groundfish fishery (2012 BiOp) that the actions of the fishery were not likely to adversely affect the population or critical habitat. Therefore, the following discussion focuses primarily on humpback whales.

In November 2024, the "Endangered Species Act Section 7(a)(2) Biological Opinion for Continuing Operation of the Pacific Coast Groundfish Fishery and Effects to Humpback whale (*Megaptera novaeangliae*) and Leatherback sea turtle (*Dermochelys coriacea*)" (2024 BiOp) was completed. Under the 2024 BiOp, it is anticipated that take of humpback whales from the Mexico and Central American Distinct Population Segments (DPS) would occur through entanglement of fishing gear, including pot, hook and line, and midwater trawl gear. It is important to note that stock delineations for humpbacks under the MMPA are different than the ESA-listed DPS, although there was a realignment in 2023 to better align the stocks. In terms of aligning MMPA stocks with the ESA DPS listings, there are two stocks (Mainland Mexico- CA/OR/WA stock and the Mexico-North Pacific stock) that fall within the Mexico DPS and the Central America/Southern Mexico-CA/OR/WA stock encompasses all of the Central America DPS. The Hawai'i humpback DPS also is present off the U.S. West Coast, however, it is not ESA-listed. The following discussion will refer to the humpback whales in the action area by their DPS category.

In general, humpbacks are present in U.S. waters at least 2/3rds of the year, moving in during mid-April and out during the latter part of December. While the Central America DPS appear to migrate to feed only off the West Coast, the Mexico DPS can forage off the U.S., British Columbia, and Alaska coastlines. Therefore, the 2024 BiOp describes the proportion of each DPS likely to be encountered based on foraging patterns (Table 3 of the 2024 BiOp), which suggests an approximate 58 percent Mexico DPS, 42 percent Central America DPS proportion for those humpbacks off the California/Oregon coastlines. Off of Washington, the proportions are 6 percent Central America, 25 percent Mexico, and 69 percent Hawai'i. Analysis of each of the DPS suggests that the populations of each DPS are increasing, with the Mexico DPS averaging around 8 percent of annual growth and the Central America DPS increasing by 1.6 percent. However, both of these estimates are uncertain (see Section 2.2.2.1 and 2.7.1 of the 2024 BiOp for more details about calculations and uncertainties.)

The 2024 BiOp evaluated the risk of humpback whale bycatch (entanglement/hooking/capture) in fishing gear, looking at historical and modeled bycatch estimates and spatial and temporal trends in fishing effort, overlaid with density distribution for humpbacks.

3.2.1.1 Historical Bycatch

Since 2002, there have been three observed takes of humpback whales in the non-trawl groundfish fishery; one in the LE sablefish pot fishery in 2014, one in the OA pot sector in 2016, and one in the halibut longline/sablefish pot (slinky pot) fishery in 2023. Additionally, there were two entanglements since 2011 that were not reported through WCGOP and not associated with a particular sector, but were associated with sablefish pot gear. Based on modeled estimates, the LE pot fishery averaged 0.29 entanglements annually (range=0.06-1.20) from 2011-2023, with a five-year running average of 0.24 (range=0.1-0.37). The OA pot sector averaged 1.09 annual entanglements (range=0.39-2.22), with a five-year running average of 1.09 (range=0.80-1.33). No bycatch has been observed in the catch share pot sector (i.e., IFQ gear switching fishery).

In addition to the pot sectors, the hook-and-line sector is included in the scope of the 2024 BiOp due to a species interaction in the OA vertical jig gear fishery in 2021. However, the 2024 BiOp notes that there have been no previous observations of entanglements with humpback whales with any type of line (longline, hook-and-line) gear and, therefore, no entanglement estimates were generated.

Overall, there is a high level of uncertainty with unidentified gear entanglements, which account for over half of humpback entanglements (2024 BiOp). However, the forthcoming fixed gear marking and entanglement risk reductions measures described in Section 3.1.2 are intended to better attribute (positively or negatively) entanglements with the groundfish fisheries.

3.2.1.2 Expected Take and Incidental Take Statement (ITS)

The 2024 BiOp estimates that the following amount of expected take of the ESA-listed humpback whale DPSs in the groundfish fishery:

Table 3-4. Anticipated Take of ESA-listed humpback whale DPSs in the groundfish fishery by gear type (reproduced from Table 26 of the 2024 BiOp).

Gear		Mexico DPS		Central America DPS	
		Annual Maximum	Maximum 5-Year Running Avg	Annual Maximum	Maximum 5-Year Running Avg
Sablefish Pot	Total Bycatch	2.29	1.03	1.55	0.69
	Anticipated M/SI	2.11	0.95	1.43	0.63
Hook-and-Line	Total Bycatch	0.47	0.1	0.29	0.06
	Anticipated M/SI	0.47	0.1	0.29	0.06
Midwater Trawl	Total Bycatch	0.52	0.21	0.37	0.15
	Anticipated M/SI	0.52	0.11	0.37	0.08
All gears	Total Bycatch	3.28	1.34	2.21	0.90
	Anticipated M/SI	3.1	1.16	2.09	0.77

An ITS for both DPS is set within the 2024 BiOp based on the estimates above. However, given that the DPS of humpback whales that are observed or estimated to be entangled is not readily known, the 2024 BiOp acknowledges that DPS may be unknown in the case of an entanglement. Therefore, if seven or more humpbacks are observed or estimated to be captured in the groundfish fishery in a year or if the five-year running average exceeds 2.67 per year, then the ITS for both DPS would be considered exceeded.

3.2.1.3 Critical Habitat

Critical habitat for humpback whales is shown in Figure 3-1 and Figure 3-2 below. In general, the DPSs overlap off the West Coast. Within the critical habitat, there was only one Physical or Biological Feature (PBF) determined to be essential for conservation of both DPS, which was prey. Humpback whales travel to the West Coast to access energy-rich foraging areas and have high feeding location fidelity. Humpbacks are generalist predators and switch between prey (such as sardine and anchovy) depending on availability. Groundfish fisheries, particularly trawl, may unintentionally catch humpback prey species during their usual fishing activities; however, the bycatch is limited overall compared to the total prey needs. The 2024 BiOp concluded that the groundfish fishery is not likely to adversely affect the critical habitat of humpbacks, either through prey removals or impacts of pollution.

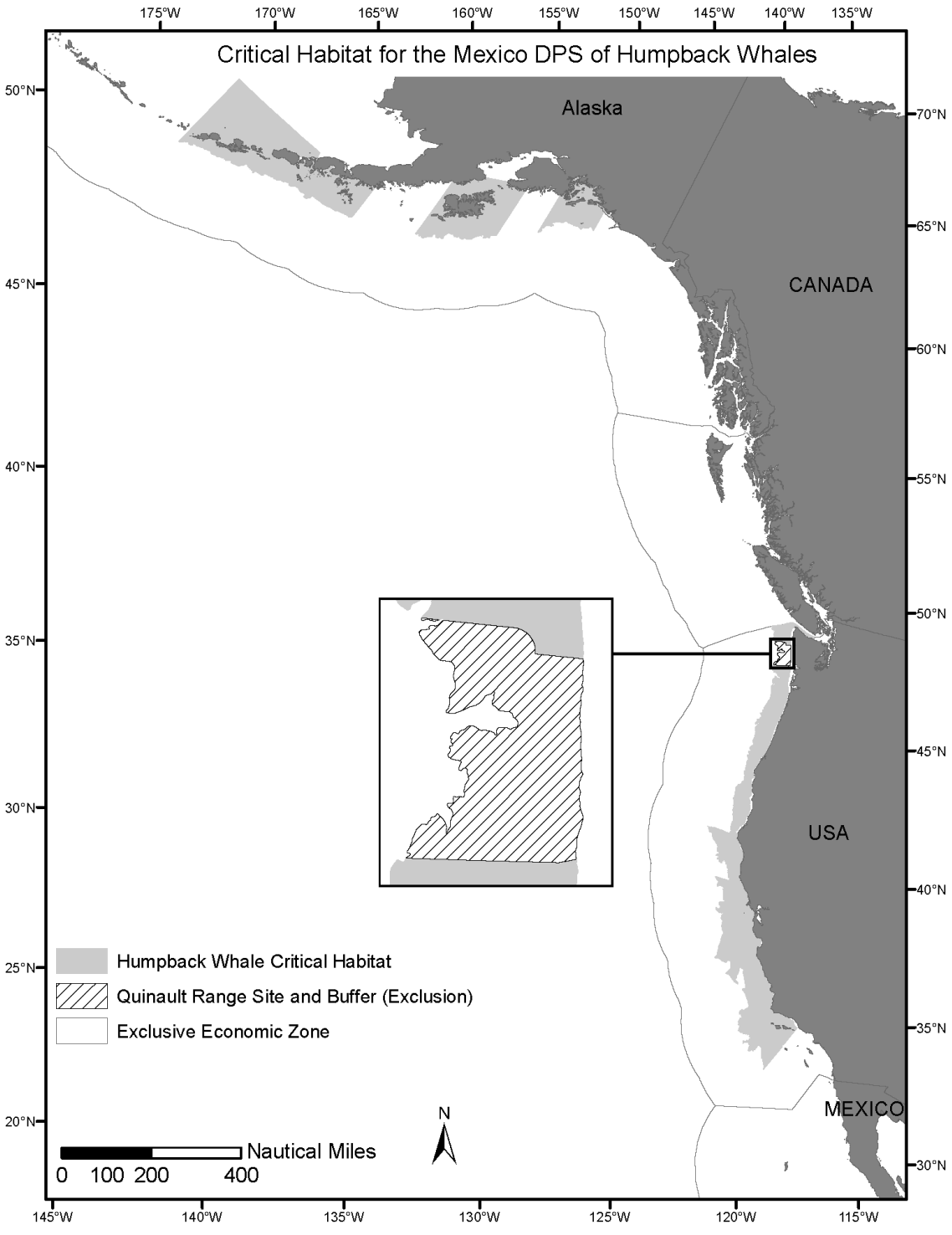

Figure 3-1. Critical habitat map for Mexico DPS for Humpback Whale.

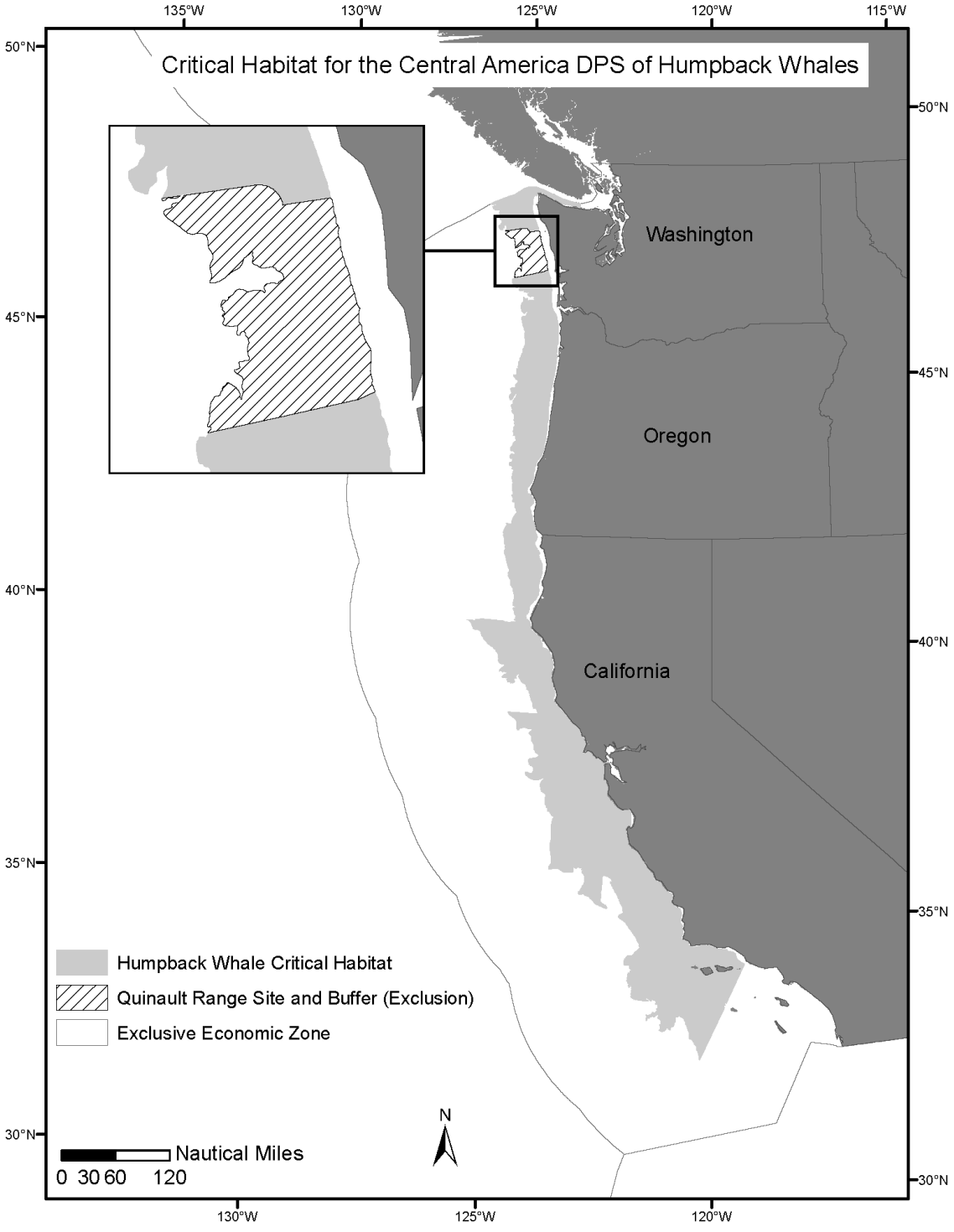

Figure 3-2. Critical habitat map for the Central American DPS for Humpback Whale

3.2.1.4 Groundfish Fishery Overlap

The 2024 BiOp uses a predicted species distribution model to show concentrations of humpback whales in the California Current Ecosystem (CCE). Hot spots can vary throughout the year, with central California seeing the highest concentrations in June-August and the highest concentrations off Oregon and Cape Elizabeth around October. There is a large amount of interannual variability both in terms of when peak humpback density is predicted to occur and where along the coast the large densities are anticipated. During 2014-2018 when the marine heat wave occurred, high densities occurred earlier in the year and San Francisco to Monterey Bay had the highest densities. More recently (2019-2023), there was a later than predicted migration, with the distribution being farther offshore in July and moving closer to the shore later in the year. The 2024 BiOp does note that beyond these trends, the density distributions and hotspots fluctuate annually. As an example, whale density was high off Washington in 2014, 2017, 2018, and 2020, but missing in 2015, 2016, and 2019. October (which is when a significant portion of LEFG activity occurs) sees concentrations of humpbacks closer to shore off Oregon and Washington, and also higher density off Oregon and Washington compared to California. However, overall October is extremely variable across the analytical period.

Section 5 of the 2024 BiOp provides an analysis of the spatial distribution of co-occurrence between humpback whales and the groundfish fishery over the last decade and the variations seen across time. A majority of sablefish fishing occurs in August through November (as shown in Figure 1-3), when humpbacks are present off the West Coast. The 2024 BiOp notes that areas of dense overlap with sablefish pot fisheries (all sectors, not just LEFG) include San Francisco Bay, Monterey Bay, and Big Sur, south of Cape Mendocino, along the Oregon coast, and around the Columbia River. However, recently, overlap occurs primarily off Washington and Oregon. The 2024 BiOp notes that over the period of analysis (2014-2023) the risk of overlap has shifted north, likely due to oceanographic conditions altering species habitats and changing fishing locations.

For the LEFG sector, specifically vessels using pot gear, the highest degree of overlap happens in October (followed closely by September). The remainder of the year, the LEFG pot sector has a lower degree of overlap compared to OA and catch share (i.e., gear switchers) sectors. The overlap risk varied over the ten-year analytical period (2014-2023), with 2020 having the highest degree of overlap of any year. 2020 was impacted by the COVID-19 pandemic in terms of overall landings, however, pot gear landings were the highest in 2020 compared to the previous six years (Figure 1-2). It is important to consider that 2020 was the first extension of the sablefish tier season through an emergency rule, which permitted additional opportunity for vessels to harvest sablefish quota (85 FR 68001). The emergency rule was driven by conditions in Alaska, including travel restrictions, postponed season start, and other quarantine requirements associated with the COVID-19 pandemic. While normally vessels would have started fishing by September, those conditions resulted in later fishing and, therefore, likely a higher overlap between the fishery and humpback whales. The extension resulted in 29 additional vessels fishing against their tiers and resulted in 16 of those vessels attaining nearly full tier limits (Agenda Item G.4.a, Supplemental GMT Report 1, March 2024).

Spatially, detailed analysis over the entire time series (2014-2023) of pot gear sets co-occurring with humpback distribution showed that "42 percent of total estimated pot sets in the LE sector overlapped with an area with humpback whale density, with 27% of these estimated overlap sets occurring in WA and 73% in CA/OR (Table A-11). LE landings are distributed so that 77% were made in CA/OR and 23% were made in Washington (Table A-12)".

With regards to hook-and-line fisheries (includes bottom longline and all other hook-and-line gears), the groundfish hook-and-line effort follows "a similar temporal distribution to sablefish pot fishing, with the majority of fishing occurring during peak humpback whale season from April-November (Figure A-7)"

(2014-2023). For the LE primary and trip limit fisheries, the highest overlap occurred in September and October, respectively (similar to pot gear). Overall, the LE hook-and-line fisheries have the most overlap with humpback distribution compared to OA or catch shares fisheries.

The LE hook-and-line sector had the highest level of overlap in 2016, over the ten-year analytical period (2014-2023). In terms of spatial overlap, there was a higher proportion of landings occurring into California and Oregon, as compared to the amount of sets that were occurring off those states.

3.2.2 Anticipated Effects of the Gear Endorsement Alternatives on Marine Mammals

Generally, beyond closures, changes to the fisheries do not benefit marine mammals in relation to incidental take, prey availability, or disturbances; rather changes to the fisheries tend to increase or decrease potential adverse impacts. Significantly, beneficial impacts are not likely outcomes with the management of groundfish fisheries, as few, if any, beneficial impacts to marine mammals are likely to result from groundfish harvest. The only exception may be instances in which marine mammals target prey from fishing gear, as seen with killer whales and sperm whales removing fish from hook-and-line gear or pinnipeds removing fish from nets or troll gear. In this example, prey availability is enhanced for these animals, as they may need less energy for foraging. However, that benefit may be offset by adverse effects from the artificial alteration of animal behavior and an increased potential for entanglement in the gear or of swallowing hooks, which are the most common impacts on marine mammals from the groundfish fishery.

Marine mammal entanglement risk arises based on the extent of overlap between marine mammals and fishing gear, which may be considered relative to the number and duration (soak time) of gear, and whether gear is on the bottom (groundlines), in the water column (vertical buoy lines), or on the surface (surface gear). As the 2024 BiOp notes, many times, marine mammal/fishing gear encounters do not lead to entanglements, but sometimes a portion of the line/gear, or a loop in the line, may catch on a body part of an animal. The gear may begin to wrap around the body (including the head/mouth area, pectoral and dorsal fins, and the tail/fluke region), as the animal moves through the water. Reacting to the contact of the gear or the drag created by the gear, the animal may perform quick and powerful changes in directions or body movements, attempting to shake the gear free. The specific dynamics of gear encounters that may be more likely to lead to an entanglement are not well documented, as very few entanglements have been witnessed in the initial stages. However, forensics review of entanglement cases suggests that knots/splices/leads and other potential sources of snags, along with loose or slack lines, are likely contributors to numerous entanglements. Other possible contributors include animal behavior (whether they encounter the gear while foraging or migrating) and ocean conditions (e.g. current, tide, wind), as well as the condition and/or life stage of the animal.

Under each of the gear endorsement Alternatives (and the scenarios developed to predict the potential changes in gear type used under the Alternatives), vessels are assumed to be operating under the fixed gear marking and entanglement risk reduction package (noted above in Section 3.1.2), which is anticipated to be in regulation by January 2026. Vessels would be required to mark their gear (pot and bottom longline) with gear-specific line markings and buoy markings to better positively or negatively attribute entanglements of whales or other marine mammals to the groundfish fisheries. These gear marking regulations would, therefore, allow for more tailored responses if an entanglement were to occur within the groundfish fishery. Note that under the new regulations, as currently anticipated, vessels could not deploy slinky pots and bottom longline hooks on the same groundline, as the gears would need different marking schemes. With regards to entanglement risk reduction, in addition to limiting the amount of surface line to 10 fm for all groundfish fixed gear (pot and bottom longline), vessels could voluntarily choose to utilize only a single set of surface gear on a terminal end of the groundline.

Vertical lines are a key source of entanglements for fixed gear fisheries, which was a primary reason for the Council recommending the voluntary use of surface gear on only one terminal end of the groundline of a set through the gear marking and entanglement risk reduction action. During discussion on that action, industry feedback included comments that LEFG vessels using bottom longline gear typically average two sets per trip (totaling four vertical lines), as compared to LEFG vessels using pot gear, which commenters estimated average seven sets per trip (totaling 14 vertical lines). Comparatively, using the most recent five years of WCGOP data (2018-2023), and noting limited observer coverage in the non-sablefish endorsed fishery, the average number of sets per trip for longline gear was 5.2 and for pot gear it was 13.9. Therefore, if the average pot vessel voluntarily used a single set of surface gear, rather than two sets of surface gear, the number of total vertical lines could be cut in half (to between seven to 14 vertical lines per vessel per trip, depending on the source of the average number). The following analysis of the gear endorsement alternatives considers this potential change in fishing behavior, under each of the scenarios and associated alternatives. Further, it analyzes how the change to fishing with surface gear on only one terminal end could impact the risk of entanglement when combined with the changes in gear endorsements that would occur under the action alternatives.

Under the No Action Alternative for this action item (i.e., Scenario 1), expected impacts to marine mammals would be those described in the Groundfish Fixed Gear and Entanglement Risk Reduction Measures Initial Review Draft RIR/RFA/Magnuson-Stevens Act Analytical Document (Agenda Item F.5, Attachment 2, June 2024; hereafter "Draft Gear Marking Analytical Document"). Effort would continue to be constrained, in terms of the proportion of bottom longline to pot gear, due to the number of bottom longline endorsed permits compared to pot permits. Vessels would continue to be able to utilize non-bottom contact gear, as permitted, and access latent permits for other gear types, as available. As outlined in the Draft Gear Marking Analytical Document, it is likely that vessels using bottom longlines would continue to utilize surface gear at both ends of the groundline, whereas pot vessels would be more likely to utilize only one set of surface gear.

Scenario 2, Anticipated Effects (Applies to Alternatives 1, 2, and 3):

Under Scenario 2 (which could apply under Alternatives 1, 2 and 3), where all bottom longline vessels switch to slinky pot gear, there could be potential adverse impacts to marine mammal prey availability, as compared to No Action (Scenario 1). Several studies have noted the depredation on hook-and-line gears in the Gulf of Alaska and Bering Sea regions in both commercial fisheries and research efforts (Peterson and Hanselman 2017 and Hanselman, et. al. 2018). Levels of depredation and encounters with whale species resulted in the North Pacific Fishery Management Council (NPFMC) implementing allowances for longline pot gear (including slinky pots) in their sablefish and turbot fisheries to reduce the occurrence of depredation by sperm and killer whales on hook and line gears (NMFS 2016, NMFS 2023). While the use of slinky pots did seem to work for a few seasons, a 2024 report by the Alaska Public Media stated that the pots limited depredation for a few seasons until the whales figured out how to open (shred) the pots. Therefore, it is not clear that, were it to result in an adverse impact to marine mammal prey availability, Scenario 2 would likely result in any such long-term impact.

There could also be potential adverse impacts to marine mammals in terms of increased entanglement risk under Scenario 2. It is unknown how the risk of entanglement with slinky pot compares to regular pot gear or longline gear; however, there was a known entanglement with slinky pot gear in 2023, as described above. Under the gear marking regulations, slinky pot gear would be required to be marked, as with other pot gear, and could not be set on the same groundline as bottom longline gear. Slinky pots would be required to be tended at least every seven days (50 CFR 660.230(b)(3) and 50 CFR 660.330(b)(2)(i)), the same interval as traditional pots are required to be tended. However, based on discussions with industry (pers. comm. Alexander Stubbs), slinky pots are likely to have a shorter soak time than standard pot gear, similar to longline soak times, thereby potentially reducing the overlap between the time a slinky pot is in the water

and marine mammals may be present, and therefore the likelihood of entanglements with marine mammals, including humpback whales.

Using WCGOP data from 2002 to 2023, Table 3-5 shows the distribution of soak times for bottom longline versus traditional pot gear sets from the LEFG fishery. Note that this table reflects just bottom longline sets, not other types of hook and line gears. Additionally, while slinky pots were observed in the LEFG fishery, they are not included in this table due to confidentiality. Looking at the distribution, the majority of observed bottom longline sets soak for a day or less, with 69 percent occurring for less than 12 hours. Comparatively, 64 percent of traditional pot hauls observed had a soak time longer than a day. If slinky pots are thought to be fished similarly to bottom longline gears, then it is likely that they will have shorter soak times compared to traditional pot gear and, under Scenario 2, the entanglement risk due to time vertical lines are set in the water would be similar to under No Action.

Table 3-5. Observed number of bottom longline and pot hauls by soak time from 2002-2023 for the LEFG fishery, percentage of hauls and number of vessels by gear and soak time category.

Soak Times	Longline			Pot		
	Hauls Observed	Percentage of Hauls Observed	Vessels	Hauls Observed	Percentage of Hauls Observed	Vessels
<2 hrs	228	2%	20	41	1%	3
2-6 hrs	3,405	33%	103	84	1%	9
6-12 hrs	3,512	34%	117	366	5%	23
12-24 hrs	2,024	20%	90	1,980	29%	34
24-36 hrs	498	5%	42	1,435	21%	30
36+ hrs	567	6%	28	2,906	43%	35

While it is anticipated that slinky pots and longlines might be fished similarly, slinky pots have been shown to be more selective of sablefish compared to bottom longline gear (Sullivan, et. al, 2022). However, catch rates of sablefish (CPUE) were actually higher for bottom longline gear compared to slinky pot gear in this study. It is important to note the pilot study was limited and therefore should be considered carefully. In summary, it could be that slinky pots might be more selective, and therefore efficient in catching sablefish as compared to bottom longline, however, bottom longline gear on a per set basis might have a higher harvest rate.

In terms of the number of vertical lines and their time in the water, which is the likely source of entanglements for whales and other marine mammals, as compared to No Action, larger vessels that use slinky pot gear may continue to utilize surface gear on both terminal ends of a set to reduce the likelihood of lines snagging, whereas smaller vessels with fewer pots may use a single set of vertical gear. With the shorter strings of gear typically used by smaller vessels, there is an increased risk of the vertical lines tangling (pers. comm., Alexander Stubbs). Under Scenario 2 (which could occur under each of the Action Alternatives), if slinky pot vessels continue to use the same set up as bottom longline vessels and fish two to five sets of a gear at a time, then the risk of entanglement would be similar to Scenario 1 (No Action).

While the amount of vertical lines and effort occurring can impact the risk of entanglement, it is also important to consider when and where the effort occurs (and the potential for shift in effort timing and location). As described in Section 3.2.1.4, September and October show the highest rate of co-occurrence for the LEFG fishery and humpback whales for both pot and hook-and-line gears. Assuming that these months would remain the highest harvest months, with vessels shifting from bottom longline gear to slinky pot gear maintaining the timing of their fishing, the pattern seen in the 2024 BiOp may remain the same

under Scenario 2. Spatially, Scenario 2 could result in a shift northward, particularly for non-sablefish endorsed vessels, if patterns in fishing effort shift more similar to those seen in traditional pot fisheries. Depending on the shift northward, this could result in a lower take of listed DPS stocks, and a potential higher encounter rate with the Hawai'i DPS that is likely to be found off Washington (Section 3.2.1), as compared to the Mexico and Central America DPSs that are likely to be found off the California and Oregon coasts.

Overall, under Scenario 2, impacts to marine mammals are anticipated to be potentially neutral, as slinky pot gear is assumed to be fished similarly to bottom longline gear; thus, the number of vertical lines in the water and the soak time for those lines are anticipated to be similar to Scenario 1 (No Action). Further there would be no change in the expected marine mammal interactions with vessels currently using standard pot gear as they are already permitted to use slinky pot gear.

Scenario 3, Anticipated Effects (Applies to Alternatives 2 and 3):

Under Scenario 3 (which could occur under Alternatives 2 and 3), where there would be a mix of traditional bottom longline vessels moving to slinky pots or traditional pot gear, there could be adverse impacts related to prey availability, similar to under Scenario 2. Pot gear (slinky pot or traditional) is known to have lower rates of depredation, thereby reducing ease of access for marine mammals to take fish off bottom longline hooks. Under Scenario 3, there could also be potential adverse impacts, as compared to Scenario 2, in terms of entanglements due to increases in standard pot gear usage, which has a higher degree of entanglement risk compared to bottom longline gear (based on historical data).

Risk of entanglement (and observing an entanglement to report it) under Scenario 3 would depend on the number of vertical lines present in the water, soaking time, and effort, as discussed for Scenario 2. The 2024 BiOp notes that detecting sablefish pot entanglements "might be easier compared to those involving other types of gear because whales entangled in heavier strings of pot gear, like sablefish gear, are often more restricted in their movements and less likely to be free-swimming, making the entanglement more noticeable to observers." Slinky pots weigh less than a standard pot (approximately 12 pounds compared to 75 lbs), depending on the design, suggesting there could be a higher risk of an unobserved entanglement with a slinky pot compared to a traditional pot (noting the entanglement that occurred in 2023), e.g., the whale is able to be free-swimming while entangled and may be less likely to be documented. The use of lighter weight slinky pot gear could result in fewer or less severe entanglements, however, if animals are able to more easily break or shed gear during an interaction, such that entanglements or serious injuries do not materialize as a result of an interaction with the gear.

As described above, it is likely that vessels that utilize traditional pot gear would take advantage of the voluntarily allowance to use a single set of surface gear (decreasing the number of vertical lines by half assuming the same number of sets, if a vessel were to transition from bottom longline to traditional pot, as analyzed under Scenario 3 for vessels over 50 ft LOA). However, vessels may shift to using more sets of pot gear compared to longline gear, if recent trends hold. Pot vessels have an average of seven to 14 sets per trip as compared to two to five sets per trip for longline vessels (depending on the source as described above). This would equate to longline vessels averaging a total of four to 10 vertical lines per trip, as compared to LEFG vessels using pot gear averaging 14-28 vertical lines using two sets of surface gear, or seven to 14 vertical lines assuming utilization of the voluntary use of single set of surface gear.

Scenario 3 might also result in gear being present in the water longer for each set; thus increasing the risk of entanglement per set. Traditional pot soaking times are higher than bottom longline soaking times (Table 3-5) and it is thought that slinky pot soak times are similar to bottom longline soak times (as described for Scenario 2). Therefore, under Scenario 3, which may occur under Alternatives 2 or 3 where all bottom

longline vessels transition to slinky pot or traditional pot gear, there could be more LEFG gear in the water at any given time for the LEFG fleet.

However, while additional gear might be soaking for a longer time in a single set under Scenario 3, with an increased number of vertical lines on average per trip (even with the utilization of a single set of surface gear) as compared to Scenarios 1 and 2, pot gear also has a higher CPUE than longline gear, which may reduce overall time gear is in the water. Utilizing the same set of WCGOP data used for the soak time analysis, of the LEFG hauls observed with sablefish (the primary target for pot gear), pot gear has an average of 1,279 lbs per set (haul) compared to 1,042 lbs per set (haul) for longline vessels. Combined with the higher number of sets per trip (~ 5 for longline, ~14 for pot), this results in a higher CPUE (in terms of hauls and trips) for pot vessels. Fish ticket data confirms that for each vessel size class, pot vessels typically landed a little less than double the amount of sablefish as bottom longline vessels (Table 3-6).

Table 3-6. Average sablefish landings (rd. wt.) per trip for LEFG vessels by gear type, 2020-2024.

Vessel Length	Longline	Pot
30 ft LOA or less	856	-
30-40 ft LOA	1,347	2,846
40-50 ft LOA	2,566	4,590
50 ft LOA or greater	12,183	21,085

In considering these factors and the risk to entanglement, it is most likely that the risk to entanglement would be neutral under Scenario 3. While the amount of vertical lines and soak time may increase under Scenario 3 when considering the shift of 50 ft LOA vessels to traditional pot gear, the increased CPUE for sablefish (the primary target of pot gear) suggests that fewer trips would be needed to harvest the same amount of quota. Therefore, while the concentration of vertical lines and gear might increase under Scenario 3 at a given time, the overall amount of gear in the water is likely similar, if fewer trips are taken.

Given that the concentration of gear at any time may change under Scenario 3, it is important to consider when and where pot gear activity typically occurs as compared to bottom longline gear. As described in Section 3.2.1.4, September and October show the highest rate of co-occurrence for the LEFG fishery for both pot and hook-and-line gears. Assuming that these months would remain the highest harvest months, this pattern seen in the 2024 BiOp may remain the same under Scenario 3. The magnitude of the overlap in those months is uncertain depending on the level of effort occurring. Similar to Scenario 2, it is likely that September and October would remain the highest harvest months under Scenario 3 and therefore the pattern seen in the 2024 BiOp may remain the same. Spatially, there could be an increase in the proportion of effort to the north if longline vessels that shift to traditional pot gear follow the recent pattern of effort shift seen in the sablefish pot fishery outlined in Section 3.2.1.4. Similar to Scenario 2, this could result in a change in the DPS encountered, with Washington seeing a larger proportion of Hawai'i DPS as compared to Oregon and California, which typically just observe the Central American and Mexico DPS.

In sum, Alternative 1, which would permit slinky pot gear to be used by bottom longline endorsed permits, would likely see impacts to marine mammals between those described for Scenarios 1 and 2 above, with some vessels choosing to utilize slinky pot gears and others maintaining bottom longline usage. This outcome would likely result in some adverse impacts in terms of prey availability and an unknown impact in terms of entanglement given the limited information available for slinky pots.

Alternatives 2 and 3 are likely to incur similar impacts on marine mammals, as the additional gear types permitted under Alternative 3 (e.g., other OA hook and line gear types) are likely to have little to no impact on marine mammals. Impacts of these alternatives are likely to be a combination of the three scenarios,

with some vessels maintaining bottom longline gear, some vessels switching to slinky pots, and some utilizing traditional pot gear. This overall would likely result in some adverse impact in terms of prey availability and an unknown impact in terms of entanglement due to uncertainty regarding the number of vertical lines and the actual number of entanglements attributed to the groundfish fishery. However, it is likely that there would be some adverse impacts on marine mammals under these alternatives given the likely increase in vertical lines present and gear soaking for longer time periods with increased traditional pot gear usage as compared to No Action. These impacts could be mitigated, though, if pot gear (slinky pot or traditional pot) continues to be more efficient in harvesting key species, such as sablefish, thereby reducing total time needed to harvest gear through the fishing season.

Cumulative Effects on Marine Mammals

Under each of the three scenarios associated with Alternatives 1-3, there is a potential for some adverse impacts to prey availability and on marine mammals due to entanglement risk. However, the risk of the impacts is dependent upon the degree of the shift to pot gear from bottom longline gears, the type of pot gear shifted to, and the degree to which vessels shift in terms of fishing area and time. While each scenario looks at the extreme situation of all bottom longline vessels shifting to pot gear (slinky or traditional), it is highly unlikely that this situation would occur given the investment required (new gear, operational changes, targeting practices) and the fact that shifting may not be profitable for vessels (see Section 3.1.1 and Section 4.5.1.3).

Potential crossover from other fisheries due to changing opportunities, such as from the gear switching fleet, may also drive the changes in the occurrence of pot effort under the alternatives. Limitations in other fisheries may drive participation into the LEFG fishery with increased gear flexibility. As an example, for OA vessels, if the cost of purchasing of a LEFG permit could be absorbed through the increased landings opportunities permitted, then there could be a shift from OA to LEFG (noting that this would entail a higher barrier to entry).

Sablefish allocations are also likely to drive potential changes in effort. In 2025-2026, sablefish allocations are increasing by over three-fold compared to 2023 (which was the highest since 2011). Market conditions and pricing are likely to keep total landings similar to recent years. However, vessel activity could increase to harvest sablefish, particularly with pot gear (slinky or traditional), as, in terms of CPUE, it is more effective.

Considering the potential impacts of the proposed action item under the alternatives evaluated in this analysis, together with the effects of past and present actions previously analyzed in other documents incorporated by reference, and the impacts of RFFA, the overall potential cumulative impacts of the proposed action, while uncertain, are determined to be not significant. There would be an ultimate cap on the number of vessels allowed to fish in the LEFG fishery, particularly the tier fishery, due to the unchanging overall amount of limited entry permits, which drives the majority of sablefish pot effort. With the implementation of the gear marking and entanglement risk reduction measures in 2026 (which would be prior to the implementation of this action), formerly unknown entanglements may be attributed or not attributed to the groundfish fishery, allowing for more tailored management as needed. Biennial estimates of whale entanglements in the groundfish fishery are still anticipated to be produced by NMFS, which permits the Council to recommend new management measures to minimize risk of entanglement, if needed.

3.3 Turtles

As with marine mammals, NMFS manages ESA-listed turtles that are primarily affected by fisheries through interactions with fishing gear, disturbance by fishing activity or vessel movement, or prey competition.

3.3.1 Status/Affected Environment

There are two populations of leatherback turtles in the Pacific Ocean (West Pacific and East Pacific), with the 2024 BiOp noting that the population most likely to occur within the action area are those that originate from nesting aggregations in the Western Pacific. Genetic analyses indicate a low probability of the East Pacific population occurring off the West Coast and none have ever been sampled. The West Pacific populations nests at beaches in Papua Barat (Indonesia), Papua New Guinea, the Solomon Islands, and Vanuatu, and exhibit a bimodal nesting pattern, with nesting peaks during the boreal winter (December-February) and boreal summer (May-July; Agenda Item G.4.a, NMFS Report 5, June 2021). There is a subset of the Western Pacific population (summer nesters) that forages off northern and central California, southern Washington, and northern Oregon. The total nesting population has declined by six percent annually (2001-2017) and the subpopulation that forages in the CCE has declined at a similar rate since 1990. However, newly established monitoring programs, and data from those programs not incorporated in the studies used in the determination of that six percent decline, show increases in abundance from 2017.

Oceanographic conditions affect the arrival, departure, and abundance of leatherbacks in the CCE, mostly likely due to prey availability (e.g., jellyfish). Changes in temperature could result in shifting of dominant forage populations (less energetically dense jellyfish in favor of energetically poor pyrosomes) or shifting of those forage populations deeper or further north/south. Overall, though, limited information is known about the distribution and abundance of the sea turtle population in offshore waters as most surveys are focused on the shelf region and shallower (Agenda Item G.4.a, NMFS Report 5, June 2021). While it is thought that nearshore waters are the primary spot for foraging, offshore waters may also be used depending on conditions.

3.3.1.1 Historical Bycatch

Historically, the only entanglement of a leatherback sea turtle in the groundfish fishery was in the OA pot fishery in 2008. Additionally, there were sightings of leatherbacks by observers in the fixed gear fisheries in 2005 (LE sablefish hook and line) and 2014 (OA fixed gear). The 2024 BiOp describes estimated bycatch in the OA fleet (Table 23) and describes the projected uncertainty for the estimated total number of entanglements occurring in all fixed gear fisheries off the West Coast. However, with sablefish pot gear, it is thought that any entanglements may be easier to detect compared to other fisheries, as the gear is likely to restrict sea turtle movements compared to gear that uses lighter lines.

3.3.1.2 ITS

The 2024 BiOp anticipates that any take of leatherback sea turtles would occur through entanglement with sablefish pot gear (specifically in the OA sector). The expected bycatch (and anticipated M/SI) in sablefish pots is

- Annual Max= 1.67
- Maximum 5-year Running Average= 0.86

Therefore, if two or more leatherbacks are observed or estimated to be incidentally captured in any one year, or if the five-year running average exceeds 0.86 per year, then the ITS would be exceeded.

3.3.1.3 Critical Habitat

Critical habitat for leatherback sea turtles was revised in 2012 and includes nearly 42,000 sq miles of marine habitat off the West coast from the surface to a maximum depth of 262 feet (Figure 3-3). The feature deemed essential to the species' conservation was the occurrence of prey species.

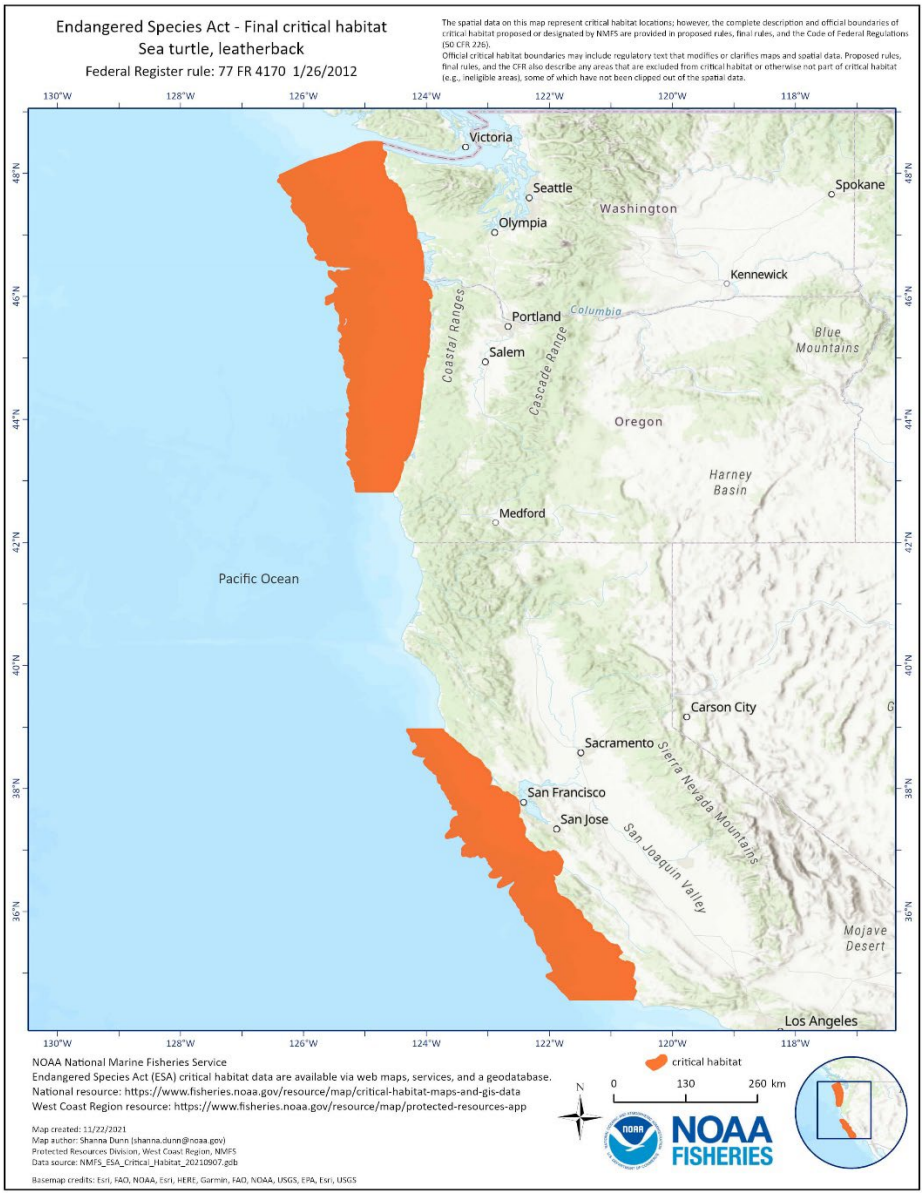

Figure 3-3. Critical habitat for leatherback sea turtle

3.3.1.4 Groundfish Fishery Overlap

The species distribution model in the 2024 BiOp used a predicted habitat suitability model for May (beginning of migration back to the CCE), August (middle of migration), and November (beginning of migration southeast to breeding/wintering grounds). Peak habitat suitability occurs July through September throughout the entire coast. However, unlike humpbacks, leatherback habitat suitability does not have a lot of annual variability in terms of seasonal or temporal distribution. Hot spots for leatherbacks include central California and the northern Oregon coast. For the three months modeled (May, August, and November),

there are differences in habitat suitability. May can see some differences in the northern distribution of habitat suitability with some years having higher suitability further north and other years having minimal suitability in the northern part of the CCE. August sees suitable habitat across the entire coast, both nearshore and offshore. In August, denser aggregations occur in central California and Oregon near the coast. In November, suitable habitat moves offshore (similar to May). Overall, highly suitable leatherback habitat is located near the coast of central California and slightly offshore of Oregon and Washington (Figure A-20, 2024 BiOp).

The 2024 BiOp notes that it is difficult to determine whether fishing effort or habitat suitability is driving co-occurrence of leatherback sea turtles and the groundfish fishery. Additionally, limited sightings of leatherbacks in areas of the Pacific Northwest are likely due to decreases in the population; however, limited leatherbacks in the region also decrease the risk of entanglement, even with high habitat suitability. Overall, groundfish fishery overlap with leatherback habitat has shifted northward in recent years (2021-2023) with minimal overlap occurring off California. This pattern aligns with shifts in pot fishing effort (all sectors, but particularly the IFQ sector). This shift in effort, particularly near key habitat off of Cape Elizabeth, WA, does raise the risk of entanglement, but again is mitigated by the limited leatherback sightings in the region. For the LE pot sector, specifically, the highest overlap with leatherback habitat occurred during September (over the time series; similar to the overlap seen for humpbacks) and in 2023 (single year; next highest in 2020). In terms of depth of foraging, leatherbacks are not likely to be in prime sablefish pot fishing grounds, as foraging habitats off central California are less than 110 fathoms or off Oregon are outside of 1000 fathoms. Climate impacts to jellyfish aggregations may also influence habitat overlap, with leatherback distribution shifting northward with prey aggregations (also aligning with shifting pot effort).

While there have been no observed leatherback entanglements with hook-and-line gears (including bottom longline gears), the 2024 BiOp still recognizes the risk of entanglements for leatherbacks, given the use of vertical lines in the fishery. Over the analyzed time series, there has been a general decline in the overlap of the hook-and-line fisheries and the habitat suitability for leatherbacks. LE effort with hook-and-line gear is highest off Oregon and Washington. The main hotspots for overlap with suitable leatherback habitat include north of the Columbia River, south of Cape Blanco, Monterey Bay, and Orange County, but overlap is overall sparse compared to the distribution of hook-and-line effort. The LE (primary and trip limit) sector had the highest habitat overlap in August and September (slightly earlier than pot gear).

3.3.2 Anticipated Effects of the Gear Endorsement Alternatives on Turtles

Similar to marine mammals, the risk to turtles from the groundfish fishery is primarily through entanglements with lines and the potential for the removal of prey (jellyfish). Non-trawl gears historically do not have a significant impact on jellyfish removal due to their selectivity. Further, as noted in the 2012 BiOp related to critical habitat, food web modeling conducted by the Northwest Fisheries Science Center in 2011 indicated that proposed fishing is unlikely to strongly impact leatherbacks through food web interactions (NMFS 2012).

Under Alternatives 1-3, and depending on the scenario(s) that results from these alternative, there is the potential for an increase in the number of vertical lines in the water, as described above for impacts on marine mammals. It is likely that a mix of the scenarios would occur under any of the action alternatives, with some vessels maintaining bottom longline use and others moving all or a proportion of their fishing to pot gears (slinky or traditional, depending on the alternative). Additionally, as discussed for Alternative 3 and with respect to impacts to marine mammals from the potential additional use of other non-trawl gear types, there is no anticipated impact to turtles expected through increased use of these other gear types.

The main difference from the expected impacts on marine mammals, as compared to those expected on turtles, is the risk of effort shifting northward and the potential risk to entanglement given the high habitat suitability for turtles in the Pacific Northwest. For humpbacks, this northward shift of effort could lead to a reduction in the risk of entanglement with the two listed DPS stocks. For leatherbacks, however, this northward shift could increase entanglement risk. However, as described above, there have been limited recent observations of leatherbacks in the CCE, specifically the Pacific Northwest, which decreases the overall anticipated risk of entanglement in that region.

Cumulative Effects on Turtles

Cumulative effects on turtles from this action and those described in Section 3.1.2 are the same as those expected for marine mammals. Considering the potential impacts of the proposed gear endorsement action under the alternatives evaluated in this analysis, together with the effects of past and present actions previously analyzed, and the impacts of RFFA, the overall potential impacts of the proposed action on sea turtles, while uncertain, are determined to be not significant. With the implementation of the gear marking and entanglement risk reduction measures in 2026 (which would be prior to the implementation of this action), formerly unknown entanglements would be able to be attributed or not attributed to the groundfish fishery, allowing for more tailored adaptive management as needed.

3.4 Seabirds

Seabirds are protected under the Migratory Bird Treaty Act. Additionally, some species are listed and protected under the ESA. Seabirds are generally affected by fishing through interactions with fishing gear, disturbance by fishing activity or vessel activity, and prey competition.

3.4.1 Status/Affected Environment

Table 3-7 describes the identified seabird species with estimated mortality in West Coast non-trawl groundfish and directed halibut fisheries from 2012-2018. For a full description of all seabirds found on the West Coast, please see Janet, et.al. 2021. With regards to this action, the primary species of concern likely to interact with the LEFG fishery is short-tailed albatross, which is listed under the ESA. Short-tailed albatross are managed in the groundfish fishery with take thresholds of five estimated or one observed albatross over a two-year period, neither of which have been exceeded based on the last status report (Agenda Item H.6.a, NMFS Report 4, June 2023). The only observed take of short-tailed albatross was in 2011, in the LEFG longline sablefish fishery.

Table 3-7. Seabird species Observed in West Coast Groundfish Fisheries.

Type	Common name	Status[7]
Albatrosses	Black-footed	Near threatened
	Short-tailed	Endangered
	Laysan	Near threatened
Fulmars	Northern fulmar	Least concern
Shearwaters	Sooty	Near threatened
	Pink-footed	Vulnerable
Cormorant	Brandts	Least concern
	Double-crested	Least concern
Loon	Common	Least concern
Phalarope	Red-necked	Least concern
Gulls	Glaucous-winged	Least concern
	Mew	Least concern
	Western	Least concern
	Arctic herring	Least concern
	California	Least concern
	Ring-billed	Least concern
Murres	Common	Least concern

(Source: WCGOP Seabird Bycatch Report 2002-2018)

3.4.2 Anticipated Effects of the Gear Endorsement Alternatives on Seabirds

Under No Action (Scenario 1), the impacts to seabirds would remain as described in the 2025-2026 Harvest Specifications EA. Vessels greater than 26 ft LOA fishing for groundfish with bottom longline gear would be subject to the seabird mitigation measures as described in Section 660.21 of the Federal groundfish regulations; streamer lines are required when gear is deployed, unless night setting or under a weather safety exemption. There are no seabird mitigation requirements for vessels using other non-trawl gear types.

Under any of the action alternatives (Alternatives 1-3), it is likely that there would be a decrease in the use of bottom longline gear as described in Section 3.1.1. While the degree of this shift is uncertain, the potential for seabird entanglement with longline gear is expected to decrease with the anticipated increased use of pot gear under any of the proposed scenarios that could occur under the action alternatives. Other OA gears that would be permitted under Alternative 3 are not expected to impact seabirds as they are already used by OA vessels, and there have been minimal observed, non-lethal encounters with seabirds associated with those gear types (see Table 3 of Agenda Item H.6.a, NMFS Report 4, June 2023). While fishing effort with those gear types may increase under Alternative 3 in order to target non-sablefish species, it is not expected to result in significant impacts to seabirds.

Cumulative Effects on Seabirds

Considering the potential impacts of the proposed action under the alternatives evaluated in this analysis, together with the effects of past and present actions previously analyzed, and the impacts of RFFA, the overall potential impacts of the proposed action on seabirds are determined to be not significant.

3.5 Habitat

3.5.1 Status/Affected Environment

The Council and NMFS have updated available habitat information, and their understanding of the impacts of fishing on habitat, in periodic 5-year reviews of the EFH components in the FMP. Maps and descriptions

[7] Endangered under ESA; all other categories are International Union for the Conservation of Nature

of EFH for groundfish species are available in the FMP (Appendix B and Appendix C of the Groundfish FMP). The Pacific Marine and Estuarine Fish Habitat Partnership (PMEP) has a publicly available database of habitat data layers that utilize the Coastal and Marine Ecological Classification Standard (CMECS). The "West Coast USA Nearshore CMECS Substrate Habitat" dataset shows substrate data out to the deepest edge of available data on the West Coast. For more information about PMEP and to see the habitat information, please visit https://www.pacificfishhabitat.org/data/nearshore-cmecs-substrate-habitat/. All habitat closures (and other closures for groundfish non-trawl gears) can be found on the Amendment 32 Story Map.

3.5.2 Anticipated Effects of the Gear Endorsement Alternatives on Habitat

Fishing operations may change the abundance or availability of certain habitat features used by managed fish species to spawn, breed, feed, and grow to maturity. These changes may reduce or alter the abundance, distribution, or productivity of species. The effects of fishing on habitat depend on the intensity of fishing, the distribution of fishing with different gears across habitats, and the sensitivity and recovery rates of specific habitat features.

As described in the FMP Appendix C, habitat sensitivity and recovery time vary between habitat type and gear type. Table 2 in Agenda Item I.5.a, Attachment 1, November 2024 provides an overview of the impacts from groundfish gears. Each gear type has a different impact and recovery time on bottom substrate types. Within the non-trawl gear types (of those with research available), habitat is more sensitive to interaction with bottom longline and pot gear than other types of fixed gear (e.g. hook-and-line). The habitat also incurs a longer recovery time from those interactions. Of the three general bottom type categories (hard, mixed, soft), hard bottom is the most sensitive to bottom trawl and pot/bottom longline gears, as compared to the other two bottom types. Hook-and-line style gears and midwater trawl are thought to have similar impacts across habitat types. Though unlike sensitivity, recovery time is lowest for hard substrates and highest for soft bottom for non-trawl gears.

Using the three scenario approach outlined in Section 3.1.1, there could be a change in impacts on habitat under the action alternatives, as compared to No Action. Under No Action, there would be no habitat impacts outside of those described in the 2025-2026 Harvest Specifications EA, which states that bottom contact fishing gears, such as pot or longline gears, may impact benthic habitat and these impacts are mitigated to the extent practicable with gear restrictions and numerous closed areas throughout the EEZ. All bottom contact EFHCAs, Groundfish Exclusion Areas (GEAs) and other closures would remain in place restricting the use of bottom contact gear respectively within the action area. These impacts are not considered significant.

Under Alternatives 1-3, the degree of that impact would depend on the nature and extent of the change in the gear types used by LEFG vessels under each alternative. Appendix C to the Groundfish FMP discusses the impacts of bottom longline versus traditional pot/trap gear. Table 5 of Appendix C shows the impact level of bottom longline and trap gear on geological and biological features and low/high energy environments. In mud/sand habitats, bottom longline gear has about 50 percent less of a reduction in "functional value" (which was used to show vulnerability of geological and biological features to differing impacts), as compared to pot gear, for geological features, and no impacts to biological features. In rocky substrates, however, the impacts to geological features are the same across longline and pot gear (up to a 20 percent reduction in functional value). For biological impacts, though, trap gear is estimated to result in a 10 percent reduction in functional value, whereas bottom longline gear can vary from no impact to up to an approximate 18 percent reduction in functional value. In terms of specific impacts, bottom longline gear is thought to overturn or snag corals and sponges, and pot/trap gear can smother habitat or crush organisms. Both gear types are subject to becoming derelict gear and affect EFH. In general, there has been limited observed loss of longline gear in the groundfish fishery (Agenda Item F.5., Attachment 2 (Electronic Only),

June 2024), and pot/trap gear types have a biodegradable escape panel that is designed to open and release any fish, if the gear is lost, in order to prevent ghost fishing. The impacts of the allowance for the use of a single vertical line for pot gear under the forthcoming gear marking and entanglement risk reduction measures, and the impacts to EFH through ghost fishing in the groundfish fishery, are assessed in Agenda Item F.5., Attachment 2 (Electronic Only), June 2024. Finally, while the likely impacts of slinky pot gear on habitat are unknown, the pots are significantly lighter in weight, and therefore may have a reduced impact on habitat, as compared to standard pot/trap gear. Though, one study has noted no significant differences between lightweight traps versus heavy commercial traps, in terms of impacts related to the penetration of the seafloor or movement of the trap during soaking time (Kopp, et. al, 2020).

Alternative 1, which would permit all longline endorsed vessels to utilize slinky pot gear, would likely have less impacts than Alternative 2 and 3, given that traditional pot gear allowance (and therefore use) would be the same as under No Action. The degree of impact of slinky pot versus bottom longline gear is unknown, but given the limited information available, it is likely neutral to slightly negative as compared to No Action. The highest degree of potential impact on habitat resulting from the proposed action would occur under Alternatives 2 and 3, under which impacts could range up to those that would occur under Scenario 3, where all LEFG bottom longline vessels shift to utilizing pot gear, with some using slinky pots and others using traditional pots. Pot gear can have more negative impacts to habitat as compared to longline gear, as described above. However, as described in previous sections, the scenario where vessels shift wholly to pot gear is unlikely to occur, as some vessels are likely to maintain bottom longline usage. Therefore, the impacts of Alternatives 2 and 3 are likely neutral to slightly negative as compared to No Action. Other non-trawl gear types that would be permitted under Alternative 3 may have some habitat impacts, but are expected to be minimal as compared to fixed gear impacts.

Cumulative Effects on Habitat

Considering the potential impacts of the proposed action under the alternatives evaluated in this analysis, together with the effects of past and present actions previously analyzed, and the impacts of RFFA, the overall potential impacts of the proposed action on habitat are determined to be not significant. While additional pot gear effort may occur, many areas sensitive to bottom contact gear would still be protected through EFHCAs and GEAs, which limit the overall impacts to habitat from fishing in the action area.

3.6 Other Resources

3.6.1 No Action

Impacts to target species, non-target species, protected/prohibited species, or ecosystem (including climate change impacts) considerations under No Action would be those described under the 2025-2026 Harvest Specifications EA. Vessels would be required to fish under the current gear endorsements associated with the registered permits unless otherwise permitted (i.e., using non-bottom contact gear).

3.6.2 Anticipated Effects of the Proposed Gear Endorsement Alternatives on Other Resources

No effects are expected on target species, non-target species, protected/prohibited species or the ecosystem. With regards to target species and non-target groundfish species, as described in previous NEPA documents (2025-2026 Harvest Specification EA), groundfish harvest specifications assume full removal of ACLs in assessing the impacts to target stock and the action alternatives would not affect how groundfish are managed to stay within allocations or ACLs. With regards to protected/prohibited species not discussed above, non-trawl gear types historically have little to no impact on salmonids (Richerson, et. al 2022).

Eulachon and green sturgeon are typically only encountered in groundfish trawl fisheries given gear selectivity (Agenda Item H.6.a, NMFS Report 1, June 2023 and Agenda Item H.6.a, NMFS Report 2, June 2023). Estimates of Dungeness crab and other prohibited species interactions are also low and can be found in the Groundfish Estimated Mortality Matrix (GEMM). Additionally, Pacific halibut catch on the West Coast is managed through a separate process (i.e., not in the Groundfish FMP). Vessels participating in the LEFG fisheries may retain halibut during the directed halibut season (per limits), or in the incidental fishery north of Pt. Chehalis when fishing in the primary tier fishery. Other halibut would need to be discarded if caught.

With regards to ecosystem impacts, there are no anticipated impacts from the potential shift in gear usage associated with the action alternatives, as non-trawl gear typically have minimal to negligible impacts on forage species. In addition, the overall effort of the groundfish fishery would continue to be constrained by the allocations and management measures set forth in the harvest specifications. Therefore, ecosystem impacts anticipated to result from the alternatives are expected to be similar to those as described in the 2025-2026 Harvest Specifications EA.

4 Regulatory Impact Review

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

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

The RIR provides an assessment that can be used by the Office of Management and Budget to determine whether the proposed action could be considered a significant regulatory action under E.O. 12866, as amended by E.O. 14094. E.O. 12866 defines what qualifies as a "significant regulatory action" and requires agencies to provide analyses of the costs and benefits of such action and of potentially effective and reasonably feasible alternatives. An action may be considered significant if it is expected to:

- Have an annual effect on the economy of $200 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local or tribal governments or communities;
- Create a serious inconsistency or otherwise interfere with an action taken or planned by another agency;
- Materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or
- Raise novel legal or policy issues arising out of legal mandates, the President's priorities, or the principles set forth in E.O. 12866.

4.1 Statement of the Problem

A statement of the problem is available above in Section 1.1 titled "Purpose and Need".

4.2 Description of the management goals and objectives

Management goals and objectives are found in Section 1.1 titled "Purpose and Need".

4.3 Description of Fisheries and Other Affected Entities

A detailed description of the fishery and affected entities is available in Section 1.5. The Stock Assessment and Fishery Evaluation (SAFE) Document also provides a summary of historic harvests, description of management, and economic characteristics of harvesting vessels, processors, and communities.

4.4 Description of the Alternatives

A description of the Alternatives is available in Section 1.

4.5 An Economic Analysis of the Expected Effects of Each Alternative Relative to the No Action Alternative

4.5.1 Analysis of Expected Effects: LEFG Permit Endorsement

Each of the endorsement alternatives has the potential to impact several factors that could result in economic impact (positive or negative) to LEFG participants. 'Participants' includes both vessels participating in the fishery and permit holders, including current and new entrants. The following analysis looks at these participants and the economic impact of each alternative.

4.5.1.1 Anticipated Effects of the Proposed Action on LEFG Gear Endorsement Flexibility

Under No Action, vessels registered to LEFG endorsed permits would be restricted to using the endorsed gear type unless fishing with non-bottom contact gears. Otherwise, vessels would need to declare into the OA sector and be restricted to the OA trip limits, per the crossover provisions, with any mortality counted towards the LEFG sector allocation (if applicable).

Alternative 1 would permit vessels with bottom longline endorsements to utilize slinky pot gear to harvest their quotas. In general, this alternative would provide increased flexibility for bottom longline participants and permit owners, but would cause no direct change in flexibility for pot gear participants or permit owners.

Alternative 2 would permit vessels registered to LEFG endorsed permits to utilize either pot (slinky or traditional) or bottom longline gears (in addition to non-bottom contact gears as permitted by Amendment 32) to harvest quotas. This alternative would provide increased flexibility for vessels registered to LEFG endorsed permits to use either type of fixed gear.

Alternative 3 would permit vessels registered to LEFG endorsed permit to utilize any legal non-trawl gear type to harvest quotas (i.e., permits formerly endorsed for fixed gears would change to endorse all non-trawl gears). Of all three alternatives, this would provide the most flexibility to industry and be the least complex to regulate.

4.5.1.2 Anticipated Effects of the Proposed Action on Non-Trawl Attainment

The nature and extent of the flexibility of the gears permitted to be used in the LEFG fishery (along with other factors, including market constraints) under each alternative may have differential impacts on the overall attainment of the fishery's catch limits.

Under No Action, there would be no expected increase in the level of non-trawl attainment outside of that presented in the 2025-2026 Harvest Specifications EA. Vessels would still be subject to gear endorsement restrictions (noting allowances for non-bottom contact gears).

There is likely little change in the overall non-trawl attainment of catch limits under Alternatives 1 and 2, as only the use of currently permitted fixed gears (and non-bottom contact gears) would continue to be allowed to harvest groundfish species. Sablefish is the primary target for the LEFG fishery and, historically, attainment of LEFG sablefish north allocations has averaged 80 percent (2019-2023), and attainments were higher in the preceding five years (93 percent, 2013-2018); see Table 10 of Agenda Item I.7, Attachment 2, September 2024). While landings have been generally increasing, those increases have not occurred to the same degree that allocations have been increasing (percent increase from 2019 to 2023 was 30.2 percent for landings and 50.8 percent for allocation for the LEFG sector). Overall, it is not expected that the

increased gear endorsement flexibility provided under Alternative 1 or 2 would increase attainment to the full available allocation.

Alternative 3 is likely to generate the most increases in the non-trawl attainment of catch limits given the ability it would provide to vessels to target all groundfish species with LE trip limits with any legal non-trawl gear. It is difficult to assess the likely nature and degree of these potential changes in attainments, or which target or non-target species may see the greatest changes in attainments, but there are likely to be positive impacts under Alternative 3 on overall non-trawl attainments, as compared to No Action and the other action alternatives, given the increased flexibility Alternative 3 would provide to target available groundfish species.

4.5.1.3 Anticipated Effects of the Proposed Action on Profitability

A primary factor that may drive vessels to switch from bottom longline to pot gear is the profitability associated with fishing each gear type. Unlike the trawl catch share program, which requires the submission of economic data (including costs) for the two years prior to and every year since implementation, there is not a mandatory data collection program for the LEFG permit stacking program (or the LEFG program in general). Therefore, limited information on the costs specific to the LEFG program is available. However, this section attempts to provide relevant revenue information and a preliminary investigation into the potential effects of the proposed action on profitability, using available information.

As discussed above in Section 1.5.2, sablefish is the main driver of the LEFG fishery. The larger the vessel fishing for sablefish, regardless of gear type, the higher the average trip revenue from sablefish (Table 4-1). Pot vessels also tend to bring in a higher revenue per trip than bottom longline vessels; a trend that aligns with the higher landings per trip by pot vessels shown in Table 3-6. The differential between gear types in terms of price per pound for sablefish has been increasing since 2018 when the price per pound for sablefish caught by pot gear dropped below the price per pound for sablefish caught by bottom longline gear (Figure 4-1).

Table 4-1. Average trip revenue for sablefish and non-sablefish by gear type and vessel size, 2020-Dec 11, 2024.

	Sablefish		Non-Sablefish	
Vessel Size	**Bottom Longline**	**Pot**	**Bottom Longline**	**Pot**
30 ft LOA or less	$2,231	-	$1,545	-
30-40 ft LOA	$3,254	$4,370	$1,889	$566
40-50 ft LOA	$5,638	$9,267	$1,461	$177
50 ft LOA or greater	$23,772	$33,567	$765	$766

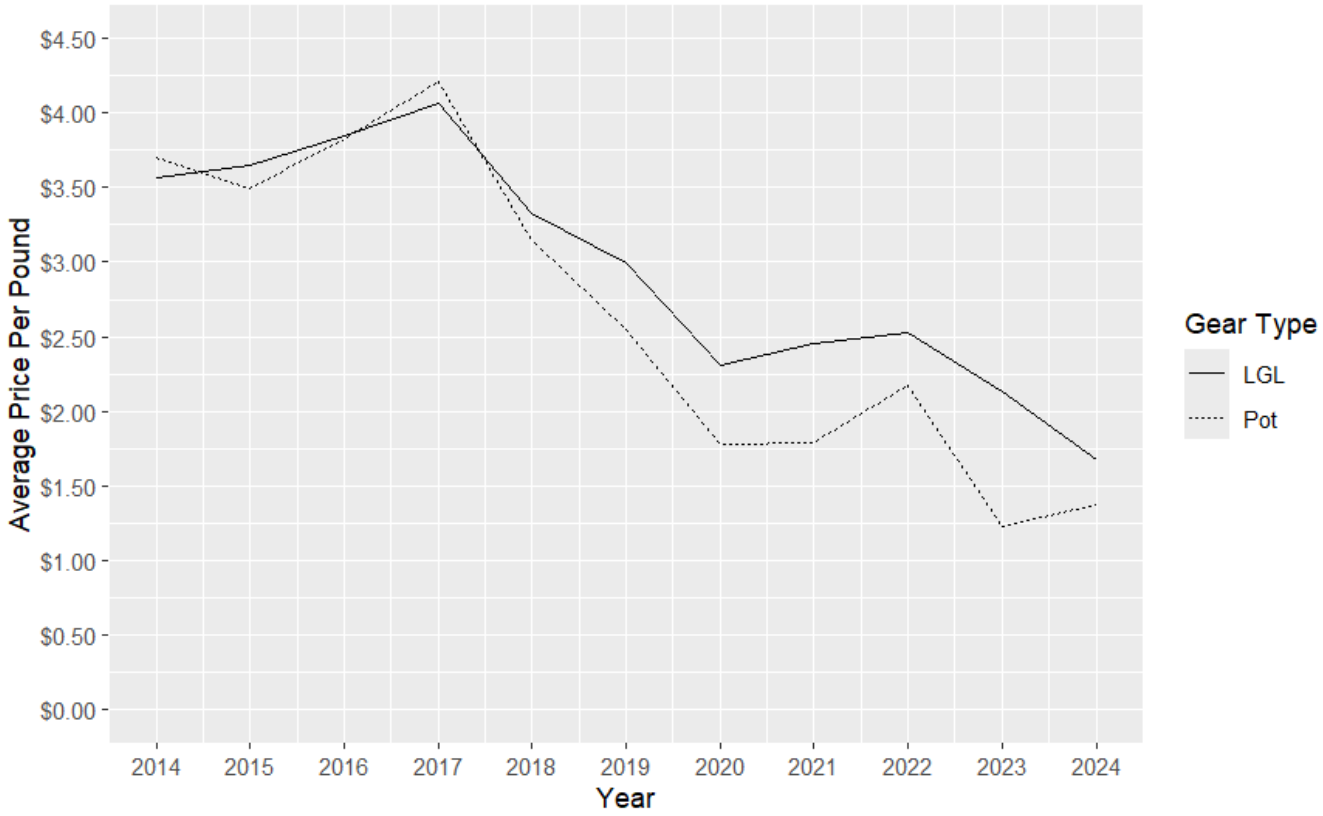

Figure 4-1. Average price per pound (2024$) by gear type for sablefish landed in LEFG (endorsed and non-endorsed), 2014-2024.

In order to consider the predicted impact of allowing vessels with LEFG endorsed permits to use either bottom longline or traditional pot gear, it is important to understand the likelihood that bottom longline operators might choose to switch to traditional pot gear by comparing profitability. A variety of sample vessels (<30 ft, 30 ft-40 ft, 40-50 ft, and 50 ft or greater LOA) from the line fleet are used to calculate a simplified estimate of the net revenue achieved, if that vessel type participated in each gear type.[8] These estimates utilize fuel and bait cost models, further explained below, to estimate trip cost, if that vessel fished with longline gear or traditional pot gear. The simplified trip cost is then subtracted from the average revenue from sablefish and non-sablefish catch, for the sample vessel's size class, which was calibrated based on 2019 – 2023 fish ticket data. It is important to note that this simplified net revenue calculation only includes ex-vessel revenue, fuel costs, and bait costs. Other trip costs, such as labor costs and ice are not included because it is assumed that these costs do not vary by gear type. Additionally, it doesn't include any equipment investment costs. This analysis is designed to predict how gear choice can impact profitability. It is not an estimate of variable net revenue under the three scenarios identified above that could occur under Alternatives 1-3. All reported 'Simplified Net Revenue' values are an over-estimate of true variable cost net revenue because the calculations capture all revenue, but exclude some costs. Additionally, this model only uses data for traditional pots, not slinky pots, given the limited information currently available on slinky pots.

Methods of Estimation

[8] All vessels using any type of line gear (including bottom longline and other hook-and-line style gears) were included in this analysis. Given the comparatively few vessels using other hook-and-line style gears (see Table 1-3) in the analytical period, this is not anticipated to affect the overall results.

This analysis (based on Krigbaum and Anderson, 2024) utilized gear-specific econometric models of fuel per trip in order to predict fuel consumption, based on vessel and operation characteristics (vessel length, horsepower, average catch per trip). With these models, we estimated differences in fuel costs if a vessel were to utilize traditional pot gear instead of line gear, by generating model predictions for fuel usage per trip from the line-specific fuel usage model given a set of vessel characteristics, then repeating for the pot-gear-specific fuel usage model using the same vessel characteristics as explanatory variables. It is important to note that these econometric models are trained using data that includes all available Economic Data Collection (EDC) program cost data on vessels that targeted sablefish from 2011-2020, which includes vessels outside the LEFG fishery. The dataset includes data on LEFG vessels collected through the voluntary cost and earnings survey,[9] as well as LEFG vessels which cross-participated in the IFQ fishery, which includes mandatory cost and earnings data collection. However, both the line-gear and pot-gear models included an indicator variable that specifies fishery participation, and the indicator variable was not significant at a standard threshold $p = 0.05$ level. For bait cost estimates, we utilized observer data to calibrate a gear-specific and sector-specific ratio of catch per unit of gear deployed (pot or line). That ratio is then used to calculate the predicted gear units deployed, given a total catch for any trip. The expected cost of bait per gear unit is calculated for vessels that provided cost data to the EDC program, which includes LEFG vessels who participated in the voluntary data collection, LEFG vessels that participated in the IFQ fishery, and non-LEFG vessels. The average cost per gear unit is then multiplied by total predicted gear units deployed to estimate bait cost.

To determine revenue costs, several price components were determined through fish ticket data and the Pacific States Marine Fisheries Commission (PSMFC) EFIN Monthly Marine Fuel Prices database[10]. For pot gear, total revenue is calculated as a vessel's yearly sablefish landings multiplied by average sablefish pot price ($1.90; Table 4-2). For line gear, total revenue is the sum of sablefish revenue (yearly sablefish landings multiplied by $2.67) and jointly caught species revenue (yearly non-sablefish landings multiplied by $3.31). Simplified net revenue for each gear type is calculated by total revenue minus bait and fuel costs. Fuel cost is calculated as the product of model-predicted fuel use per trip multiplied by fuel price ($3.00/gal) and the total number of trips taken.

Table 4-2. Price components

Parameter	Value	Basis
Average Pot Sablefish Price	$1.90	2019-2023 Pot Average, Fish ticket data
Average Line Sablefish Price	$2.67	2019-2023 Line Average, Fish ticket data
Average Jointly caught non-sablefish Price	$3.31	2019-2023 Line Average, Fish ticket data
Fuel Price	$3.00	PSMFC Marine Fuel Average 2011-2020, rounded from $2.98 for simplicity

[9] The voluntary CE survey was given to vessels with limited entry groundfish permits for joint years 2011/2012, 2014/2015, 2016/2017 and to vessels that participated in OA covering 2014/15, 2019/2020.
[10] https://www.psmfc.org/efin/data/fuel.html

The shaded rows in the following tables (Table 4-3 through Table 4-8) labeled "Average Line" are the standard characteristics of a representative sample vessel within the line fleet that may consider switching to traditional pots under Alternatives 2 and 3. The remaining cells in the table are imputed or calculated using the methods described above to provide a point of comparison for what outcomes that representative vessel may expect if using traditional pot gear instead. The "Average Pot" row represents what outcomes the vessel may expect if that catch rate per trip is held constant (i.e., the vessel expects to land the same amount of sablefish per trip using pot gear as it does using line gear). Since it is difficult to determine if vessels will change their catch rate if they switch gears, the analysis included a second point of comparison "Improve Catch Rate Pot," which represents a scenario in which that same representative vessel expects to increase their catch rate per trip when using pot gear. The increased catch rates tested in these scenarios were calculated as double the original catch rate but capped by the observed range of current pot vessels of the same category. All increased catch rate values are within the observed range of current pot vessels' catches per trip, so it is reasonable to assume such an estimated catch rate is possible for a vessel of each representative size, with a sufficient number of pots. In both points of comparison, the total number of trips is held constant, so that the line vessel considering the switch is comparing between the profitability of spending the same number of trips fishing sablefish. For the 30-40 foot size vessel category and the 40-50 foot size category, a representative vessel that observes a higher-than-average catch rate was also included to test whether a higher catch rate sufficiently changes the profitability dynamics. The higher-than-average catch rate representative vessel is excluded from the analysis for the smallest category (<30 ft vessel) and the largest category (>50 ft vessel) because an insignificant number of vessels would fall into that category.

The analysis shows that given the additional revenue that line vessels currently earn from catch of jointly caught non-sablefish species, as well as the higher average sablefish price per pound for line gear as compared to pot gear, line operations have higher 'Simplified net revenue' than is expected if that vessel switched to pot gear without increasing the trip catch rate (Average Pot). Using Table 4-3 as an example, an average line vessel less than 30 ft LOA has an estimated simplified annual net revenue of $92,700, as compared to $34,575 if that vessel were to switch to pot gear and not increase its catch rate. The difference between the Average Line and Average Pot revenue values generally decrease as the vessel's size increases, confirming our understanding that larger pot vessels are typically more profitable, and the larger vessels in the line fleet are the most likely to switch (as considered under Scenario 2). However, if no vessels expect to land more sablefish per trip with traditional pot than line gear, we would expect very limited switching from line to traditional pot gear under the action alternatives.

In comparison, when a line vessel expects to increase their trip catch rate when switching to pot gear, the increase in revenue generated from an increased quantity of sablefish caught more closely balances out the lost revenue that would have been earned from other species caught with line gear. This balance can lead to a higher simplified net revenue for vessels switching to pot gear, despite higher bait costs for larger vessels (40-50 ft, average catch rate). This is not true for smaller vessels (<30 feet or 30-40 feet), however, as even with the high catch rate, vessels of these lengths would have approximately $5,000 less in simplified net revenue, as compared to the scenario where they maintained line operations. This suggests that some vessels could utilize traditional pot gear to be relatively more profitable than line gear, but that not all vessels would be able to increase their catch rate per trip sufficiently to do so.

Table 4-3. Profitability comparison for <30 ft vessel, average catch rate.

	Vessel Length	Vessel HP	Number of Trips	Avg. Landings of Sablefish (lbs) per Trip	Total Sablefish (lbs) per year	Non-Sablefish Landings (lbs) per year	Pred Fuel Gallons per trip	Est. Bait Cost	Overall Revenue	Fuel & Bait Costs	Simplified Net Revenue
Average Line	30	295	25	900	22500	13000	92	3520	103,110	10,410	92,700
Average Pot	30	295	25	900	22500	NA	73	2700	42,750	8,175	34,575
Improve Catch Rate Pot	30	295	25	1800	45000	NA	75	5400	85,500	11,000	74,500

Table 4-4. Profitability comparison for 30-40 ft vessel, average catch rate.

	Vessel Length	Vessel HP	Number of Trips	Avg. Landings of Sablefish (lbs) per Trip	Total Sablefish (lbs) per year	Non-Sablefish Landings (lbs) per year	Pred Fuel Gallons per trip	Est. Bait Cost	Overall Revenue	Fuel & Bait Costs	Simplified Net Revenue
Average Line	35	275	15	1400	21000	6000	118	3360	75,390	8,470	67,460
Average Pot	35	275	15	1400	21000	NA	111	2520	39,900	7,515	32,385
Improve Catch Rate Pot	35	275	15	2800	42000	NA	115	5040	79,800	10,215	69,585

Table 4-5. Profitability comparison for 30-40 ft vessel, high catch rate.

	Vessel Length	Vessel HP	Number of Trips	Avg. Landings of Sablefish (lbs) per Trip	Total Sablefish (lbs) per year	Non-Sablefish Landings (lbs) per year	Pred Fuel Gallons per trip	Est. Bait Cost	Overall Revenue	Fuel & Bait Costs	Simplified Net Revenue
Average Line	35	275	4	5,000	20,000	6,000	165	3,200	73,260	5,180	68,080
Average Pot	35	275	4	5,000	20,000	NA	152	2,400	38,000	4,345	33,655
Improve Catch Rate Pot	35	275	4	8,000	32,000	NA	162	3,840	60,800	5,665	55,135

Table 4-6. Profitability comparison for 40-50 ft vessel, average catch rate.

	Vessel Length	Vessel HP	Number of Trips	Avg. Landings of Sablefish (lbs) per Trip	Total Sablefish (lbs) per year	Non-Sablefish Landings (lbs) per year	Pred Fuel Gallons per trip	Est. Bait Cost	Overall Revenue	Fuel & Bait Costs	Simplified Net Revenue
Average Line	45	262	15	2,000	30,000	5000	138	4,640	96,650	10,850	85,800
Average Pot	45	262	15	2,000	30,000	NA	161	3,420	57,000	10,665	46,330
Improve Catch Rate Pot	45	262	15	4,000	60,000	NA	168	7,200	114,000	14,760	99,230

Table 4-7. Profitability comparison for 40-50 ft vessel, high catch rate.

	Vessel Length	Vessel HP	Number of Trips	Avg. Landings of Sablefish (lbs) per Trip	Total Sablefish (lbs) per year	Non-Sablefish Landings (lbs) per year	Pred Fuel Gallons per trip	Est. Bait Cost	Overall Revenue	Fuel & Bait Costs	Simplified Net Revenue
Average Line	45	350	5	6,150	30,750	5000	227	4,920	98,650	8,325	90,600
Average Pot	45	350	5	6,150	30,750	NA	239	3,690	58,425	7,275	51,170
Improve Catch Rate Pot	45	350	5	10,000	50,000	NA	258	6,000	95,000	9,870	85,140

Table 4-8. Profitability comparison for 50+ ft vessel, average catch rate.

50+ Vessels	Vessel Length	Vessel HP	Number of Trips	Avg. Landings of Sablefish (lbs) per Trip	Total Sablefish (lbs) per year	Non-Sablefish Landings (lbs) per year	Pred Fuel Gallons per trip	Est. Bait Cost	Overall Revenue	Fuel & Bait Costs	Simplified Net Revenue
Average Line	55	350	4	12,500	50,000	3,000	331	7,520	143,430	11,500	131,930
Average Pot	55	350	4	12,500	50,000	NA	418	7,440	95,000	12,460	105,350
Improve Catch Rate Pot	55	350	4	18,000	72,000	NA	439	8,640	136,800	13,900	122,890

Overall, considering potential changes in profitability associated with vessels switching from line to traditional pot gear, we predict a limited number of vessels would choose to switch to pot gear under Alternatives 2 and 3, given the current economic dynamics. The factors that may limit the number of line vessels we expect to switch to traditional pots include:

1. The currently highly profitable pot vessels are typically larger in size than the current line fleet and have high catch rates per trip. Few vessels in the line fleet are of the size typically observed for the most profitable vessels in the pot fleet.
2. Achieving the high catch rate needed to increase a vessel's simplified net revenue using pot gear rather than line gear would require significant capital investment. A vessel's catch rate on a given trip is directly related to the amount of gear deployed, with a wide range of values for catch per trip being observed for all vessel sizes, due to different vessels deploying different amounts of gear. Therefore, in order to have a high catch rate and achieve the increase in net revenue exemplified by the "Improved Catch Rate Pot" scenario shown in the tables above, a line vessel switching to traditional pots would need to invest a significant amount of capital in purchasing pots. Traditional pots are a large investment. In 2011, two strings of 40 traditional pots (~$292 per pot, adjusted for inflation) required an investment of $56,100 in Alaska. This value can be compared to the potential use of the same longline set up for slinky pots, which averaged $224 per pot (totaling an approximate $18,000 investment, adjusted for inflation). (ADF&G, 2021) A December 2024 review of other gear supply companies (Englund Marine, Go2Marine, Fish Tech) shows prices ranging from $95-$170 for a slinky pot depending on size, webbing, and diameter.
3. Some vessel or other operational configurations will make switching from line to traditional pot gear unfeasible, though, this analysis is unable to speak to how many of those exist. Vessel configuration complications could include the size or shape of the deck, and operational configuration complications could include logistics, such as those associated with the storage and transport of pots.

Future conditions, such as potential changes in the relative ex-vessel price of sablefish and other groundfish, the relative ex-vessel price across gear types, longline catch composition, or the price of acquiring pot gear could shift the relative profitability of sablefish fishing towards pot gear, and thus cause more line vessels to prefer to switch from line to pot gear. However, as seen in Table 4-8 for the greater than 50 ft LOA vessels, the profitability of line vessels could still be higher than pot vessels with the increased ex-vessel revenue seen from the non-sablefish landings.

To summarize, using the analysis described in this section, under No Action, profitability by gear type is expected to continue to be driven by costs and revenues. Vessels choosing to switch gears would need to acquire the necessary endorsement or be subject to crossover provisions under OA limits. For Alternatives 1, 2, and 3, the profitability would be determined by the specific operations of the vessel, including aspects such as vessel configuration and the investment needed to change gears. Investments required for slinky pots are expected to be lower than for traditional pots, particularly given that the same longline set up can be used for slinky pots (thereby only requiring the investment into the pots themselves). Under any of the action alternatives, some shift to from bottom longline to slinky pot gear is expected. However, the overall likelihood of a shift to slinky pot due to changes in profitability for bottom longline versus slinky pot is uncertain. Alternatives 2 and 3, which would allow longline-endorsed vessels to utilize standard pot gear, may allow for increased profitability for larger vessels if the catch rate of sablefish is able to compensate for the loss in non-sablefish revenue. Overall, it is anticipated that there would be a limited shift in vessels using longline gear to standard pot gear due to the lack of increased profitability under Alternatives 2 or 3. The margins of difference between the gear types are small enough that a change in prices can change the profitability calculations which reiterates the idea that market conditions will be a key driver.

4.5.1.4 Anticipated Effects of the Proposed Action on New Entrants

In considering expected economic impacts of the endorsement alternatives, it is necessary to consider the impact to new entrants.

Under No Action, participants wanting to enter the fishery would need to acquire an LEFG endorsed permit and fish the endorsed gear type or the non-bottom contact gear types permitted through Amendment 32. With each action alternative, there could be increased opportunities for new entrants, particularly for those operating in other sectors. Under Alternative 1, vessels using slinky pots in other fisheries (such as in Alaska or in the OA sector) may be motivated to purchase a longline permit and fish at higher trip limits or potentially tier limits. Under Alternatives 2 and 3, it is likely that the vessels using pot gear to gear switch in the shorebased IFQ program (i.e., use non-trawl gear to harvest trawl quota) and which are only licensed for longline gear in the tier fishery (fewer than three vessels, see Section 3.1.2.1)), would utilize the increased flexibility to shift to using pot gear under an LEFG permit. That being said, some gear switching vessels that are permitted for both longline and pot gear in the tier fishery have historically used bottom longline gear in the tier fishery. Alternative 3 could also encourage new entrants in the form of existing OA fishery participants, who might invest in the LEFG fishery in order to harvest higher limits by utilizing OA gear types (other than non-bottom contact gears), such as vertical hook and line anchored to the bottom or dinglebar gear.

Overall, there are opportunities for new entrants under each of the action alternatives, which could result in positive economic impacts as compared to No Action.

4.5.1.5 Anticipated Impacts of the Proposed Action on Permit Prices

In the LEFG Primary Tier Reviews from 2014 and 2021, it was noted that there was limited information for determining any trends in the permit values over time for sablefish-endorsed permits. As a part of this package, the Council is considering collecting permit data to be able to assess changes in permit value, as without this information, few conclusions can be made, especially on the differences between permit prices by gear type. The 2021 review produced some information on the price per pound of tier permits (i.e., price paid for the permit per pound of quota), showing a similar trend as the average ex-vessel price per pound for primary sablefish.

It has been suggested that there could be a devaluation of pot-endorsed permits under the proposed action alternatives considered in this package. Given the number of pot permits (32, including those with dual endorsements) compared to the number of longline permits (191), it is possible that the value of the pot-endorsed permits could decline, as they would no longer be as limited of a resource. The potential degree of the decline, though, is unknown given that no permit price information is collected and the limited public information available shows few pot-endorsed permits being sold.

Under No Action, there would likely be no impact to the value of LEFG permits. However, given the risks associated with pot gear in terms of whale and turtle entanglements, the value of a pot permit could potentially decline as compared to previous years. For each of the action alternatives, longline-endorsed permits, including non-sablefish endorsed permits, may increase in value relative to No Action, as they would permit additional gear opportunities. The increase in value would be restricted by the return on the investment associated with the additional opportunity permitted by the permit, however. For pot-endorsed permits, the value of a permit may or may not be impacted under the action alternatives.

4.5.1.6 Anticipated Impacts of the Proposed Action on Fishing Communities

Changes in the endorsements that result in changes to fishing activity would also have impacts on the communities in which the vessels deliver. Section 1.5.3 outlined the port communities that the LEFG

fishery delivers to, and how much each of those communities is engaged in and dependent on the fishery overall. In addition, there is an overview presented of the relative amount of landings and revenue by gear type. Depending on the endorsement alternative, communities may see different levels of impact depending on how the participants react to the gear flexibility provided. Communities would only see benefits if vessels currently delivering into those ports are able to maintain or exceed current landings levels.

Under No Action, each of the port communities is expected to see the typical levels of activity, which are driven by markets, fishing conditions, and infrastructure. Under the action alternatives, vessels that deliver bottom longline caught fish (particularly sablefish) could switch to using slinky pots or traditional pots depending on the alternative. Under Alternative 3, all LEFG vessels could utilize any legal non-trawl gear to harvest groundfish. A majority of port groups have landings of each gear type (pot, bottom longline, and other hook-and-line gears), suggesting that each community could see benefits from the action alternatives, if the alternative resulted in bringing additional landings (not simply a net exchange) into the port community. This could result in additional jobs or money being spent within that community.

Given the current endorsement restrictions, which only permit pot gear for sablefish-endorsed permits (tier fishery), there is limited to no pot activity in southern California (Figure 1-6 and Figure 1-7). Under the action alternatives, these communities could benefit if more vessels utilize pot gear (in addition to line gear).

Depending on the distribution of permit owners and vessel owners, the communities in which they reside might offer some insight into which states may see benefits. As described under the profitability discussion (Section 4.5.1.3), it is likely that larger longline vessels will switch to traditional pot gear. In 2024, LEFG longline-endorsed permit owners for permits endorsed over 40 ft LOA mostly resided in Washington (~40 percent). California and Oregon were similar in terms of permits owned by residents (~30 percent of permits). California did have the highest number of bottom longline-endorsed permits for smaller vessels. While more permit owners reside in Washington for larger LEFG-endorsed permits, the number of larger Washington and Oregon vessels is much more similar (43 and 47 for Washington and Oregon, respectively). Following the scenario laid out throughout this analysis, which indicates that it is likely that larger bottom longline vessels would switch to traditional pot gear (assuming it is profitable), communities in Washington and Oregon are likely to see the most benefits from Alternatives 2 and 3. For Alternative 1, which would permit use of slinky pots for all longline-endorsed permits, it is possible that communities in California could see the most benefits (given the number of longline permits owned by California residents and the number of vessels out of California as compared to the other states). Ultimately, all of these potential benefits will depend on where permits are fished and the vessels to which they are registered. Overall, it is difficult to predict how communities may benefit from each of the action alternatives, as it will depend on how participants react to each of those alternatives.

Table 4-9. Number of LEFG endorsements by gear, endorsement length, and permit owner state of residence in 2024. Dual-endorsed permits included with pot-endorsements.

	CA		OR		WA	
Endorsement Length	**Longline**	**Pot**	**Longline**	**Pot**	**Longline**	**Pot**
30 ft LOA or less	16	0	1	0	1	0
30-40 ft LOA	39[a]	3	14	3	6	0
40-50 ft LOA	19	1	17	1	17	5
50 ft LOA or greater	16	3	18	12	28	5

a/ Includes one registered permit owner from Arizona

Table 4-10. Number of vessels registered to LEFG-endorsements in 2024 by vessel owner state of residence, gear endorsement, and vessel size group. Dual-endorsed permits included with pot-endorsements. Includes all vessels registered to permits at any point in the year.

	CA		OR		WA	
Vessel Length	**Longline**	**Pot**	**Longline**	**Pot**	**Longline**	**Pot**
30 ft LOA or less	19	1	0	0	0	0
30-40 ft LOA	33	1[a]	6	0	4	0
40-50 ft LOA	22	2	15	1	17	2
50 ft LOA or greater	13	3	32	17	29[b]	8[c]

a/Includes one vessel owner from Arizona
b/Includes two vessel owners from Alaska
c/Includes one vessel owner from Alaska

4.5.1.7 Summary of Anticipated Effects

Table 4-11. Summary of Anticipated Effects of the Proposed Gear Endorsement Action Item

	No Action	Alternative 1	Alternative 2	Alternative 3
Gear Flexibility	Limited to gear endorsement and ability to acquire a different permit (or restricted to OA limits)	Allows longline vessels to utilize slinky pot gear; No changes to pot endorsed permits	All permits would be permitted to use longline and pot gears (including slinky pots) in addition to non-bottom contact gears	All permits would be permitted to use any legal non-trawl gear
Non-Trawl Attainment	No Increase	Likely limited to no increase	Likely limited to no increase	Highest potential for increase
Profitability	No changes	Uncertain due to lack of information on slinky pots; Shift depends on degree that slinky pot catch rates increase overall profitability.	Uncertain due to lack of information on slinky pots; larger longline vessels likely to increase overall profit if switch to pot gear (and increase catch rate).	Same as Alternative 2, although vessels could increase non-sablefish profitability potentially with expanded gear opportunities.
Permit Prices	Pot permit prices likely higher than longline prices (Based on limited information)	Uncertain, but differential between pot and longline permit price might decrease	Uncertain, but differential between pot and longline permits likely to decrease more than Alternative 1	Same as Alternative 2
New Entrants	Limited based on permit availability	Potential for increased participation due to latent LGL endorsed permits and ability to use slinky pots	Uncertain, but potential may be slightly higher than Alternative 1	Same or potentially higher than Alternative 2, given ability to use any legal non-trawl gear (i.e., vertical hook and line anchored to the bottom)
Communities	No changes.	Depends on the degree to which vessels change gears, impacting overall landings and revenue into ports.	Depends on the degree to which vessels change gears, impacting overall landings and revenue into ports.	Depends on the degree to which vessels change gears, impacting overall landings and revenue into ports.

4.5.2 Analysis of the Expected Effects of the Proposal on Base Permit Designation

Under No Action, tracking base permit information would continue to be required. The removal of the base permit designation under Alternative 1 is administrative in nature and would likely have slightly positive economic impacts to NMFS by not requiring NMFS to maintain records related to base permits. Additionally, the proposal would remove unnecessary regulations and thus could result in greater ease of the public's understanding of the tier program, as the requirement to have a permit of sufficient length is already required. There are no impacts from the proposal on vessel safety.

4.5.3 Analysis of the Expected Effects of the Proposal on Permit Price Reporting

Under No Action, when LEFG permit owners sell a permit there is no requirement to report the sale price to NMFS. If future analysis or program reviews were to assess the LEFG permit values, there would be limited information available to support these analyses outside of what is available in public databases (such as Jefferson Trading). Under Alternative 1, LEFG permit owners would be required to report the sale price of a permit. In June 2023, the GAP noted that this could be a simple addition to the permit transfer application, which is already required when a permit is sold (Agenda Item H.4.a, Supplemental GAP Report 1, June 2023). There would be negligible cost to industry as compared to the current status quo permit transfer process. Administratively, there would be a one-time cost to NMFS to change the application form, and an ongoing collection of the permit price data by NMFS permit staff. However, those costs are likely to be minimal.

4.5.4 Analysis of the Expected Effects of the Proposal on Season Start Time

Under No Action, the season start and end times (i.e., noon local time) would remain in place in regulations, resulting in unnecessary specificity in the regulation. Alternative 1 is strictly an administrative action, which has no associated costs and would not impact vessel safety.

4.5.5 Analysis of the Expected Effects of the Proposal on Cost Recovery

No cost recovery program would be developed under No Action. While this would have a positive impact for industry members who would continue to operate in the LEFG tier program without paying any cost recovery fees, NMFS has determined that this would be out of compliance with the Magnuson-Stevens Act for LAPPs(Agenda Item H.4.a, NMFS Report 2).

Under Alternative 1, a cost recovery program would be developed as described in Section 2.5. Vessel or permit owners would be required to pay a percentage fee (up to three percent) annually based on the previous year's ex-vessel revenue and the direct program costs (DPC). Table 4-12 below shows the last ten years (2015- December 11, 2024) of ex-vessel revenue for the primary fishery from sablefish north (2024$), and the maximum value that could have been collected assuming a three percent fee.

Table 4-12. Revenue in 2024$ from sablefish landed in the LEFG tier fishery and the maximum amount of cost recovery that could occur (3 percent) based on the revenue.

Year	Revenue (2024$)	Max Cost Recovery (3 percent fee)
2015	$ 10,472,840	$ 314,185
2016	$ 11,851,634	$ 355,549
2017	$ 12,939,513	$ 388,185
2018	$ 10,128,480	$ 303,854
2019	$ 7,984,445	$ 239,533
2020	$ 4,966,877	$ 149,006
2021	$ 6,397,610	$ 191,928
2022	$ 8,075,163	$ 242,255
2023	$ 6,801,597	$ 204,048
2024	$ 4,696,907	$ 140,907

At the time of the drafting of this report, there is no estimate that could be provided on the DPC, since costs have not been tracked to date. In March 2022, NMFS provided a report on a preliminary determination of the core elements of the LEFG permit stacking program that would subject to cost recovery under this proposed action. Past costs for years prior to the implementation of any program would not be recoverable, including any infrastructure built to implement the core elements of the program. Elements that are considered "core" to the LAPP and would be subject to future calculations for cost recovery, including items such as the monitoring and enforcement of tier limits, electronic fish tickets, and collecting ownership information to assess ownership limitations and exemptions. One estimate on costs that the NMFS WCR staff provided at the time of this analysis is an estimate of the DPC from the administration of e-tickets since they were implemented, for the 2019-2023 period, based on the 2024 groundfish fee calculations, which average $2 per ticket (Table 4-13).

Table 4-13. Number of LEFG tier e-tickets and associated estimated DPC (assuming 2024 groundfish fee calculations) from 2019-2023.

Year	Tier Tickets	DPC
2019	460	$915
2020	402	$800
2021	398	$792
2022	380	$756
2023	412	$820
	Average	**$816**

A preliminary examination of the range of costs for a cost recovery fee to be paid by vessel owners (Suboption a), under a potential cost recovery program where the fee is one percent (right side) and three percent (left side), is provided in Figure 4-2. Note this estimate does not consider whether multiple vessels are owned by the same owner and excludes outliers to preserve confidentiality. Assuming a one-to-one correlation between vessels and vessel owners, from 2019-2023, the average cost recovery fee for vessels at a one percent rate would be $889 and at a three percent rate would be $2,667. Under Suboption b, permit owners would be responsible for paying the cost recovery fee. While a corresponding graphic for Figure 4-2 was not produced for permit owners, based on publicly available information, the 2021 Review noted that approximately 60 percent of vessels were registered to permits that they were thought to own, with another 12 percent of vessels registered to a combination of both leased and owned permits. Therefore,

Figure 4-2 is likely to show the range of cost recovery fees under the one percent and three percent scenarios for about 60 percent of permit holders. However, the other 40 percent of permit holders may be represented by multiple points shown in the range of Figure 4-2, if they own several permits leased to different vessels, or some of these permit holders may be represented by a fraction of a point in the range, if they lease out a single permit to a vessel who has multiple stacked permits. More information on this suboption may be able to be brought forward to the Council if it selects Suboption b as the PPA.

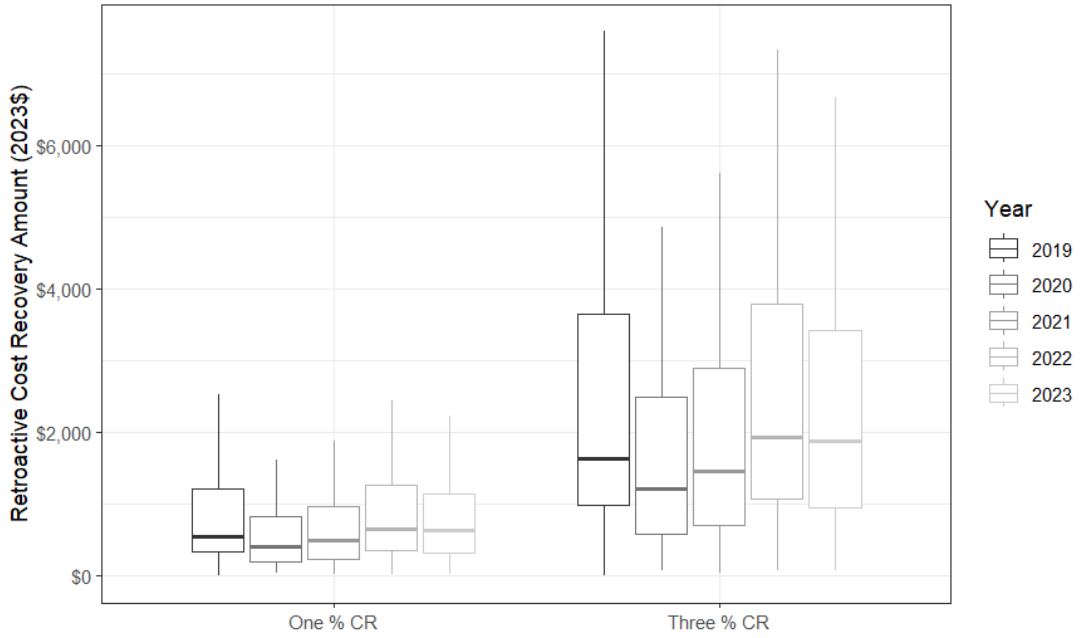

Figure 4-2. Range of cost recovery fees for LEFG primary tier vessels from 2019-2023 based on one percent and three percent levels. Outliers removed for confidentiality.

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

The action items and corresponding alternatives described below are not mutually exclusive.

- Under No Action, LEFG vessels would be restricted to using only the gear endorsed on their registered permit (unless using non-bottom contact gear as allowed). There would be no price permit reporting to inform future actions, and no cost recovery program implemented to fund the governance of the LEFG program.
- Under the LEFG endorsement alternatives, there would be increased flexibility with each alternative to harvest target stocks with the most efficient and profitable gear for the vessel. Alternative 3 would provide the greatest potential economic net benefit to the Nation by providing the most opportunity to harvest all stocks (not just sablefish), thereby increasing the seafood supply.
- Under the permit price reporting alternative, LEFG permit owners would be required to report the price of a LEFG endorsed permit when sold. While mainly administrative in nature, this alternative would provide information to better understand the costs associated with the LEFG fishery and guide future actions.

- The proposed changes to the base permit designation and season start time are administrative actions and would have no impact with respect to net benefits to the Nation.
- LAPPs, like the primary tier fishery, are designed to provide a net benefit to the Nation by having a rationalized versus a non-rationalized management structure. Specifically, the tier program was designed to allow for longer fishing seasons, economic efficiency, increased safety, and other factors (see 2021 Review for goals and objectives). While there would be additional costs to industry under Alternative 1 for the cost recovery component of this proposed action, which could reduce potential profits and benefits to the communities in which fishery participants deliver to and reside in, there is likely a net benefit to the Nation, achieved by shifting the responsibility of the management of the LAPP from the general taxpayer to the participants of the program that access the public fishery resource.

4.7 Determination of Significant Impact

As noted above, under E.O. 12866, as amended by E.O. 14094, a regulation is a "significant regulatory action" if it is likely to: (1) have an annual effect on the economy of $200 million or more or adversely affect in a material way the economy, a sector of the economy, productivity, competition, jobs, the environment, public health or safety, or State, local, or tribal governments or communities; (2) create a serious inconsistency or otherwise interfere with an action taken or planned by another agency; (3) materially alter the budgetary impact of entitlements, grants, user fees, or loan programs or the rights and obligations of recipients thereof; or (4) raise legal or policy issues for which centralized review would meaningfully further the President's priorities or the principles set forth in this Executive order, as specifically authorized in a timely manner by the Administrator of OIRA in each case. A determination regarding the significance of this proposed action under E.O. 12866 will be made after the selection of the FPA.

5 Regulatory Flexibility Analysis

To be completed after the selection of PPA in March 2025.

6 Magnuson-Stevens Act and FMP Considerations

6.1 Substantive Authority for the Proposed Action

This action includes 5 sub-actions, proposed modifications to: LEFG permit gear endorsements, the base permit provision, permit price reporting, season start time, and cost recovery. The first two sub-actions relate to the West Coast groundfish limited entry permitting system. Section 303(b) of the Magnuson-Stevens Act allows FMPs to require permits for fishing. Relative to sub-action 3, section 303(a)(5) requires FMPs to specify "[…] economic information necessary to meet the requirements of this Act […]". Relative to sub-action 4, Section 303(b)(4) allows FMPs to "prohibit, limit, condition, or require the use of specified types and quantities of fishing gear, fishing vessels, or equipment for such vessels […]". And relative to sub-action 5, Sections 303A(e) and 304(d)(2) of the Magnuson-Stevens Act require a cost recovery program for all LAPPs.

6.2 Magnuson-Stevens Act National Standards

Below are the 10 National Standards as contained in the Magnuson-Stevens Act, and a brief discussion of how each alternative is consistent with the National Standards (NS), 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.

The biennial groundfish harvest specifications and management measures described in analytical documents and undertaken for the current biennium establish harvest levels consistent with National Standard 1 and the harvest management framework described in Chapter 4 of the Groundfish FMP.

This action would not revise the harvest management framework nor groundfish harvest limits. None of the alternatives would influence the ability of the Council and NMFS to prevent overfishing. The alternatives for the increase in gear endorsement flexibility considered in this action could promote achieving optimum yield (OY) by increasing the flexibility by which vessels could target stocks, including non-sablefish stocks in particular. Capacity in the LEFG tier fishery would still be controlled through the sablefish-endorsement (limiting the number of vessels) and the three permit limit (limiting the amount of catch that could be taken in the fishery). Historically, sablefish has been a highly attained stock under status quo management measures, and by increasing the gear flexibility associated with LEFG permits, that trend should go unchanged. However, for non-sablefish stocks, which are mostly under attained, with limited LE effort due to the gear restrictions associated with the permits, increased flexibility could allow for greater opportunity to achieve OY for the fishery as a whole.

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

This analysis uses the best scientific information available to describe the potential economic impacts to the fishery (using PacFIN fish ticket data and WCGOP observer data), as well as the best scientific information available to assess the potential impacts to marine mammals, turtles, seabirds, and other resources (including data from non-trawl logbooks and WCGOP data).

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

The Council develops and designates management units for groundfish, which include stocks, stock complexes, or geographic subdivisions thereof. The proposed action does not change any management units for groundfish. The alternatives considered would not result in stocks being managed differently throughout their range, nor would they fail to manage stocks as a unit.

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

Amendment 6 established allocations to the LE fisheries based on historic landings by three gear types, pot/trap, bottom longline, and trawl, as described in Section 1.2. Under No Action, those allocations would remain in place and participants would be restricted to using the gear associated with the endorsement registered to the vessel. Gear endorsement Alternatives 1-3 would change those allocations by allowing vessels to utilize slinky pot gear on longline-endorsed permits (Alternative 1), allowing all LEFG vessels to use pot or longline gears (Alternative 2), or allowing the use of any legal non-trawl gear for all permits (Alternative 3). None of the alternatives would discriminate against residents of different states and the current provisions of the LEFG program would remain in place to limit any excessive share concerns (i.e., the owner-on-board provisions and the three-permit stacking limit). Therefore, the following analysis focuses on the other two relevant factors when considering allocations: fairness and equity and the promotion of conservation.

Fairness and Equity

NS4 states that any allocation be connected to achievement of OY or with furtherance of an FMP objective. Additionally, allocations of fishing privileges may impose a hardship on one group if it is outweighed by benefits received by another group(s). Specifically, "An allocation need not preserve the status quo in the fishery to qualify as "fair and equitable," if a restructuring of fishing privileges would maximize overall benefits."

Alternatives 2 and 3 would make all the permits equitable in terms of opportunity as compared to Alternative 1 (which would provide additional opportunity to bottom longline permits only) and No Action (which maintains current allocations of opportunity). A discussion of the anticipated effects of the alternatives on the gear use flexibility of the LEFG permits can be found in Section 4.5.1.1. The consideration of "fair and equitable" for current holders of permits, particularly those with pot gear endorsements, may vary by permit owner, depending on whether they purchased the permit in question with the intent of using that specific gear versus receiving an initial permit. As described under NS1 above, Alternative 3 is likely to promote the best likelihood of achieving OY, as it would allow any LEFG vessel to utilize any legal non-trawl gear to harvest LEFG allocations for stocks not likely to be harvested by fixed gear. With respect to the FMP goals and objectives, the proposed action alternatives would meet FMP goals 2 and 3, with Alternative 3 creating the greatest benefit related to those objectives. Alternative 3, as compared to the other action alternatives and No Action, would likely contribute to achieving the maximum value of the groundfish fishery as a whole (by allowing for the most gear flexibility; FMP Goal 2), and promote year-round availability of quality seafood to the consumer (by allowing gear flexibility and increased potential for other non-trawl species harvest; FMP Goal 3).

Promotion of Conservation

NS4 also states that "An allocation scheme may promote conservation by encouraging a rational, more easily managed use of the resource. Or, it may promote conservation (in the sense of wise use) by optimizing

the yield in terms of size, value, market mix, price, or economic or social benefit of the product." Gear endorsement Alternative 1 would decrease the ease of management, as compared to No Action, by providing another exception to bottom longline-endorsed permits (allowing for slinky pot gear), which increases the burden of management. However, it would also allow for vessels registered to bottom longline-endorsed permits to increase yield by increasing the efficiency of their sablefish harvest through pot gear (assuming slinky pots have similar CPUE as traditional pots and are selective of sablefish). Similar to the assessment above, Alternatives 2 and 3 would make all permits the same in terms of opportunity and would increase the ease of management of the resource. Alternative 2 would optimize the ability for the LEFG to harvest sablefish through use of either pot or bottom longline gears. Ultimately, Alternative 3 would likely see the greatest amount of optimization, increasing potential yield and market mix of the LEFG fishery, by expanding the use of all non-trawl gear types for harvesting quota.

None of the other items would allocate or assign fishing privileges.

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

Studies have shown that pot gear is more selective than bottom longline gear in catching sablefish (see Section 3.2.2, which is one of the most profitable species in the groundfish portfolio (noting declines in ex-vessel value in recent years). Under the gear endorsement alternatives, with varying degrees of flexibility, fishery participants would be able to opt to use a potentially more efficient gear in targeting sablefish (noting that there is limited evidence regarding slinky pot CPUE compared to bottom longline CPUE as described in Section 3.2.2). Alternative 3 would create the highest level of flexibility, and therefore anticipated efficiency, in the fishery, as it would allow for the use of any legal non-trawl gear type. This authorization could permit greater utilization of fisheries resources, by allowing vessels to use the most efficient and effective gears to target all species of groundfish, rather than just sablefish.

None of the other action items are expected to impact efficiency of utilization of the resource.

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

In the development of the LEFG program, it was determined that clear divisions were needed between gear types, in order to manage the sablefish fisheries in particular. Over time, as the groundfish fishery has changed and climate change and variations in other fishing opportunities (e.g., salmon) have become more prevalent, there is a need to develop more flexibility to allow participants to expand their portfolios and fish on healthy and abundant stocks. The endorsement alternatives would permit vessels currently restricted to the use of bottom longline gear (and non-bottom contact gear) to utilize pot gear (slinky and/or traditional) and/or potentially other OA gear types to continue to target sablefish. Additionally, under Alternative 3, vessels could expand into other non-trawl gear types, such as vertical hook and line anchored to the bottom, to target other rockfish species. As sablefish allocations vary over time, the allowance of using whichever gear type is more effective for an individual vessel would permit vessels to harvest the species that are most abundant and available.

None of the other alternatives would have impacts related to NS 6.

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

None of the gear endorsement alternatives are expected to change costs.

Alternative 1 for the base permit designation would meet the goals of NS7 as it would remove an unnecessary regulation from the Federal groundfish regulation. Federal regulations at 50 CFR 660.25(b)(3)(iii)(B)(*1*) already require vessels to be registered to a permit of sufficient length, therefore, the tracking of a base permit is an additional administrative cost and unnecessary for management of the program.

While the requirement to submit permit price information would require some administrative costs (i.e., developing a database to track the sale of the permits), by including permit price in the existing permit transfer form, no new form would be required, thereby minimizing the costs of collecting the information. The removal of the exact times of the season start and end date for the primary tier season from regulation would have no associated costs and would remove unnecessary specificity from the regulations. Historically, those times were needed for enforcement, but given advancements in inseason tracking, set season start and end dates are no longer needed.

The implementation of the cost recovery program would add costs to industry.

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

The increase in flexibility that would be allowed under the endorsement alternatives would provide additional opportunities (of varying nature and extent, depending on the alternative) to LEFG participants. As discussed in Section 4.5.1.6, the impact on communities would depend on the degree to which participants react under each alternative (i.e., shift or utilize multiple gears) and the distribution by which any changes in landings occur.

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

Under the action alternatives for the gear endorsement action item, there would likely be a change in the proportion of bottom longline gear used as compared to pot gear (slinky and/or traditional). The degree to which vessels shift from using one type to another (likely bottom longline to pot gear), or by which vessels expand their current operations to utilize other OA gear types, is uncertain, as described in Section 3.1.1. However, bycatch for some groundfish and non-groundfish species may decrease. Research has shown that pot gear (both traditional and slinky pots) tends to be more selective than bottom longline gear in terms of bycatch.

With regards to bycatch of marine mammals, turtles, and seabirds, a discussion of impacts can be found in Sections 3.2, 3.3, and 3.4, respectively. Overall, risk of bycatch of marine mammals and turtles may increase under the action alternatives, depending on the resulting nature and degree of any shift towards slinky and/or standard pot gear. The risk of marine mammal and turtle mortality is uncertain, but is likely not significant. For seabirds, all alternatives are likely to reduce mortality, with a shift away from bottom longline gears. Mitigation measures for marine mammals and turtles (through the gear marking and the entanglement risk reduction package anticipated in 2025) and for seabirds would still be in place to reduce the risk of bycatch and associated mortality under any alternative.

None of the other alternatives are expected to have any impact on bycatch outside of those described in the 2025-2026 Harvest Specifications EA.

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

There is no expected impact from the proposed action to the safety of human life at sea outside of that described in the 2025-2026 Harvest Specifications EA.

6.3 Amendment 6 Considerations

The goals and objectives of Amendment 6 to the Groundfish FMP included reducing harvest capacity with the least disruption to current fishing practices, accommodating historical participation and investments, and reducing conflicts between user groups. Several components of the program were aimed at achieving that objective, including limiting the number of vessels in the fishery and putting constraints on increasing capacity of individual vessels. Gear limitations through gear endorsements were seen as a way to meet this objective by preventing vessels from being able to switch from a less powerful to a more powerful gear (e.g., longlining to trawling, as noted on page 3-3 of Amendment 6). For the gear endorsements, the Council considered whether there should be a single "fixed gear" endorsement or separate endorsements for longline and pot gears (in addition to a separate trawl gear endorsement). While this single endorsement would have provided more flexibility to fixed gear vessels and be consistent with how sablefish are allocated, ultimately, the Council chose to keep the endorsements separate for two reasons: 1) greater constraint on capacity, and 2) the connection between those using the two fixed gear types did not appear to be stronger than between those using pot and trawl gears. On the latter point, during the period analyzed by the LEC (1984-1986), there were two times as many vessels that had at least one landing with trawl and pot gear as compared to longline and pot gear. The issuance of separate gear endorsements was intended "to minimize opportunity for expansion of effort... Allowing unrestricted movement between these gears could result in increased harvest capacity directed toward a given species. Movement and flexibility is allowed through the ownership of a permit with more than one gear endorsement or purchase of a second permit. Flexibility achieved through the latter means will help reduce capacity, making the program more effective." (page 99 of Amendment 6 FEIS).

In looking at the proposed gear endorsement alternatives, it is important to consider how things have changed since Amendment 6, as this action would change the LE system that has been in place for three decades. At the time of Amendment 6, the Council kept the endorsements for longline and pot gear separate even though it was different from how sablefish is managed (with a single LEFG allocation for sablefish north or under the non-trawl allocation for sablefish south). The groundfish fishery and the LEFG fishery has continued to evolve since the implementation of Amendment 6. Under any of the action alternatives, capacity would continue to be limited by the vessel size allowance associated with a permit (which has a direct tie to capacity), the number of permits, and other factors such as market conditions and port infrastructure.

On the second point, that there was more connection between pot and trawl gears versus longline and pot gears, that trend is no longer prevalent given the structure of the current fishery. During the gear switching action, it was noted that three or fewer vessels annually from 2011 through 2024 utilized both trawl and fixed gear in a single year (average of one per year). By comparison, there are six to 12 vessels within the LEFG fishery annually utilizing both types of fixed gear (see

Table 1-3). Amendment 6 noted that allowing use of both gears could result in increased harvest capacity directed towards a given species. Under the action alternatives and the related scenarios contemplated in this analysis, it is likely that there could be an increase in the use of pot gear in the fishery, which is efficient at targeting sablefish mostly. As has been discussed, however, the nature and extent of the likely shift in gear usage will depend on multiple factors, such as profitability.

At the time of Amendment 6, there was a decision to allocate between LE and OA, which was formulaic for select species, including sablefish north. At that time, allocations for the OA fishery were established for species where the ABC was historically fully harvested, but for other species no allocations were made. Section 11.2.2. in the FMP does describe criteria for such allocations, if they ever needed to be established. Three decades later, the groundfish fishery and how it is managed has changed. Vessels require a broader portfolio, including the targeting of non-sablefish species in situations where market conditions are poor. There is no longer a LE/OA allocation for any species outside of sablefish north, given the change to managing the fishery via trawl and non-trawl allocations through Amendment 21. However, the policy of allowing LE vessels to harvest higher limits than OA vessels still remains via trip limits. LE vessels are still subject to crossover provisions, which require fishing to OA limits when using non-endorsed gears and catch counting towards any LE limits/allocations. While gear endorsement Alternatives 1 and 2 would not change the definition of the LE sector, in that all vessels would still be restricted to using fixed gear (noting exceptions for non-bottom contact gears), Alternative 3 would result in the removal of the crossover provisions, as it would permit the use of all legal non-trawl gear (i.e., OA gears) by LE vessels to harvest any catch limits.

6.4 Section 303(a)(9) Fisheries Impact Statement

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

The EA/RIR prepared for this plan amendment constitutes the fishery impact statement. The likely effects of the proposed action are analyzed and described throughout the EA/RIR. The effects on participants in the fisheries and fishing communities are analyzed in the RIR chapter of the analysis (Chapter 3.6). The effects of the proposed action on safety of human life at sea are evaluated in Section 4.5, and above under National Standard 10, in Section 6.1. Based on the information reported in this section, there is no need to update the Fishery Impact Statement included in the FMP.

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

7 Other Applicable Laws

7.1 Executive Order 13175 Consultation and Coordination with Indian Tribal Governments

Executive Order 13175 is intended to ensure regular and meaningful consultation and collaboration with tribal officials in the development of Federal policies that have tribal implications, to strengthen the United States government-to-government relationships with Indian tribes, and to reduce the imposition of unfunded mandates upon Indian tribes.

The Secretary recognizes the sovereign status and co-manager role of Indian tribes over shared Federal and tribal fishery resources. At Section 302(b)(5), the Magnuson-Stevens Act reserves a seat on the Council for a representative of an Indian tribe with Federally-recognized fishing rights from California, Oregon, Washington, or Idaho.

8 Preparers and Persons Consulted

8.1 Preparers

Jessi Waller, Pacific Fishery Management Council

8.2 Contributors

Megan Mackey, NMFS West Coast Region

Maggie Sommer, NMFS West Coast Region

Erin Steiner, NMFS NWFSC

Melissa Krigbaum, NMFS NWFSC

Keeley Kent, NMFS West Coast Region

Christopher Biegel, NMFS West Coast Region

Elif Wilkins, NMFS West Coast Region

Corinna McMackin, NOAA General Counsel, Northwest Section

9 References

ADF&G (Alaska Department of Fish and Game). 2021. Alaska Department of Fish and Game staff comments on regulatory proposals, Committee of the Whole—Groups 1–8 for the Southeast and Yakutat Finfish and Shellfish Alaska Board of Fisheries Meeting, 2021/2022 meeting cycle. Alaska Department of Fish and Game, Regional Information Report No. 1J21-15, Douglas.

Hanselman, D. H., B. J. Pyper, and M. J. Peterson. 2018. Sperm whale depredation on longline surveys and implications for the assessment of Alaska sablefish. Fish. Res. 200:75–83.

Krigbaum, Melissa and Anderson, Chris (2024). "Gear-specific operating cost models for US West Coast Sablefish". [Unpublished manuscript]

Kopp D, Coupeau Y, Vincent B, Morandeau F, Méhault S, Simon J (2020). The low impact of fish traps on the seabed makes it an eco-friendly fishing technique. PLoS ONE 15(8): e0237819

National Marine Fisheries Service (2012). Endangered Species Act (ESA) Section 7(a)(2) Biological Opinion and Section 7(a)(2) "Not Likely to Adversely Affect" Determination Continuing Operation of the Pacific Coast Groundfish Fishery. https://media.fisheries.noaa.gov/dam-migration/final_groundfish_biop_12-7-12.pdf

National Marine Fisheries Service (U.S.) (2016). Environmental Assessment / Final Regulatory Impact Review For Amendment 101 to the Fishery Management Plan For Groundfish of the Gulf of Alaska Allow the Use of Pot Longline Gear in the Gulf of Alaska Sablefish Individual Fishing Quota Fishery October 2016.

National Marine Fisheries Service (2023). Secretarial Review Draft Environmental Assessment/Regulatory Impact Review for a Proposed Regulatory Amendment to allow longline pot gear in the Bering Sea Greenland turbot fishery. September 2023

Peterson, Megan J. and Hanselman, Dana (2017). Sablefish mortality associated with whale depredation in Alaska. 74(5). https://doi.org/10.1093/icesjms/fsw239

Richerson, K. E. et al. (2022). Observed and Estimated Bycatch of Salmon in U.S. West Coast Fisheries, 2002-20. https://doi.org/10.25923/pm3a-ad32

Somers, Kayleigh A. et al. (2023). Fishing Effort in the 2002–21 U.S. Pacific Coast Groundfish Fisheries. https://doi.org/10.25923/fa7g-yp86

Stuart-Rasi, Sofia. "Orcas Challenge the Bering Sea's Black Cod Industry." *Alaska Public Media*, AKPM, 15 Dec. 2024, alaskapublic.org/2024/08/27/orcas-challenge-the-bering-seas-black-cod-industry/. Accessed 12 Feb. 2025.

Sullivan, J. et al. (2022). Slinky pot and hook-and-line comparison project during the experimental leg of the 2021 AFSC sablefish longline survey. https://doi.org/10.25923/esqg-v834