Analysis to Inform Selection of Initial Preliminary Preferred Alternative for Sablefish Gear Switching

Initial analysis of the range of gear-switching alternatives adopted by the Pacific Fishery Management Council (Council) at its June 2023 meeting. Revisions made to Tables 26, 32, and 33.

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1.0 INTRODUCTION

1.1 Purpose and Need

The Council adopted this statement at its September 2021 meeting, at which time Council members indicated their intent to move its consideration of a limitation on gear switching through to final action, when it would also make its final determination of the need for an action alternative over No Action.

> This action is needed because the Shorebased Individual Fishing Quota (IFQ) Program has under attained most of its allocations since the inception of the program in 2011. The under attainment for some northern stocks may be due to the allowance to use fixed gear to harvest shorebased IFQ, declining trawl vessel participation, and the lack of market and infrastructure. Specifically, participants engaging in gear switching are using northern sablefish quota that may otherwise be used by trawl gears; this may lead to uncertainty in trawl access to sablefish, thereby affecting the development of markets and infrastructure. Working within the guidance and authority provided by the MSA (§303A(c)) and the Pacific Coast Groundfish Fishery Management Plan (FMP) goals and objectives, the purpose of this action would be to keep northern sablefish gear switching from impeding the attainment of northern IFQ allocations with trawl gear, while considering impacts on current operations and investments.
>
> Under attainment results in the Shoreside IFQ Program being unable to meet Management Goals 2 and 3 of the FMP which respectively seek to maximize the value of the groundfish resource as a whole and to achieve the maximum biological yield of the overall groundfish fishery. Additionally, this action would seek to improve the program towards the goal of Amendment 20 to the FMP, which created the Shorebased IFQ Program, of providing for full utilization of the trawl sector allocation.

1.2 Guiding Principles

At its October 2018 meeting, and in consideration of the working principles that were originally developed by the Community Advisory Board (CAB), the Sablefish Management and Trawl Allocation Attainment Committee (SaMTAAC) developed and adopted the following as principles that the alternatives would be designed to support:

> A. We want to ensure there is affordable trawl access to sablefish.
> B. We believe that unlimited catch of sablefish through gear switching is not desirable.
> C. We want to consider impacts on existing operations/investments.
> D. We want to maintain the gear-switching option for trawl operations.
> E. We will consider industry and community impacts and ensure long-term stability.
> F. We will consider the effect on the value of trawl permits.
> G. We want to increase the net economic value of the trawl individual fishing quota fishery.

Principle C, it should be noted, references consideration of impacts to investments related to trawl, fixed gear, and buyer/processor operations.

1.3 Key Considerations and Where They Are Addressed in this Document

- What is the rationale for separate sectors and what is the allocational history between them? ..... Section 2.1
- How much gear switching has there been? ..... Section 2.2
- To what degree is the trawl fishery under attained? ..... Section 2.3
- What are the potential causes for trawl under attainment? ..... Section 2.4
- What market distortions are introduced by the catch share programs? .... Section 2.4.4(a)
- What is the relative efficiency of trawl vs. gear switching vessels? ..... 2.4.5(b)
- What are the prospects for gear switching levels to increase or decrease in the future? ..... Section 2.5
- National Standards Analysis ..... Section 4.2.
  - National Standard 1 (OY) ..... Section 4.2.1
  - National Standard 4 (Allocations) ..... Section 4.2.4
- Action Alternative Option Analysis
  - Alternative 2 (iPPA) ..... Section 9.2
- Where is there information on the following and how they are impacted by the alternatives on
  - communities? ..... Sections 7.11 and 10.3
  - the various segments of the trawl fleet most likely to be impacted? ..... Sections 7.6.1(c) and 10.1.

1.4 Public Process

The following is a partial description of the process through which this issue was considered and developed.

Gear switching was identified as an issue of concern in workshops prior to and during the first review of the trawl catch share program (completed in 2017). The Council adopted a control date for gear switching at its September 2017 meeting (September 15, 2017, see Section 8.1). Following on that process, the Council appointed the SaMTAAC in April 2018 and gave it the following charge:

> Identifying obstacles to achieving the goals and objectives of the catch share plan related to under attainment of non-sablefish trawl allocations and unharvested sablefish quota pounds (QP) south of 36° N. latitude. As appropriate to overcome identified obstacles, the committee will discuss and develop options, including but not limited to, actions that may modify rules for gear switching by trawl permit holders and QP leasing to vessels using fixed gear, as well as options that may encourage increased utilization of sablefish QPs south of 36° N. latitude.

To address its charge, the Committee met six times: June 2018, October 2018, May 2019, October 2019, January 2020 and April 2020 (the last via webinar). Records for these meetings, including materials considered by the Committee and meeting summaries, are provided on a "Gear Switching and Trawl Allocation Attainment" webpage on the Council website.

While the Committee steadily progressed in its work, its process was interrupted by a government shutdown in the winter of 2018/2019.

The Committee's final report was issued in June 2020 and considered by the Council at its September 2020 meeting. At that time, the Council adopted a purpose and need and decided to proceed with consideration of a range of alternatives (ROA), including status quo. In November 2020, the Council decided to first set a tentative policy for the maximum amount of gear switching to be allowed, with the idea that this would further guide development of the action alternatives. The Council set 29 percent as a maximum gear switching level at its April 2021 meeting that would be used in development of the range of action alternatives. The 29 percent gear switching level was calculated as the average annual percent of the available northern sablefish QP that were gear switched in full calendar years prior to the control date (2011-2016). At its September 2021 meeting, the Council reviewed the SaMTAAC report and adopted two alternatives for its ROA: a gear-specific quota share (QS) alternative and a gear-endorsement based alternative. At its June 2022 meeting the Council added a new alternative (a gear-specific QP based alternative) and split into two the previously adopted endorsement based alternative (permit based and vessel based qualification). At its November 2022 meeting, the Council eliminated the gear-specific QP based alternative and the endorsement based alternative with a vessel qualifier. At its April 2023 meeting, the Council added a simplified gear-specific QP alternative back to the range, stopped work on the endorsement-based alternative with a permit qualifier, and added an alternative based on a seasonal approach. At its June 2023 meeting, the Council selected No Action and the gear specific QP-based alternative as its initial preliminary preferred alternative (iPPA) (see Table 1 for links to key documents).

Table 1. Steps in the consideration of the trawl allocation attainment and gear switching issues, within the Council forum.

Step/Action	Meeting & Agenda Item	Key Documents	Decision Summary
Community Advisory Board (CAB) First Recommends a Control Date for Gear Switching	June 2017 Agenda Item F.2	Agenda Item F.2.c, Supplemental CAB Report	Trawl Catch Shares Review Draft Report and Intersector Allocation Report
Adoption of Gear Switching Control Date and Guidance on Catch Share Review Follow-on Actions	September 2017 Agenda Item E.7	Control Date Federal Register Notice Agenda Item E.7.a, CAB Report 1: Community Advisory Board Report on Preliminary Range of Follow-on Actions Agenda Item E.7.a, Supplemental GAP Report 1	Adoption of Control Date and Other Actions/Guidance Related Follow-on Actions
Council Decides to Create a Committee to Address Issues Related to Gear Switching	March 2018 Agenda Item H.2	Agenda Item H.2, Attachment 1: Gear Switching and Trawl Sablefish Area Management—Preliminary Data Agenda Item H.2, Supplemental Attachment 2: Expanded Agenda Item H.2., Attachment 1 Tables	Trawl Catch Shares - Gear Switching and Trawl Sablefish Area Management
Council Creates the SaMTAAC	April 2018 Agenda Item H.2	Agenda Item H.2, Attachment 1: Creation of an ad hoc Committee on Issues Related to Trawl Allocation and Southern Sablefish Attainment	Membership Appointments and Council Operating Procedures
SaMTAAC Meets Six Times to Develop Alternatives	SaMTAAC Meetings June 2018; Oct 2018; May 2019 Oct 2019; Jan 2020; Apr 2020	Key documents	No related Council decisions.

Step/Action	Meeting & Agenda Item	Key Documents	Decision Summary
Final SaMTAAC Report Provided	June 2020 Informational Reports	The SaMTAAC Final Report and an accompanying analysis were provided as informational reports 1 and 2. These informational reports were included in relation to Agenda Item D.1 at the September 2020 Council meeting (see next row).	No related Council decisions.
Council Decision on Whether to Continue SaMTAAC Related Deliberation and Adoption of Purpose and Need Statement	September 2020 Agenda Item D.1	D.1, Attachment 1: Preliminary Assessment of Trawl Under-Attainment Issues and SaMTAAC Alternative Qualification Criteria (UPDATED), August 2020 D.1.a, SaMTAAC Report 1 Final Report to The Council	Gear Switching and Sablefish Area Management Scoping
Council Scheduled to Adopt Range of Alternatives (ROA) for Analysis (Instead Decides to First Decide on a Level of Gear Switching)	November 2020 Agenda Item G.2	○ Key documents were reproduced for the September 2021 briefing book (see below)	Gear Switching for Sablefish in the Trawl Catch Share Fishery
Council Decision on Gear Switching Level to Use in Developing Alternatives	April 2021 Agenda Item F.4	F.4, Attachment 1: Analysis of Gear Switching Levels	Sablefish Gear Switching Identify the Gear Switching Level to Use in Developing Alternatives
Council Selects ROA Adopted for Analysis	September 2021 Agenda Item C.5	C.5, Attachment 1: SaMTAAC Recommended Alternatives C.5, Attachment 3: Preliminary Analysis of Gear-Switching Alternatives C.5, Attachment 4: Supplement to Preliminary Analysis of Gear Switching Alternatives	Sablefish Gear Switching Adopted two alternatives for the ROA: gear-specific QS (replacing SaMTAAC gear-specific QP alternative) and gear-switching endorsement.
Refine alternatives for analysis and provide guidance on analysis, as needed.	June 2022 Agenda Item F.5	F.5 Attachment 2: Range of Gear Switching Alternatives… F.5 Attachment 3. Provisions on Which Council Guidance is Needed	Sablefish Gear Switching Added a gear-specific QP based alternative to the ROA.
Revised alternatives published	September 2022 Informational Report 1	Informational Report 1	No related Council decisions.
Selection of a PPA Scheduled – Instead ROA Revised	November 2022 Agenda Item H.3	H.3, Attachment 1: Range of Gear Switching Alternatives … H.3, Attachment 2: Gear Switching Alternatives and Options List H.3, Attachment 3: Initial Analysis of The Gear Switching Alternatives	Sablefish Gear Switching Gear-specific QP alternative and endorsement-based alternative (vessel qualifier) eliminated from the ROA.
Refine Range of Alternatives	April 2023 Agenda Item G.5	G.5, Attachment 1: Synopsis of Gear Switching Alternatives, Options, Comparisons, and Issues G.5, Attachment 2: Range of Gear Switching Alternatives Adopted for Analysis by the Council at its September 2021, June 2022, and November 2022 Meetings	Sablefish Gear Switching—Check-in and Refine the Range of Alternatives Gear-specific QP alternative added back to the range, work stopped on endorsement-based alternative (permit qualifier), seasonal approach added.

Step/Action	Meeting & Agenda Item	Key Documents	Decision Summary
Select Initial Preliminary Preferred Alternative (iPPA)	June 2023 Agenda Item H.2	H.2, Attachment 1: Synopsis of Gear Switching Alternatives, Options, Comparisons, and Issues H.2, Attachment 2: Range of Gear Switching Alternatives Adopted for Analysis by the Council at its September 2021, June 2022, November 2022, and April 2023 Meetings H.2, Attachment 3 (***Electronic Only***): Analysis to Inform Selection of Initial Preliminary Preferred Alternative for Sablefish Gear Switching	Sablefish Gear Switching – Initial Preliminary Preferred Alternative Two iPPAs selected: No Action and Gear-Specific QP. Refinements made to the latter.
Scheduled PPA	November 2023 Agenda Item E.4		

2.0 DESCRIPTION OF THE FISHERY AND ANALYSIS OF PROBLEM

The purpose and need for this action is provided in Section 1.1. The basic concern of the purpose and need is that gear switching might constrain attainment of the non-whiting trawl allocations, either in the current fishery or at some time in the future, if for example, there is an expansion in the amount of gear switching. This section covers the following issues:

- History of the decision to allow gear switching in the trawl IFQ program.
- Indicators of factors that might be constraining attainment of the trawl allocation (including gear switching).
- The levels of gear switching that have been present.
- An assessment of factors that might increase or decrease gear switching in the future.

2.1 Fishery Context and Sectors

Fisheries tend to be diverse by nature, involving a variety of fish stocks and a wide range of commercial and recreational user groups. To efficiently and effectively manage this diversity of species and user groups, fisheries are often divided into sectors, for example commercial and recreational sectors, and these sectors are sometimes further divided into sub-sectors based on geography, gear types, and target species. Moreover, each sector has unique characteristics that requires specific management programs. As Pearse notes:

> … fishing sectors benefit in different ways from the fish they harvest and so value them differently….Almost any regulation of fishing gear, seasons or locations affects commercial, recreational and aboriginal fishers differently. To achieve objectives of equity as well as conservation as they expanded their regulatory control, governments were forced to adopt different regulations for each sector. Doing so undoubtedly had the effect of defining, and in some degree creating, separate sectors and sub-sectors, each with its own permitted methods of fishing and regulatory regime. (Pearse, 2010, p. 126).

In the Pacific Coast groundfish fishery management plan (FMP), sectors are one of the primary tools used to organize management of the rockfish, flatfish, and roundfish that are part of the groundfish management unit off the Washington, Oregon, and California coast (over 100 species are managed under the groundfish FMP, including species in the rockfish families but not specifically named). The groundfish FMP identifies 10 sectors that the Council initially considers in the development of total catch limits (PFMC, 2022, p. 77-78). In addition to the gears used, differences between the sectors include, but are not limited to, the mix of species caught, the markets they serve and related needs of those markets, the nature of the benefits to the public (e.g., protein source or recreational experience). Fishery sectors are also affected by a history of past legal obligations and fishery access rules on which participants have relied (e.g., tribal fishing rights and the groundfish license limitations systems). Sector management helps the Council better achieve optimum yield (OY) by providing more ways to balance the various

competing MSA mandates; FMP goals and objectives, and other legal obligations—including those related to between sector equity.[1]

Management of sablefish has been foundational to the groundfish FMP. For example, the Council's current prioritized goals for the groundfish FMP were established in the context of resolving sablefish allocation issues between trawl and non-trawl sectors in the late 1980s. In 1986, the Council adopted several objectives for sablefish management (these were not specified in priority order at the time):

1. To prevent overfishing by managing sablefish and the total groundfish complex within approved acceptable biological catches (ABCs).
2. Provide meaningful shares to historic user groups.
3. Minimize waste.
4. Maximize value of deep water complex.
5. Maximize value of sablefish.

During this time period, the Council continued to refine management of the sablefish fishery. In July 1989, while the Council was engaged in an overall rewrite of the groundfish FMP, it incorporated into the current action the five objectives previously identified for sablefish management. Then, in September 1989, the Council prioritized the five sablefish objectives noted above and expanded their application to all groundfish species by incorporating them into the FMP rewrite document, which eventually became groundfish FMP Amendment 4. During the FMP rewrite process, the five prioritized objectives became the prioritized goals that are in the current groundfish FMP (italicized text was added after the September 1989 action):

> Goal 1 - Conservation. Prevent overfishing and rebuild overfished stocks by managing for appropriate harvest levels *and prevent, to the extent practicable, any net loss of the habitat of living marine resources*.
> Goal 2 - Economics. Maximize the value of the groundfish resource as a whole.
> Goal 3 - Utilization. *Within the constraints of overfished species rebuilding requirements,* achieve the maximum biological yield of the overall groundfish fishery, *promote year-round availability of quality seafood to the consumer, and promote recreational fishing opportunities.*

Key to sablefish management was the establishment of the trawl and nontrawl sectors. These sectors were established due to the differences between the needs of trawl and nontrawl gears and how they interacted with other fisheries, infrastructure, markets, and fishery dependent communities. The nontrawl sectors, comprised of the limited entry fixed gear (LEFG) primary tier fishery managed by a catch shares system and trip limit fisheries (both LE and open access, OA) catch their sablefish with few bycatch species. In contrast to the largely single species harvest of the LEFG sector, the trawl sector catches its sablefish in complexes along with many other species. Prior to the IFQ program, the trawl fishery was managed with trip limits rather

[1] § 600.310 (b)(2)(ii). "The determination of OY is a decisional mechanism for resolving the Magnuson-Stevens Act's conservation and management objectives, achieving an FMP's objectives, and balancing the various interests that comprise the greatest overall benefits to the Nation."

than seasons so as to maintain year-round operations. Year-round operation of the trawl fishery was viewed as essential for groundfish marketing, avoiding the development of surplus shoreside capacity, and helping ensure that labor and services would be available for other groundfish and nongroundfish fishery. The IFQ program was implemented with the idea that processors would have some ability to incentivize vessels to time their harvest with the availability of processing capacity and market needs and thus continue to meet the need for year-round trawl activity. At present, the current action on gear-switching deals only with the shoreside trawl sector IFQ program, which covers 30 groundfish stocks and stock complexes caught and landed by the trawl sector and bycatch of Pacific halibut. Only the shoreside trawl sector is managed with an IFQ program for reasons stated in Amendment 20 (see PFMC & NMFS, 2010, p. 56-57). Gear switching provisions of the trawl IFQ program reduced the barriers between the trawl and nontrawl sectors.

2.2 Trawl/Non-trawl (Fixed Gear) Sablefish Allocation, and Origin and Levels of Gear Switching

As discussed in the previous section, the trawl/nontrawl sablefish allocation has been an important element of the groundfish FMP, leading to the development of the groundfish FMP's prioritized goals that now apply to all species.

Regulation of the sablefish fishery began in 1982 and trawl/nontrawl sablefish allocation deliberations began in earnest in the mid-1980s (Table 2). The first trawl/nontrawl split percentages that applied for an entire year were coastwide: 52 percent trawl/48 percent nontrawl (1987). In 1990, there was a reallocation between the sectors and the status quo non-tribal allocation became 58 percent trawl/42 percent nontrawl. The total proportion of the available harvest allocated to the trawl sector was reduced over time by a number of events. As larger amounts were provided to meet Tribal treaty obligations, the total tonnage split between the trawl and nontrawl sectors was reduced. Similarly, in 1994, when the coastwide sablefish allocation was split between north and south, the tonnage to which the 58/42 split is applied was further reduced. However, on a coastwide basis, the nontrawl sector was able to access more total sablefish after the north/south split because it was more predominant in the south. Also in 1994, the non-tribal allocation was split between the OA and LE sector while the 58/42 split continued to be used to divide the limited entry allocation between trawl and fixed gear. Since the nontrawl sector previously included what became open access and limited entry fixed gear sectors, this effectively reduced the trawl share of the non-tribal sablefish north allocation to 54 percent. Additionally, at some point between 1999 and 2004 (research continuing), the OA allocation was increased from 6.6 to 9.4 percent. Then, when the catch share program was established in 2011, the southern sablefish allocation was officially split 42 percent trawl/58 percent nontrawl. Compared to 1990, as of 2010 the trawl portion of the non-tribal commercial fishery had declined from 58 percent of the coastwide allocation to 53 percent of the northern sablefish allocation and 42 percent of the southern sablefish allocation.

Table 2. History of trawl/nontrawl sector allocations of sablefish.

Date	Area	Portion Allocated: Share of…	Trawl	Non-trawl/ Fixed Gear (NT/FG)	Open Access (OA) (Non-Trawl [b/])
1986-Aug-22[a/]	Coastwide	OY (for the amount remaining)	55%	45%	
1987-1988	Coastwide	OY	52%	48%	
1989	Coastwide	Non-Tribal Commercial	52%	48%	
1990-1993	Coastwide	Non-Tribal Commercial	58%	42%	
1994-1999	36 North	Non-Tribal Commercial	54%	39%	6.6%
	36 North	The LE Fishery	58%	42%	
	36 North	The LE Fishery	58%	42%	
2000-2010	36 North	Non-Tribal Commercial	53%	38%	9.4%
	36 North	The LE Fishery	58%	42%	
	36 South	(not allocated among sectors)			
2011-Present	36 North	Non-Tribal Commercial	53%	38%	9.4%
	36 North	(LE Fishery Share)	58%	42%	
			Fixed Gear Oppty in Trawl Sector		

a/ First sablefish management regulations were implemented October 13, 1982.
b/ But also includes exempted trawl gears (halibut, sea urchin, and pink shrimp).
c/ More research is needed to find out what the OA allocation of sablefish during this period was.

With the Amendment 20 IFQ program, gear switching for non-trawl vessels became more viable and they began harvesting part of the trawl allocation. However, gear switching has been part of the LE program since it was first implemented in 1994. This program allowed vessels with trawl permits to use other gears but specified that any groundfish caught would be counted against trawl or LE allocations (where such allocations were in place). While it was allowed prior to 2011, there was little fixed gear harvest by trawl permitted vessels during that period, likely because bimonthly cumulative limits and the high cost of trawl permits.

Continuation of gear switching under Amendment 20 was debated at a time when many perceived that a conservation issue connected to trawl gear impacts warranted substantial reduction in its use. The Council considered whether to maintain the opportunity for trawl permitted vessels to use other gears or to specify that only trawl gear could be used to take the trawl quota. Additionally, a policy was considered that would have required that any gear switching in the trawl sector would have resulted in the permanent conversion of that activity to non-trawl gear. Instead of a permanent conversion, the Council chose a "go slow" approach and decided to allow gear switching to both help trawl fishermen access their quota (in years of surplus sablefish) and allow fixed gear participants to acquire trawl permits and quota (potentially reducing the amount of trawling). For a full discussion of the Amendment 20 deliberations, see *SaMTAAC Agenda Item E.2 Analysis, October 2019.*

Consequently, starting in 2011, when harvest control shifted from cumulative limits to IFQ, vessels registered to trawl LEPs could utilize non-trawl gear types to target IFQ species in greater volumes than under the monthly and bimonthly cumulative limits. Over the course of the IFQ program, gear switching has averaged 29 percent of each year's trawl allocation (Table 3). In the first two years of the program, there were the greatest number of gear-switching vessels

and permits. It is thought that some participants "tested out" gear switching for sablefish. While the number of participants has declined since then, the level of gear switching has increased. For 2016-2019, the level of gear switching ranged from 32.5 percent to 35.3 percent of the allocation and numbers of participating vessels and permits varied between 15 and 16. Gear switching has declined in more recent years, possibly due to a variety of causes including the COVID pandemic and changing sablefish market prices. At the same time, in 2022 the total trawl allocation increased by 28 percent relative to the previous year and was still fully utilized (97.8 percent), with trawlers taking 74.5 percent and gear-switchers 23.3 percent. See Section 2.5 for discussion of factors and trends that might impact future gear switching.

Table 3. Sablefish north of 36° N. lat. total catch by year and gear type (millions of lbs.) compared to the allocation and total available pounds (allocation plus surplus carryover) and number of gear switching vessels and permits, 2011-2022. Source: catch from 2011-2020 GEMM; catch from 2021-2022 IFQ database; participants from PacFIN.

Landing Year		**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2011-2022 Avg**
Total Catch		5.29	4.92	4.07	4.13	4.82	5.02	5.56	5.08	5.62	4.09	5.04	6.43	5.01
Catch by Gear [a/]	**Trawl**	3.75	3.26	3.09	2.86	3.24	3.22	3.69	3.27	3.61	2.61	3.72	4.90	3.43
	Fixed Gear	1.54	1.66	0.98	1.27	1.58	1.80	1.87	1.81	2.01	1.48	1.32	1.53	1.57
Allocation Lbs		5.61	5.44	4.03	4.38	4.85	5.32	5.33	5.56	5.69	5.81	6.92	6.58	5.46
Percentage by Utilization	**Trawl**	66.8%	59.9%	76.7%	65.3%	66.8%	60.5%	69.2%	58.8%	63.4%	44.9%	53.8%	74.5%	63.4%
	FG	27.4%	30.5%	24.3%	28.9%	32.6%	33.9%	35.1%	32.5%	35.3%	25.4%	19.1%	23.3%	29.0%[b/]
	Unharvested	5.8%	9.6%	-1.1%	5.7%	0.6%	5.6%	-4.4%	8.7%	1.3%	29.7%	27.1%	2.3%	7.6%
Available Lbs		5.61	5.44	4.29	4.52	5.05	5.46	5.64	5.67	5.94	6.00	6.92	6.58	5.59
Percentage by Utilization [c/]	**Trawl**	66.8%	59.9%	72.1%	63.3%	64.2%	58.9%	65.4%	57.7%	60.7%	43.5%	53.8%	74.5%	61.7%
	FG [c/]	27.4%	30.5%	22.9%	28.0%	31.3%	33.0%	33.2%	31.9%	33.8%	24.6%	19.1%	23.3%	28.3%[c/ d/]
	Unharvested	5.8%	9.6%	5.0%	8.7%	4.5%	8.1%	2.4%	10.4%	5.5%	31.9%	27.1%	2.3%	10.0%
Gear Switching Participants	**Vessels**	17	20	11	15	14	16	16	15	15	9	7	10	14
	Permits	17	21	11	14	14	16	16	15	15	10	7	10	14

a/ Catch from 2011-2018 does not include discard mortality rates. Starting in 2019, IFQ vessel accounts were debited for total mortality (landings plus dead discards) instead of total catch.
b/2016-2019 average is 34.2%.
c/2011-2016 average shown in shaded cells is 29 percent (28.85 rounded up). This value was used in the Council's April 2021 motion.
d/2016-2019 average is 33.0%.

2.3 History of Trawl Under Attainment

There are a number of goals and objectives in the FMP which relate to the importance of fully utilizing fishery allocations. Prior to the IFQ program, the trawl sector was managed with trip limits, leading to large amounts of regulatory discards, and other management measures such as gear and area restrictions. While catch for some species has decreased with the implementation of the catch shares program, even as annual catch limits (ACLs) have increased (such as Dover sole), some strategies, such as the midwater rockfish, have seen growth meeting or exceeding pre-IFQ levels as stocks have rebuilt. Assessing the change in trawl allocation attainment that occurred with the start of the catch share program is a challenge because for many species and species groups, there were no trawl/non-trawl allocations prior to 2011. Previous assessments of attainment trends before and during the catch share program (Matson 2016 and the 2017 catch share review[2]) have shown that for select species (Dover sole, lingcod, and thornyheads), attainments have continued to decline since 2011. Other species like Petrale sole and sablefish north have seen increases in attainment.

Since 2014, there has been a substantial expansion of the trawl allocation of a number of non-whiting species, and in more recent years, trawl catch has also expanded (Figure 1). [3] Even though non-whiting quotas in aggregate were over 50 percent greater in 2017-2019 than in 2011-2014, the fishery was able to bring utilization rates close to 2011-2014 levels, reaching an average of 26 percent. A good portion of this increase is associated with the implementation of the trawl gear exempted fishing permit that allowed development of the non-whiting midwater trawl fishery for widow and yellowtail rockfish prior to the start of the primary whiting season, along with marketing initiatives by industry. In recent years, the list of species that usually reach full attainment includes Pacific whiting, Petrale sole, sablefish north, and widow rockfish (Table 4). The attainment level for most other species tends to be under attained (below 50 percent attainment), the primary exception being yellowtail rockfish. For 2020, COVID appears to have impacted fully attained species more than the under attained species. As demonstrated by the comparison of 2011-2014 to 2017-2019, changing stock conditions affect attainment and will continue to affect it in the future. As an example, in the forthcoming years, the trawl sector is likely to see a reduction in canary rockfish allocations which may lead to lower attainments of other target species (e.g., widow and yellowtail).

[2] Matson, S. 2016. Exploration of landings, harvest specification and attainment time series, for stocks of interest in the historical shorebased LE trawl fishery and contemporary IFQ program. Agenda Item F.5.a NMFS Report September 2016.

[3] In 2015, the Dover sole ACL increased from 25,000 to 50,000 mt (or over 55 million pounds) with 95 percent allocated to trawl fisheries. Since Dover sole landings did not increase proportionally to the allocation, the overall non-whiting trawl attainment decreased to about 21 percent. In 2016, there was a small increase in percentage utilization and usage. Then, in 2017, another 50 million plus QP were added to the IFQ allocations due to the rebuilding of canary rockfish (leading to 16 times greater canary ACLs compared to 2016), increases in the ACL for widow rockfish (over 6 times greater compared to 2016), and some other smaller ACL changes.

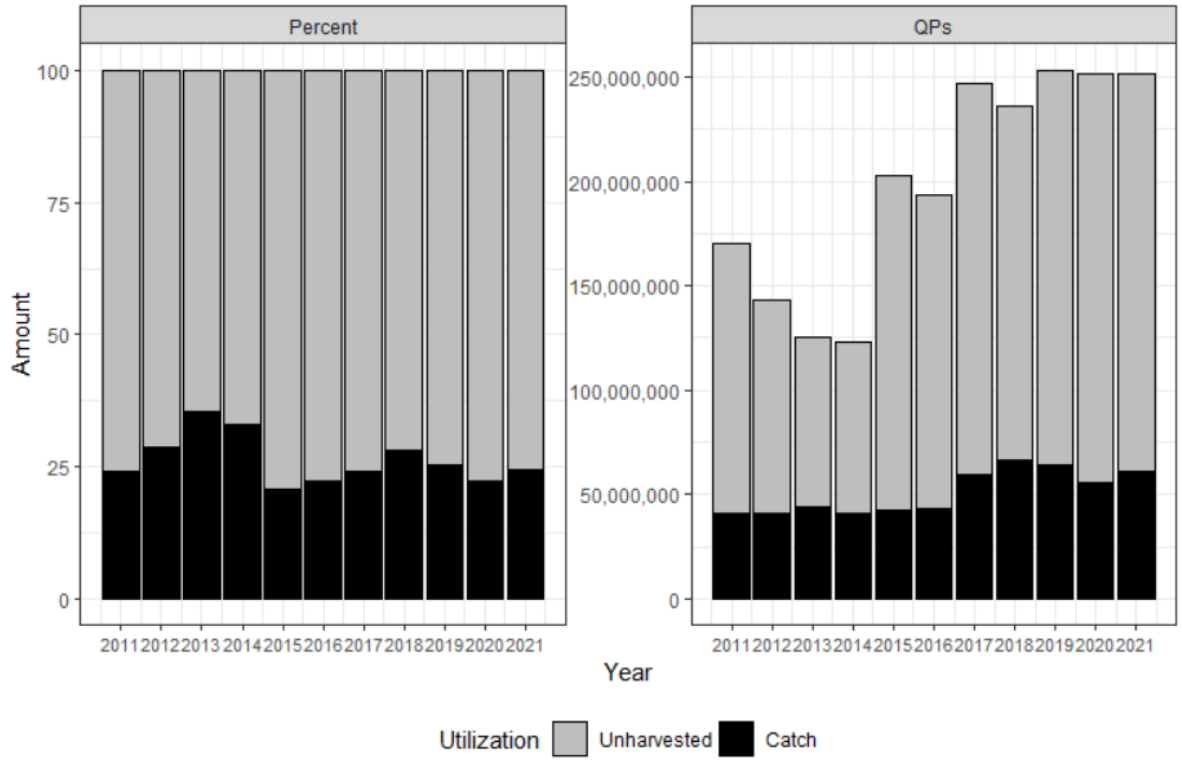


Figure 1. Shorebased IFQ utilization of non-whiting species, 2011-2021. Left panel: Percent of total allocations for all species caught and left unharvested. Right panel: Total amount of quota pounds (QPs) caught and allocation QPs unharvested. Internal reference: June Analysis.rmd

Table 4. Trawl sector attainment of annual QP allocations (values over 100 percent are covered with carry-over QP or deficit carry-overs).

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Arrowtooth flounder	20%	26%	63%	50%	52%	47%	12%	9%	7%	6%	10%
Bocaccio rockfish South of 40°10' N.	9%	15%	17%	11%	47%	51%	30%	63%	40%	35%	38%
Canary rockfish	14%	28%	26%	26%	104%	48%	25%	45%	44%	38%	42%
Chilipepper rockfish South of 40°10' N.	21%	22%	36%	29%	16%	6%	6%	16%	27%	37%	43%
Cowcod South of 40°10' N.	1%	5%	22%	20%	26%	21%	27%	30%	35%	25%	11%
Darkblotched rockfish	36%	36%	44%	35%	43%	42%	36%	51%	50%	39%	35%
Dover sole	35%	33%	36%	29%	14%	16%	16%	14%	13%	10%	9%
English sole	1%	2%	3%	5%	4%	6%	3%	3%	2%	1%	2%
Lingcod	16%	21%									
Lingcod North of 40°10' N.			28%	21%	16%	24%	46%	35%	21%	17%	15%
Lingcod South of 40°10' N.			3%	4%	7%	6%	4%	10%	18%	15%	10%
Longspine thornyheads North of 34°27' N.	49%	48%	59%	50%	26%	23%	30%	14%	11%	5%	3%
Minor shelf rockfish North of 40°10' N.	3%	8%	6%	7%	3%	3%	21%	24%	40%	45%	48%
Minor shelf rockfish South of 40°10' N.	3%	15%	25%	12%	5%	2%	1%	3%	8%	12%	18%
Minor slope rockfish North of 40°10' N.	17%	27%	25%	23%	19%	13%	13%	16%	22%	18%	30%
Minor slope rockfish South of 40°10' N.	14%	33%	31%	26%	16%	12%	13%	17%	4%	10%	9%
Other flatfish	17%	16%	19%	20%	11%	14%	10%	10%	8%	9%	10%
Pacific cod	22%	35%	14%	15%	37%	37%	4%	1%	1%	0%	0%
Pacific halibut (IBQ) North of 40°10' N.	28%	43%	31%	26%	43%	38%	45%	39%	45%	38%	41%
Pacific ocean perch North of 40°10' N.	39%	45%	45%	36%	42%	44%	47%	45%	13%	14%	13%
Pacific whiting	98%	96%	99%	83%	47%	61%	87%	77%	86%	85%	89%
Petrale sole	93%	100%	92%	97%	98%	95%	100%	101%	98%	87%	76%
Sablefish North of 36° N.	94%	91%	101%	95%	100%	95%	105%	91%	99%	68%	73%
Sablefish South of 36° N.	86%	44%	15%	32%	24%	26%	14%	6%	10%	9%	11%
Shortspine thornyheads North of 34°27' N.	50%	50%	60%	50%	45%	48%	48%	42%	36%	24%	27%
Shortspine thornyheads South of 34°27' N.	17%	1%	7%	5%	2%	4%	0%	0%	0%	0%	0%
Splitnose rockfish South of 40°10' N.	3%	4%	3%	4%	2%	1%	1%	2%	1%	1%	1%
Starry flounder	2%	1%	0%	2%	1%	2%	1%	0%	0%	0%	0%
Widow rockfish	40%	45%	41%	66%	57%	59%	52%	97%	94%	89%	80%
Yelloweye rockfish	10%	6%	6%	6%	4%	5%	15%	12%	15%	11%	14%
Yellowtail rockfish North of 40°10' N.	24%	32%	27%	40%	32%	26%	58%	76%	74%	84%	66%

A predominant concern in the discussions of trawl under attainment has been with respect to Dover sole attainment. The vast majority of Dover sole are taken with trawl gear such that the percentage of the available Dover taken by trawl gear is generally reflective of trawl attainment. Historically, from the early 1980s through 2010, trawl harvest of the available Dover sole has generally been in excess of 60 percent (Figure 2). Starting in 2011, percentage attainment has declined by 75 percent relative to the period of the initial license limitation program (1994-2000) and the pre-catch shares stock rebuilding era (2001-2010). Increasing Dover sole harvest limits are a large cause of the decline in percent attainment (Figure 2), but IFQ total landings are also down by about 15 percent relative to the 1994-2000 and 2001-2010 periods. While attainment and harvest amounts are both down, because of increasing prices, total Dover sole revenue in the IFQ era is down only three percent relative to 1994-2000 and up three percent relative to 2001-2010, adjusting for inflation. Depending on changes in costs, net revenue associated with Dover may be up or down. Overall, the 20 percent attainment levels for Dover sole in the IFQ era indicate the potential for a strong opportunity for increased industry and community benefits, as well as the production of more seafood for consumers. Among the trawl caught fishery complexes, harvest of Dover sole-thornyhead-sablefish (DTS) is most likely to be limited by the limited availability of northern sablefish QP (as shown in Section 2.4.5).

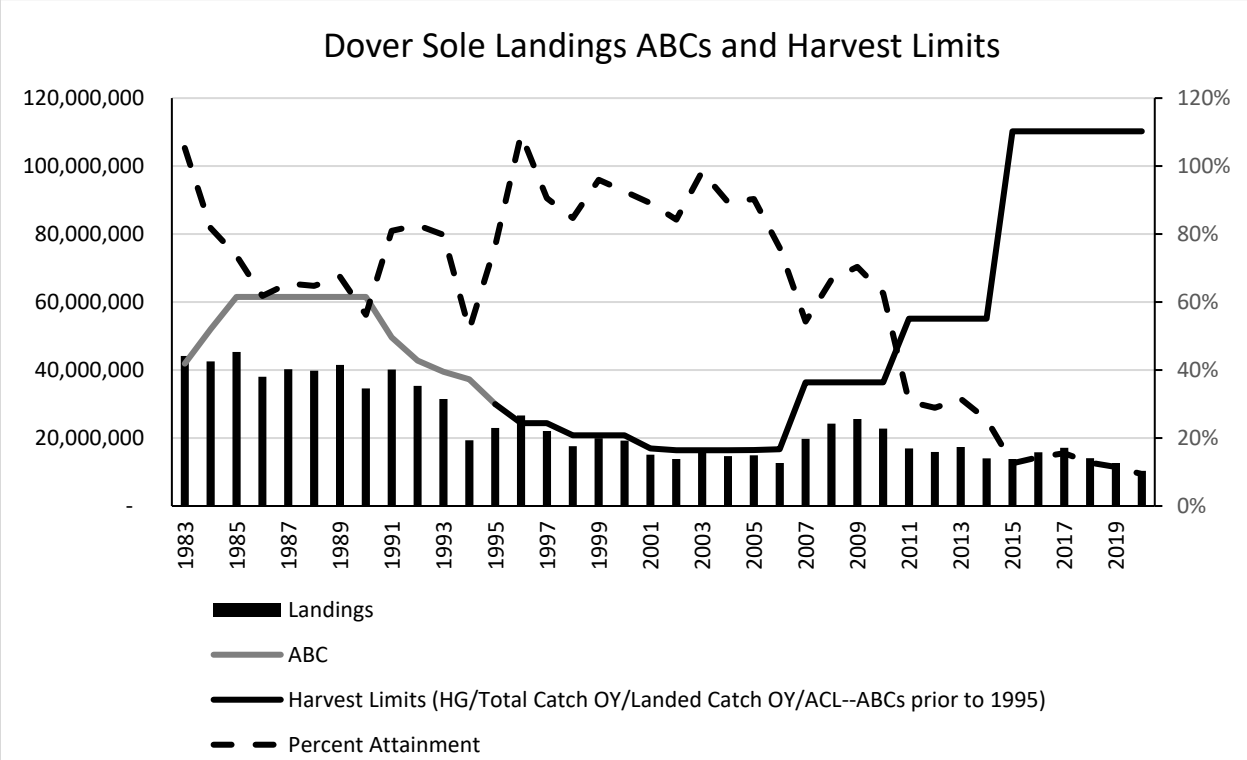


Figure 2. Trawl landings and percent attainment of Dover sole groundfish harvest limits, 1983-2020 (Source: Harvest Specifications and PacFIN Comprehensive Fish Ticket Database) Internal reference: LE TW SF&DVR-PriceStudy_1994-2020_Jan 3 2021.xlsx; Dover Harvest Limits-1983-2022.

Trawl harvest levels and attainment of its sablefish allocation have also varied over the years. Over a variety of conditions from 2005-2010, groundfish trawl gear landings of sablefish averaged 5.7 million pounds. After implementation of the trawl IFQ program, total QP use

averaged 3.4 million pounds from 2011-2022 (Figure 3). From 2005-2010, allocation attainment with trawl gear ranged from 65 percent to 106 percent and averaged 83 percent. From 2011-2022, allocation attainment with trawl gear ranged from 45 percent to 77 percent and averaged 63 percent. Thus, since the implementation of the trawl IFQ program, average trawl gear harvest has dropped by 2.3 million pounds and the range of percentage attainment by vessels using trawl gear has dropped 20 to 30 percent while the average attainment decreased by 20 percent and harvest and attainment variability declined. The chance appears substantial, but the degree of significance needs to be evaluated taking into account the different ways that discard mortality was accounted for and changes in the harvest of the trawl complexes to which sablefish contributes. Since implementation of the program, gear switchers have averaged 1.6 million pounds and harvested 29 percent of the trawl sector allocation (Figure 3, Table 3).

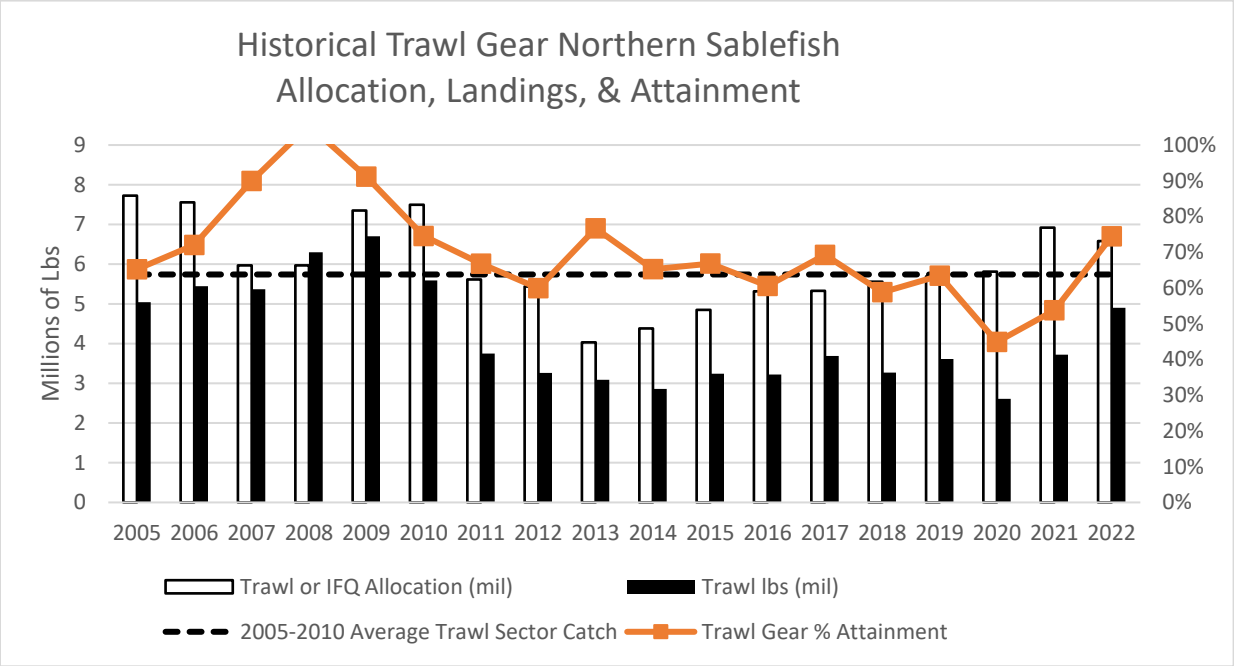


Figure 3. Trawl northern sablefish allocations and trawl gear catch and allocation attainment from 2005-2022.

2.4 Potential Causes of Trawl Allocation Under Attainment

Prior to the catch share program, there was under attainment for many species but after implementation, under attainment increased. A limited amount of unused northern sablefish QP available, potentially due to gear switching, is one potential cause of under attainment of the trawl allocations, as identified in the purpose and need statement. The causes mentioned in the purpose and need statement have been evaluated along with other potential causes (see Agenda Item D.1, Attachment 1 September 2020; and Agenda Item F.4, Attachment 1, April 2021) and those evaluations are summarized in this section. The degree to which gear switching is or is not a cause of under attainment will have a substantial bearing on the impacts of a gear switching limitation.

2.4.1 Trawl Vessel Participation as a Limit on Attainment (Including Relative Profits)

Summary: The purpose and need statement proposed for this action identifies declining trawl vessel participation as a factor that might be affecting attainment of trawl allocations. Agenda Item H.3, Attachment 3, November 2022 evaluated the relationship between the number of non-whiting vessels using trawl gear, average vessel harvest for those vessels, and total non-whiting trawl harvest. In general, it finds:

- *The number of participating vessels using trawl gear to catch non-whiting species declined after implementation of the program; however, average harvest per vessel has increased and the remaining fleet likely had the physical capacity to maintain pre-IFQ harvest levels.*
- *Economic data appears to show adequate vessel profitability to support expansion of trawl harvest.*
- *The general indication is that factors other than the capacity of participating non-whiting trawl vessels remaining in the fishery led to under attainment of the trawl allocation.*

Declining levels of trawl vessel participation has been suggested as one explanation for low levels of trawl allocation attainment. When the IFQ program was implemented in 2011, the number of non-whiting vessels using trawl gear dropped from an average of 116 vessels from 2006-2010 down to an average of 66 from 2011-2022 (Figure 4).

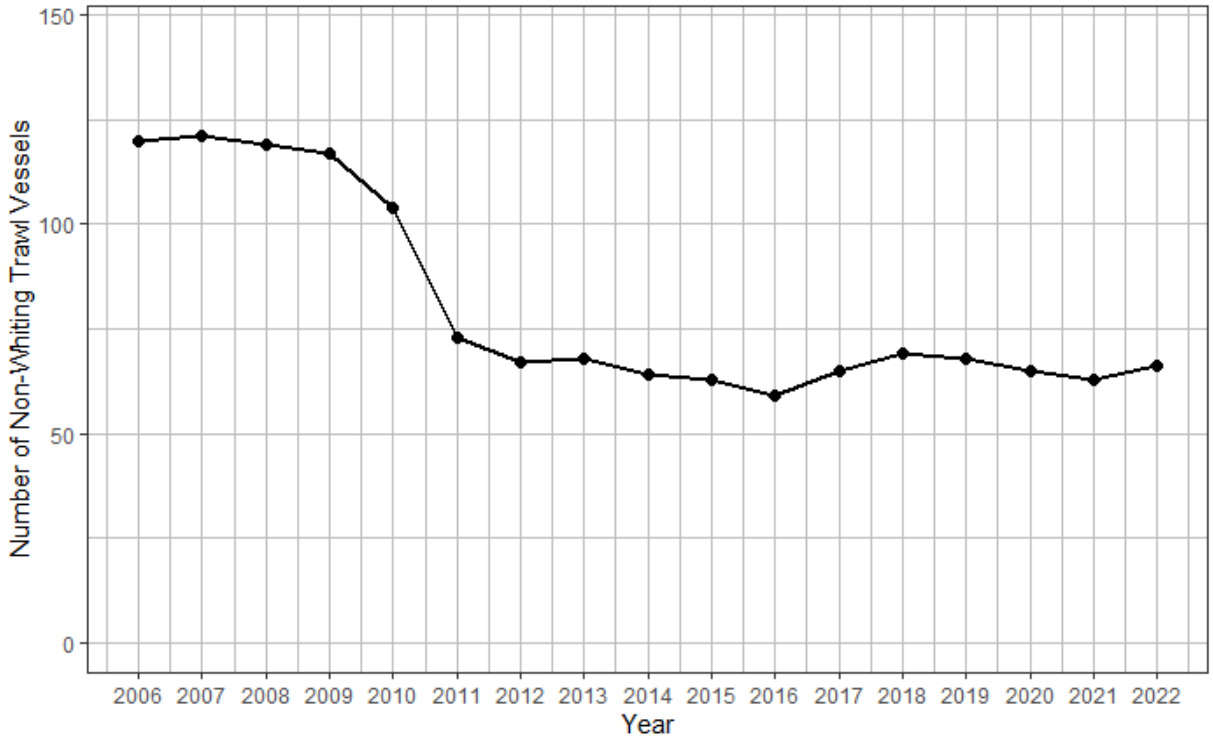


Figure 4. Number of non-whiting trawl vessels using trawl gear, 2006-2022.

One indicator of the capacity of the existing fleet is the harvest of those vessels that are "stable participants"[4], relative to what they were harvesting prior to the IFQ program. On average, as a group, stable participants have increased their landings and revenue compared to before the start of the program and over the course of the years of the program. In the most recent period, the harvest levels for stable participants alone are nearly equivalent to the pre-IFQ harvest levels (Figure 5), indicating that the trawl catch share fleet likely had sufficient capacity to harvest at pre-catch share levels without even taking into account new entrants.

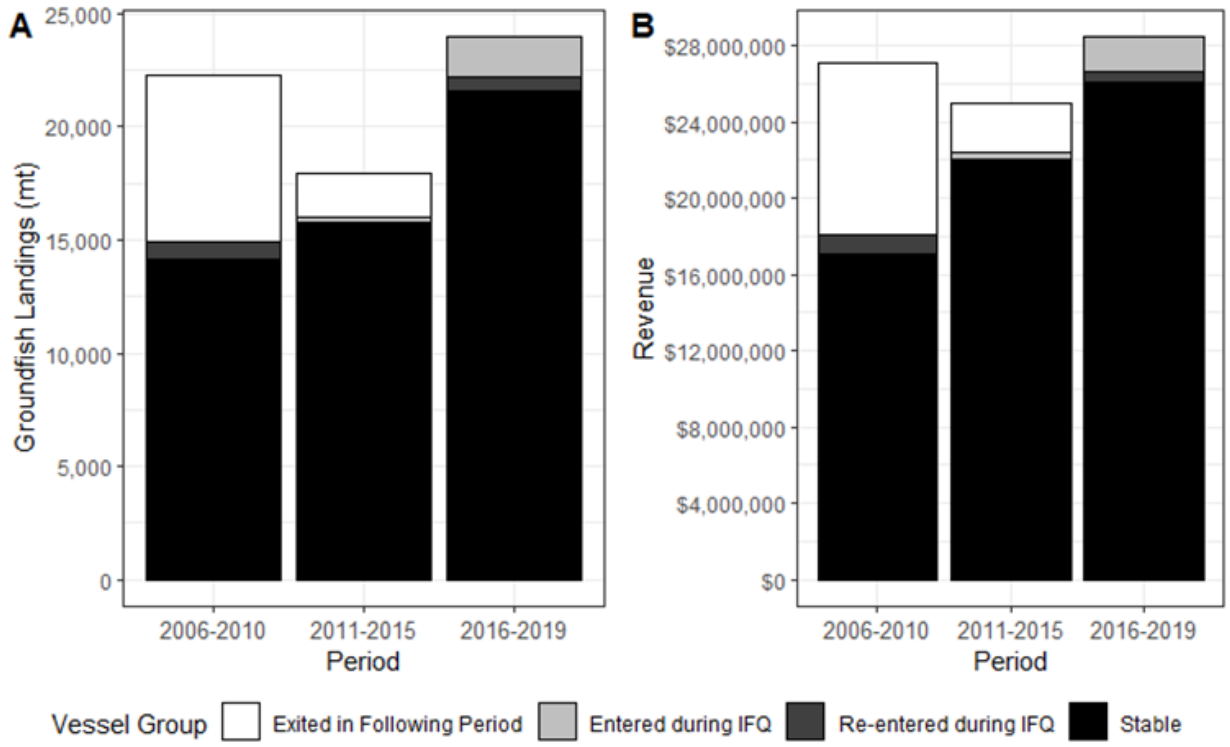


Figure 5. Average non-whiting trawl sector landings (mt; A) and revenue not adjusted for inflation (B) by period and vessel group (stable, re-entered fishery, entered fishery, or exited in following period).

While the trawl catch share fleet likely had sufficient capacity to harvest at pre-catch share levels, participation and attainment could still be constrained by low profitability. A recent analysis of two decades of data on 170 US fish stocks found that in many cases, fishers are fishing less of a species because they find it unprofitable (Oremus et al., 2023). With respect to profits from the harvester side, summaries from the National Marine Fisheries Service (NMFS) Economic Data Collection (EDC) program generally show that, while using trawl gear in non-whiting fisheries, vessels became more profitable after implementation of the catch share program—taking into account fixed[5] and variable costs[6] (total cost net revenue, TCNR, Figure 6). In considering these results, it should be noted that some of the apparent increases in

[4] Stable participants are those that had at least one non-whiting trawl landing in each of the following periods: 2006-2010, 2011-2015, and 2011-2015. For further description, see page 44 of Agenda Item H.3., Attachment 3, November 2022

[5] E.g., fishing gear and on-board equipment

[6] E.g., crew wages, fuel, monitoring costs, and cost recovery fees.

profitability might be the result of less efficient vessels leaving the fishery rather than an increase in efficiency of remaining vessels. Overall, vessel profitability while using trawl gear in the catch share program does not appear to be constraining because the majority of vessels have positive TCNR per day while fishing these strategies. This will be discussed further in Section 2.4.5. While vessels may have sufficient profitability at the exvessel prices offered, that leaves open the question of whether the volume of product sold could be expanded while maintaining those prices, i.e., whether vessel capacity and participation is sufficient but market limits are constraining total production.

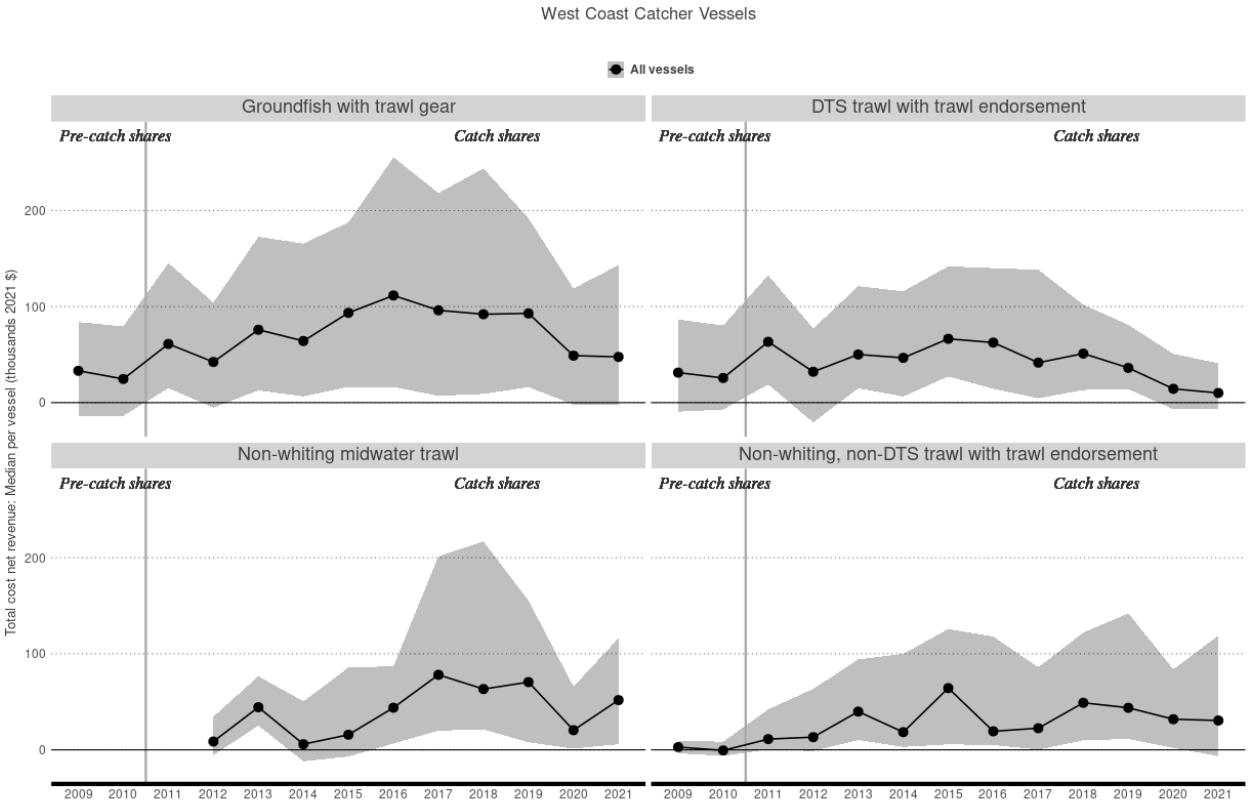


Figure 6. Total cost net revenue per vessels while fishing in non-whiting strategies, 2009 through 2021. Source: The FISHEyE application maintained by NOAA Fisheries, NWFSC on Updated October 8, 2023.

2.4.2 Market Limits – Domestic Markets and Competing Imports

This section explores information pertaining to whether market limits may be constraining attainment of trawl allocation, as posited as a possibility in the purpose and need statement.

Summary:

- *One of the species most likely impacted by competition with gear switchers is Dover sole. Therefore, a focus for this section is indicators of whether or not or the degree to which landings of Dover sole might be market constrained.*
    - *From 2007-2009, there was a dramatic increase in Dover sole landings and a pull-back that started in 2010.*

    - *Amounts delivered at different market prices in 2009 and 2010 indicate that in the context of conditions at that time the market may have been at its limit for Dover sole for the fresh fish market.*
    - *The volume pull back that started in 2010 may have been associated with this limit or, in addition or instead, may have been related to declines in Petrale sole opportunity, increases in pink shrimp catch per unit effort (CPUE), and a general downturn in the US economy (the great recession).*
    - *In 2011, when the catch share program was implemented, prices recovered and most all the fish delivered was paid fresh prices.*
    - *During the catch share program, the volume of Dover deliveries has not recovered to levels observed in the early years of the 2007-2010 expansion (i.e., 2007 and 2008, years prior to price signals that may have indicated substantial market limitations).*
- *Even if markets are currently limiting the expansion of harvest of species like Dover sole, it is also possible that uncertainty about availability of sablefish QP is limiting investments in efficient equipment and marketing that could expand market capacity.*
    - *See Section 2.4.4 for a discussion of possible ways the catch share system design is impacting investment.*
- *Increasing the attainment of trawl allocations for some species will likely require the development of markets—either through expansion of existing markets or displacement of products such as aquaculture products and imports. Developing markets for these trawl species requires that the fish be competitively priced.*
- *Competition from imports may have become an increasingly important factor affecting the expansion of West Coast fisheries as global markets have increasingly commodified whitefish. Market studies indicate that fresh tilapia imports may be competing in whitefish markets with some U.S. wild caught species, possibly including Dover sole.*

The purpose and need statement identifies a lack of markets as another factor that could be constraining trawl allocation attainment. If gear switching is constraining the attainment of trawl allocations, one of the species most likely impacted is Dover sole, typically taken as part of a DTS complex (see Section 2.4.5). Therefore, this section focuses primarily on the question of market limits contribution to under attainment of the Dover sole trawl allocation.

Historical information on the dynamics of the Dover sole market provides some clues about possible market capacity limitations on attainment of Dover sole allocations. However, numerous conditions play into these dynamics including cycles in the general economy, production and opportunities in other fisheries, and international trade. While there are various indications of limitations in the Dover sole market, the level and degree of these limitations over time is difficult to identify with certainty. Additionally, historic conditions may not reflect current market conditions. Together all of these factors make definitive determinations based on the indicators provided here difficult.

One of the historical events that has received much attention during these deliberations is the expansion of Dover sole harvest that occurred just prior to the catch share program and the contraction that approximately corresponded to trawl IFQ program implementation. It is thought that the reduction in availability of the trawl allocation of sablefish due to gear switching under the IFQ program might have reduced the amount of Dover sole landed after program implementation.

Dover sole harvest declined across the 1990s but as Dover sole OYs increased in 2007, an expansion began (Figure 7). Average Dover sole prices held relatively steady in 2007 and 2008 but then began dropping in 2009 and 2010, possibly indicating a market capacity limitation. There appear to be three predominant prices at which Dover sole is delivered: $0.20 a pound, $0.30 a pound, and a higher price for which there is more variability. Members of industry have indicated that the lower two prices are for fish that will likely be frozen and are the prices for amounts delivered in excess of what processors believe they can sell into the fresh market (these may be the market or delivery limits that are often discussed in public comment). Prices of fish delivered at the higher fresh market prices were relatively steady until 2010, at which time both the volumes delivered, and fresh market prices declined (Figure 8). The proportions of Dover sole delivered at the $0.20 and $0.30 price points for frozen markets increased substantially in 2009 and 2010 (Figure 9). These price patterns may indicate a limit to the capacity of Dover sole markets at that time. But in considering that possibility, it should be noted that: 1) the level of Dover sole production that occurred before negative price effects became apparent (2007 and possibly 2008, depending on whether there were lagging effects that did not show up until 2009, Figure 7) were well above levels that have been seen since implementation of the catch share program (indicating that the post implementation market might be able to absorb more Dover sole); 2) Dover sole processing and market capacity may have shifted since that time; and 3) coincident with the 2009 and 2010 changes in the Dover sole market were other changes in the national and fishery economies. As an aside, it is also worth noting that with implementation of the catch share program in 2011, while the amount of Dover sole landings declined, prices for fresh deliveries increased, and the amounts delivered at frozen prices returned to levels similar to those seen in 2008 and earlier. There are a number of possible reasons for the Dover sole price increase at the start of the IFQ program, including the possible increase in market leverage of trawlers but also the possibility that the supply of Dover sole was being constrained due to limited availability of sablefish QP.

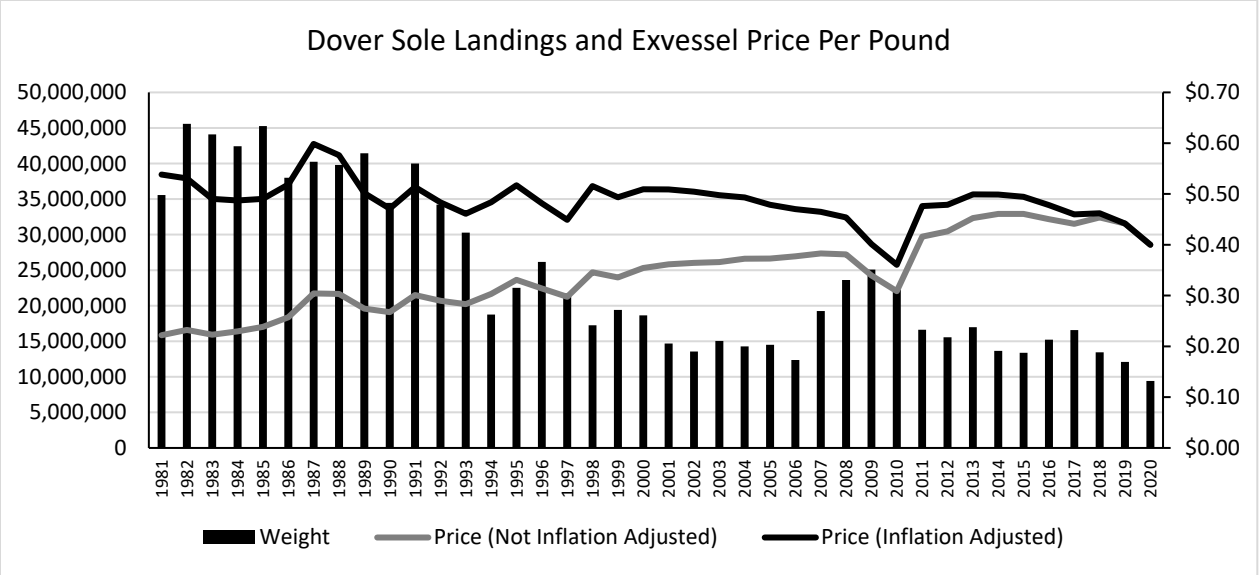


Figure 7. Dover sole landings and exvessel prices (1981-2020). (Source: PacFIN Comprehensive Fish Ticket Database). Internal reference: LE TW SF&DVR-PriceStudy_1994-2020_Jan 3 2021.xlsx;Average_Prices.

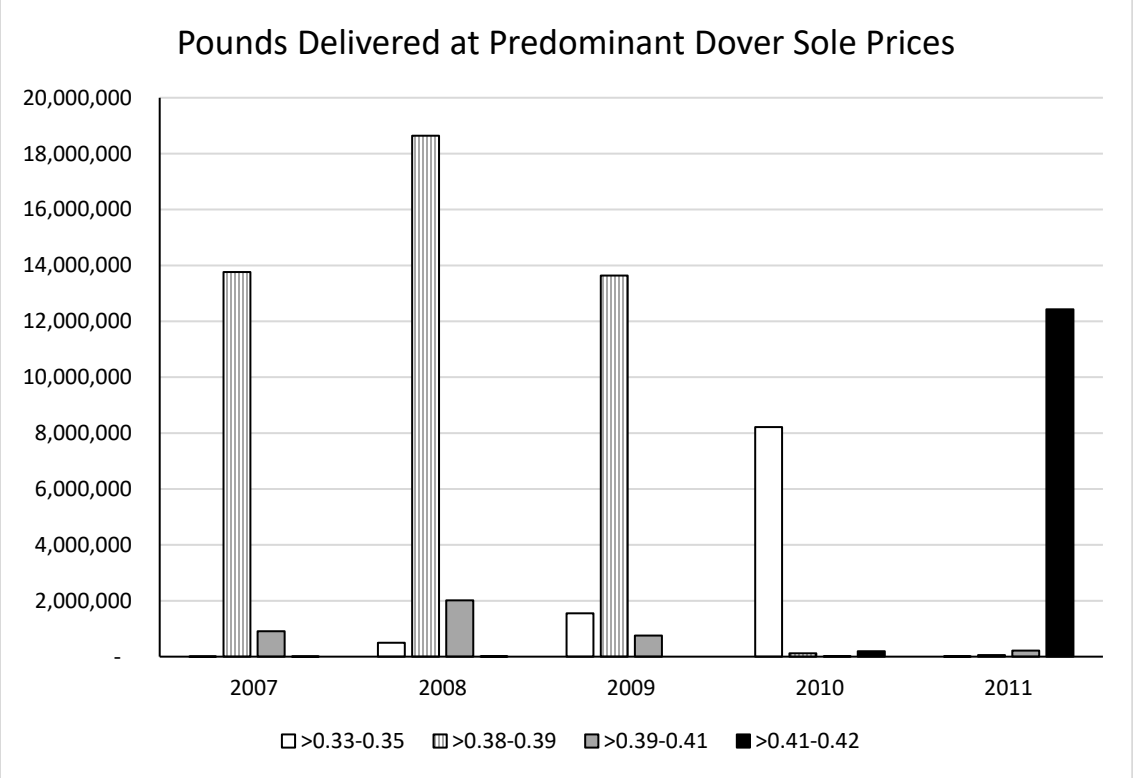


Figure 8. Pounds of Dover sole landed and exvessel prices for fish delivered for the fresh market (2007-2011). (Source: PacFIN Comprehensive Fish Ticket Database). Internal reference: LE TW SF&DVR-PriceStudy_1994-2020_Jan 3 2021.xlsx;Average_Prices.

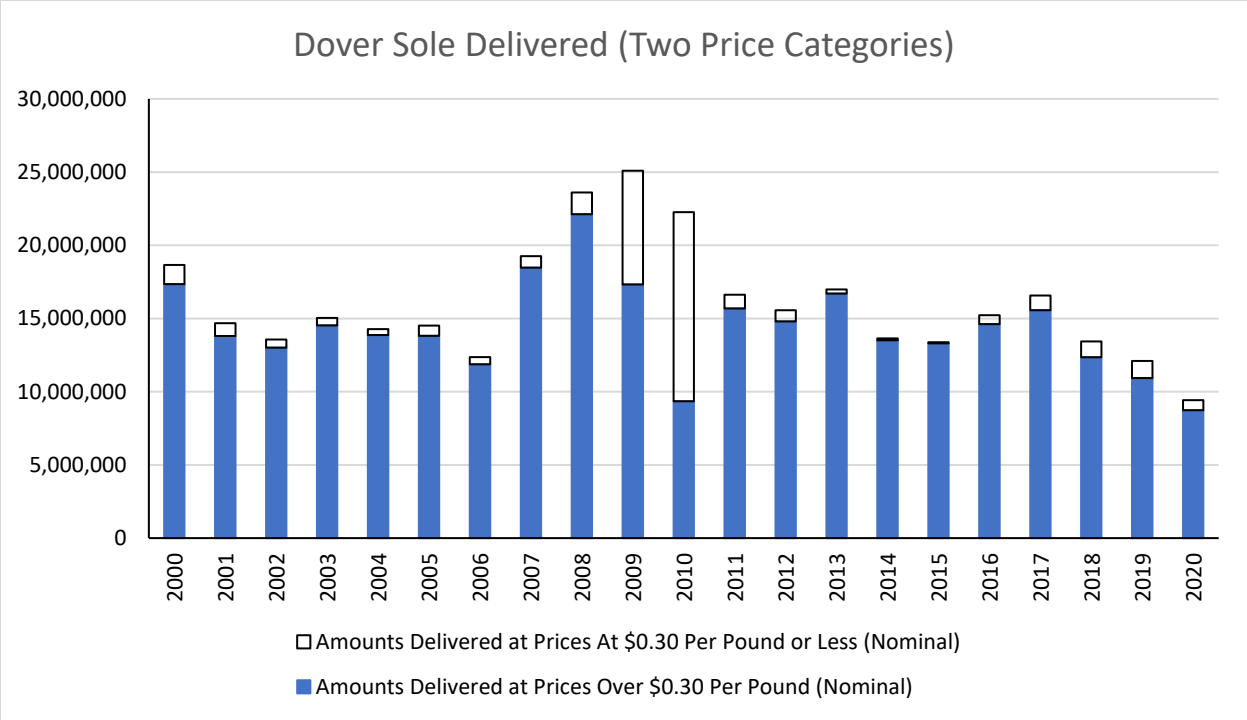


Figure 9. Pounds of Dover sole landed above $0.30 per pound and at or below $0.30 per pound (2001-2020). (Source: PacFIN Comprehensive Fish Ticket Database). Internal reference: LE TW SF&DVR-PriceStudy_1994-2020_Jan 3 2021.xlsx; Dover_Prices (non-confid).

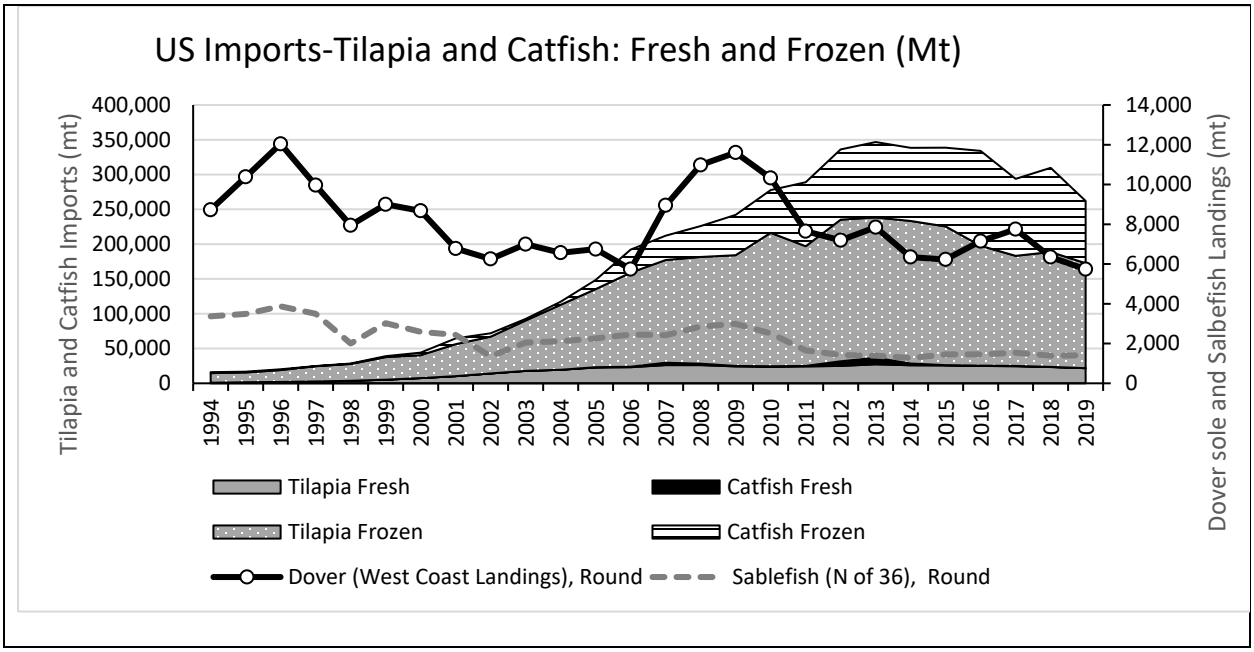
Coincident with these changes in the Dover sole market were other changes in the national and fishery economies that may have contributed to Dover sole prices and levels of production. With respect to influences of the national economy, there was a major downturn that started in December 2007 and bottomed out in June 2009 (the "Great Recession") with recovery occurring in the second quarter of 2011. This downturn might have influenced a reduction in demand for Dover sole and cut in production for fresh markets. Between October 2008 and October 2009, the urban consumer price index for fresh fish and seafood dropped by 4.1 percent and did not recover to its October 2008 level until April of 2010. Over a similar period, the Dover sole price dropped by about 20 percent, far more than the drop in the general index. These data suggest the possibility that if the Dover sole 2009 peak and 2010 pull back relates to a general limit in Dover sole market capacity at the time, it may also have been at least partially influenced by temporary national economic conditions. However, a determination of the influence and its degree would require evaluation of a multiplicity of factors and potential interactions that is beyond what is possible here.

Production and opportunities in other fisheries also influence prices and production levels in the Dover sole fishery. For example, Dover sole is often taken on trips with Petrale sole. From 2005 to 2008, 32 percent of all Dover catch by non-whiting trawlers was taken on trips with at least 1,000 lbs of Petrale. Therefore, when managers began constraining Petrale sole fishing due to overfishing concerns in 2009, the decline in Petrale sole catch may also have influenced the decrease in harvest of Dover sole. Opportunities to fish in other fisheries can also influence participation in the Dover sole. For example, in Oregon, beginning in 2009, there was a doubling of the pink shrimp CPUE which may have drawn effort away from other fisheries, including DTS. It is difficult to discern the degree to which this may be related to decreases in

Petrale sole opportunity or possible Dover market limitations. More detailed information on this history of the Petrale sole and pink shrimp fishery is provided in Section 10.6.

If there are market limitations that cause trawlers to yield sablefish QP to gear switchers, those limitations might be overcome with investments in processing equipment and marketing. It has been opined in public comment that gear switching creates some uncertainty around the reliability of the supply of trawl caught complexes, which may be dampening the type of capital investment and efforts needed to expand markets. See Section 2.4.4 for a discussion of how the catch share program design might impede market mechanisms normally employed when secure access to key inputs is needed to reduce risk and justify investments.

One challenge in developing markets may be competition from imports and, in particular, commodified seafood. While 39 percent of the world's seafood is traded in global markets, around 75 percent of all seafood production is impacted by import/export trade competition (Tveteras et al., 2012[7]). It appears likely that Dover sole competes across species categories with farmed tilapia and catfish in the commodified whitefish market (see Agenda Item D.1, Attachment 1, September 2020). U.S. imports of tilapia and catfish, fresh and frozen, increased each year from 1994 to 2013 but leveled off and declined somewhat since reaching a peak. Overall, the amount of tilapia and catfish imports far outstrips the amount of Dover sole production, with the volume of processed imports[8] exceeding the volume of round Dover sole landed on the West Coast by a ratio of over 40:1 over the last 10 years (through 2019). The large volumes of these imports may indicate both a competitive advantage for the imported product as well as market opportunities for domestic production, if imports decline or can be displaced.



[7] Tveterås, S., Asche, F., Bellemare, M.F., Smith, M.D., Guttormsen, A.G., Lem, A., Lien, K. and Vannuccini, S., 2012. Fish is food-the FAO's fish price index. *PLoS One*, *7*(5), p.e36731.
[8] Close to 80 percent are reported as fillets (weighted annual average)

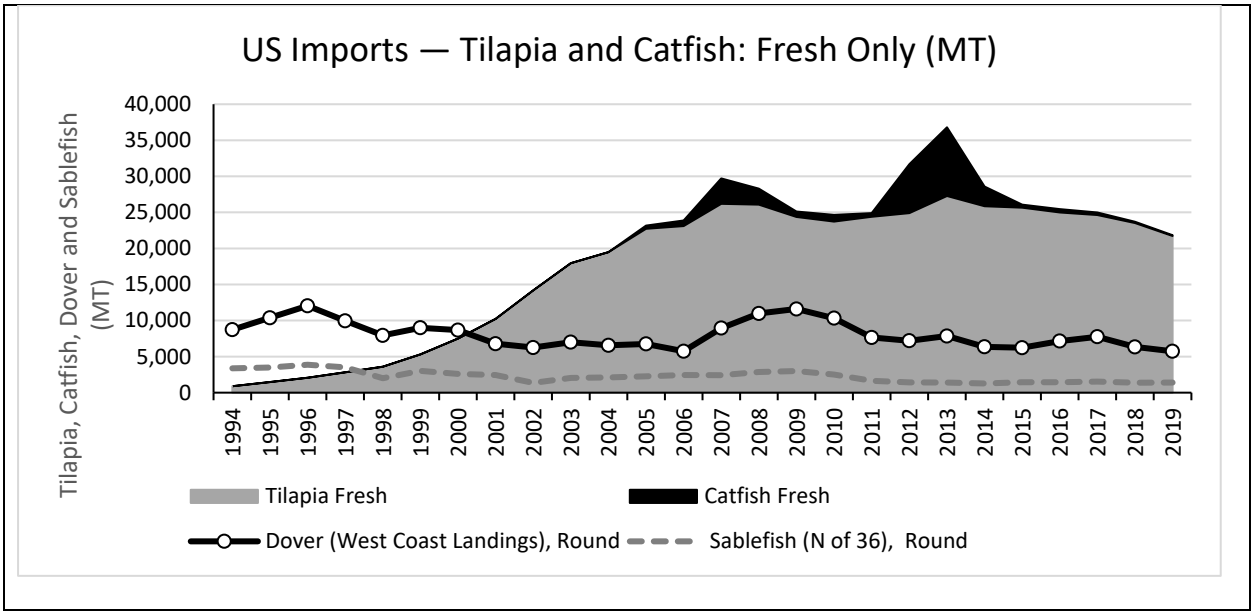


Figure 10. Import volume of processed fresh and frozen (top panel) and fresh (bottom panel) tilapia and catfish and limited entry trawl gear landings of Dover sole and northern sablefish (excluding gear switching). (Sources: NOAA Fisheries Foreign Trade Data and PacFIN Answers Database)

2.4.3 Infrastructure Limitations (Physical)

Summary:

- *Since the catch share program was implemented, there has been a decline in the number of processors in a number of ports.*
- *The number of IFQ first receivers (FRs) has declined in five ports from Half Moon Bay south while declining in only two ports north of that.*
- *Other than processors and FRs, fishery infrastructure does not appear to have declined under catch shares.*

It has been hypothesized that infrastructure limitations could be contributing to low quota attainment under the catch share program. Overall, the catch share review finalized in 2017 showed no strong indications that infrastructure has declined substantially on a coastwide basis under the IFQ program, except with respect to a decline in the number of processing entities. As summarized in Section 2.3 of the September 2020 analysis (Agenda Item F.4, Attachment 1, p. 25), excluding the numbers of processors and FRs, there are more instances of improvement of an infrastructure category in a port (11) than losses of infrastructure (6), indicating that it does not appear likely that post IFQ implementation losses in non-processing infrastructure is affecting attainment of the trawl allocation (Figure 4).

Table 5. Presence of infrastructure by port, current and change (as of 2017) since implementation of the catch share program, along with presence of FR businesses, change over the course of the IFQ program and whether FRs in the port are receiving trawl or fixed gear deliveries. (Source: Catch Share Program Review, 2017; PacFIN; WCR Permit Data; and publicly available information on business ownership)

	Fuel Dock		Ice Plant/Cold Storage		Processors		Hoists, Lifts, and Cranes		Shipyard/ Dry Dock		Marine Vessel Suppliers		Businesses Owning Licensed First Receivers Sites			IFQ Deliveries 2016-2019	
	Current	Change	Current	Change	Current	Change	Current	Change	Current	Change	Current	Change	IFQ FR	Change During IFQ Program	Current Count (2019)	Trawl Deliveries	FG Deliveries
Washington																	
Bellingham Bay, Whatcom County	✓	–	✓	–	✓	▼	✓	–	✓	–	✓	▼	✓	–	2	✓	✓
Neah Bay/N WA Coast	✓	▲	✓	▲	✗	–	✗	–	✗	–	✗	–	✗	–			
Westport	✓	–	✓	▲	✓	–	✗	–	✗	–	✓	–	✓	–	1	✓	
Ilwaco/Chinook	✓	▼	✓	–	✓	–	✓	–	✓	▲	✓	–	✓	–	2	✓	✓
Oregon																	
Astoria (Includes Hammond & Warrenton)	✓	–	✓	?	✓	▼	✓	▼			✓	–	✓	▼	5	✓	✓
Garibaldi	✓	–	✓	–	✓	?	✓	▲	✓	?	✗	–	✗	–			
Newport (Includes South Beach & Toledo)	✓	–	✓	▲	✓	–	✓	▲	✓	▲	✓	?	✓	▲	4	✓	✓
Coos Bay (Includes Charleston & South Bend)	✓	?	✓	?	✓	▼	✓	▲	✓	?	✓	–	✓	▼	2	✓	✓
Brookings (Includes Harbor)	✓	–	✗	▼	✓	?	✓	?	✓	–	✗	–	✓	–	3	✓	
California																	
Crescent City	✓	?	✓	–	✓	▲	✓	?	✓	?	✓	–	✓	–	3	✓	
Eureka (Includes Fields Landing)	✓	?	✓	?	✓	?	✓	–	✓	–	✓	?	✓	▲	4	✓	
Fort Bragg	✗	▼	✓	–	✓	▼	✓	–	✓	–	✓	?	✓	▲	3	✓	✓
Bodega Bay	✓	▼	✓	–	✗	–	✗	–	✗	–	✗	?	✗	–			
San Francisco (Including east bay)	✓	–	✓	–	✓	▼	✓	–	✓	–	✓	?	✓	▲	5	✓	✓
Half Moon Bay/Princeton	✓	▲	✓	?	✓	▲	✗	?	✗	?	✓	?	✓	▼	3	✓	✓
Moss Landing	✓	–	✗	?	✓	▼	✓	–	✓	–	✗	–	✗	▼			
Monterey	✓	–	✓	–	✓	▼	✓	▲	✓	–	✗	–	✓	–	1	✓	✓
Morro Bay	✓	?	✓	–		–	✗	?	✓	?	✓	–	✓	▼	1	✓	✓
Avila	✓	–	✓	–	?	?	✓	–	✗	–	✗	–	✗	▼			
Santa Barbara	✓	–	✓	–	✗	?	✓	–	✓	–	✓	?	✓	▼			

Present = ✓
Absent = ✗
Increased = ▲
No Change = –
Decreased = ▼
Pre-IFQ Comparison Information Not Available = ?

The number of processing companies was down in a number of ports; and, since 2011, the number of IFQ first receivers has declined in five ports from Half Moon Bay south while declining in only two ports north of that. In some cases, the declines are a result of companies consolidating their processing activities in fewer ports and in other cases processors have left the fishery. Given the decline, in some ports it is possible that there could be some limitations to trawl attainment with vessels having fewer options for delivering catch. However, the effect of declines in number of processors on attainment would be indicated by whether there was an accompanying reduction in the amount of trawl product delivered to wholesale markets. Studies cited and data provided in Section 2.3 show after implementation of the trawl catch shares program there has been a mixture with attainment for some of the main trawl species declining while that for other species increased (Table 4). Historical data on total volume of non-whiting trawl caught groundfish indicates that product through-put has varied between 37 and 58 million round pounds (Figure 11). This variation likely indicates the aggregate flexibility that the system has to physically handle larger volumes of fish. Since 2003, there have been two major expansions, the first associated with a temporary expansion of Dover sole from 2007-2010, and the second with the redevelopment of the midwater rockfish fishery, taking off in 2017. While

the capacity may be present, there is a question as to whether the existing processing capacity is efficient enough and able to produce the right product forms to be competitive in global markets.

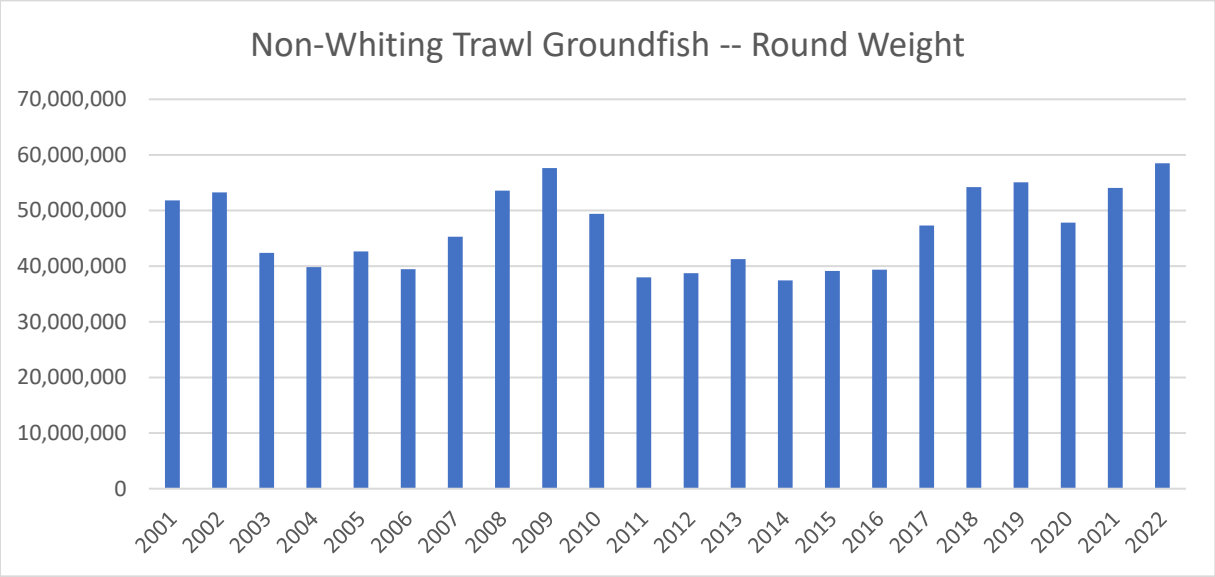


Figure 11. Total volume of nonwhiting groundfish delivered shoreside on the west coast (round weight, 2001-2022)

Overall, unless the concentration of control over fish buying and processing was so great that it interfered with market function (monopolistic control) or regulatory barriers interfere with normal market function, one would expect processing capacity and market development to expand if additional fish can be delivered at a competitive price. Possible sources of regulatory interference with market function are discussed in the following section.

2.4.4 Management System Design

In its June 2022 statement, the Scientific and Statistical Committee (SSC) stated that "the analysis should address whether and why the current market-driven allocation of sablefish quota pounds is undesirable, and what problems the proposed alternatives are trying to correct by constraining the market." A review of the program shows that the trawl catch share program provides a constrained market such that a market driven solution will not necessarily generate the greatest net revenue and benefits to the nation. Further, the catch share program interacts with the LEFG program, another constrained market catch share program. Market constraints in the LEFG program provide incentives for additional cross-over by those vessels into the trawl program. Finally, the barrier between the two programs is itself a market constraint that interferes with an efficient outcome. The reason for these market constraints are the mandates of the MSA that go beyond conservation and efficiency to address other public concerns that are not necessarily captured in market determined solutions. The following sections look at these issues in more detail.

2.4.4(a) Trawl Catch Share System Design

Summary of main points:

- *QS control limits in the catch share system limit the degree to which processors and others can better secure access to a key input needed to support major investments (reduce risk) through vertical integration (acquiring QS).*

It is possible that the QS control limits are inhibiting investments in markets and infrastructure, thereby contributing to under attainment of the non-whiting trawl allocations. When a business evaluates whether to make substantial and specialized capital investments that may improve efficiency and market competitiveness, its willingness to make those investments is partially dependent on an assessment of risk. One source of risk is security of access to the supply of key inputs. When uncertainty is high, a strategy for reducing risk is to secure access to those key inputs through vertical integration.

Prior to catch shares, processors could acquire fish from any licensed vessel, subject to the cumulative landing limits which constrained that vessel's catch. In contrast, under catch shares a processor depends not only on the identification of an available vessel willing to fish but also on that vessel's ability to access QP, which are, in total, more limited relative to the opportunities provided by pre-catch share trip limits. See Section 7.10 for further discussion of the importance of certainty of supply to processors. A processor could secure access to QP through QS acquisition (vertical integration), but QS control limits reduce its ability to do so. A limitation on the ability to secure access to QS as a key input could inhibit a processor from making efficiency-promoting capital investments that would improve the price competitiveness of trawl caught fish, potentially expanding attainment of the trawl allocation.

QS control limits are recognized as balancing concerns about distribution of opportunity among individuals and communities with the potential for some reduction in efficiency. It could be that efficiency effects related to reduced incentives for investments (and consequent impacts on attainment) is a cost traded off for the distributional and other positive effects of control limits. In recent years, there were a total of six entities that were within 10 percent of being constrained by either the sablefish north or the aggregate non-whiting control limits, 3.0 percent and 2.7 percent, respectively (including at least one processing company and a community trust). For additional discussion, see the analysis presented at the September 2020 Council meeting (Agenda Item F.4, Attachment 1, p. 29).

2.4.4(b) LEFG Stacking Program Design

Summary of main points.

- *The LEFG Program limits stacking to three permits and the license limitation program from which the LEFG program was designed included a very limited number of pot permits.*
    - *Fixed gear vessels that have reached their three-permit limit and want to further increase revenue or that want to use fishpot gear but cannot get an LEFG permit can pursue those activities in the trawl fishery as gear switchers.*
- *Market resolution of the trawl/fixed gear allocation dispute is inhibited because trawl vessels cannot use trawl gear in the LEFG program.*

The current management system allows fixed gear vessels to fish on the trawl allocation but does not allow trawl vessels to fish on the fixed gear allocation. This sets up a sablefish quota market

situation that impedes market driven efficiency and alters the between gear allocations. Although on average gear-switching vessels are more profitable per day than bottom trawlers, there is a wide range in profitability among both fleets EDC data shows that one gear type is not wholly more efficient than another but rather that some gear--switching vessels are more efficient than most trawl vessels and some trawl vessels are more efficient than most gear-switching vessels (see Section 2.4.5(b)). About half the gear-switching vessels have reached their permit stacking limit in the LEFG fishery (see Table 13 in Section 2.5.4) and are likely crossing into the trawl fishery to further expand their harvest. These vessels are likely among the more efficient/competitive vessels in the LEFG fishery. Additionally, having covered many of their fixed operating costs with their LEFG harvest they are likely taking the additional trawl harvest at fairly low marginal costs (not including the additional costs of operating in the IFQ fishery).[9] The other main group of gear-switching vessels are not crossing over from the LEFG fishery and tend to use pot gear. There are relatively few pot permits available in the LEFG fishery (36 pot or longline/pot combined, compared to 128 longline permits). The trawl fishery provides an opportunity to fish pot gear without having to compete for the few pot permits available in the LEFG fishery (discussed further in Section 2.5.4). If fixed gear vessels gear switching in the trawl fishery are outcompeting trawl vessels for the purchase of sablefish QP, it is likely the trawl vessels of lesser efficiency that are being displaced. Because trawl gear cannot be used to catch the LEFG sablefish quota, these trawl vessels do not then have an opportunity to see if they can outbid some of the LEFG vessels of lesser efficiency for that quota. Thus, the one-way entry opportunity for crossing between the fisheries may be resulting in some gain in efficiency but the gain is limited by the unidirectional access and the result is an intersector allocation that is still not fully market driven but rather impeded by the management measures intended to address the nonmarket objectives and considerations specified by the MSA.

2.4.5 Competing Uses for Sablefish QP, Including Gear Switching

The previous section considered other causes for the under attainment of the trawl allocation. One of the main potential causes at issue in this action is whether a constraint is created by the use of sablefish by gear switching vessels. If gear switching were to be limited, would that QP otherwise go unused, be used by trawl vessels to take more sablefish, or be used to take more of other species, thereby increasing overall attainment.

- *Sablefish QP can basically be considered fully utilized, excluding COVID years (2020 and 2021).*
- *Trawl and gear-switching vessels have comparable levels of total profitability, with some trawlers being more profitable than some gear-switchers and vice versa.*
- *Profit per day earned by each strategy has a similar overlap in distribution of profitability.*
- *On a per mt of catch basis, for the most part, gear-switching vessels bring in much higher revenue and profit (variable cost net revenue, VNCR).*

[9] Paying for observers and cost recovery fees.

    - *Trawl revenue per mt is lower because each mt includes only some sablefish and a substantial amount of other species of lower value (petrale sole being a potential exception).*
- *Profits per pound of sablefish influence what a vessel is willing to pay for sablefish QP.*
    - *On average, trawl profits per pound of sablefish on DTS trips tend to be higher than for gear-switched trips but for a substantial number of trawl trips the profits are lower than for gear-switching trips.*
    - *The trips on which trawl profits per pound of sablefish are lower than for gear switching tend to be those in which there is a higher portion of sablefish in the catch (and therefore less revenue from co-occurring species).*
    - *Years of high sablefish prices increase the proportion of the gear switched trips that are more profitable than DTS trips.*
- *If gear switchers are acquiring sablefish QP that would otherwise be used by trawlers the effect would be to either*
    - *Reduce the amounts of the complex caught and trawler profits, OR*
    - *Reduce the amount of sablefish trawlers take while fishing some complexes (encouraging sablefish avoidance) and thereby reduce trawler profits.*
- *If gear switchers are acquiring sablefish QP that would not otherwise be used by trawlers, they are contributing to attainment of the sablefish allocation.*
- *There was a substantial and consistent reduction in the Dover/sablefish ratio that occurred with implementation of the trawl catch share program, potentially indicating DTS trawler avoidance of sablefish.*

The previous sections consider a number of factors that might impact trawl allocation attainment. In this section, competition for sablefish QP is considered as a possible limitation.

2.4.5(a) Attainment of Sablefish Allocation

In most years the sablefish allocation can be considered fully attained, creating competition among different strategies for the available sablefish QP. On average from 2011-2019, 96.4 percent of the trawl sablefish allocation for each year was caught (Table 3). Attainment was much lower in 2020 and 2021, likely due to COVID. In 2022, even with a trawl allocation that had increased to 30 percent above the 2011-2019 average, overall attainment was above the 2011-2019 average (97.8 percent compared to 96.4 percent). In catch shares programs, it is not unusual for there to be some quota left unused. As an example, the LEFG primary fishery is typically considered "fully attained" but averaged only 91.2 percent from 2015-2020 (2022 LEFG Review). For 1995-2019 (years covered in program review, NPFMC/NMFS, 2016), the Alaska IFQ Programs for fixed gear sablefish and halibut took an average of 90 percent and 96 percent of their allocations, respectively.

2.4.5(b) Relative Revenue and Profitability, By Strategy

Vessels use trawl gear in a variety of strategies that catch different species complexes, usually including some sablefish, while gear switching operations primarily target sablefish, with little to

no additional retained harvest of other species.[10] To compare the economics of these strategies, this evaluation looks primarily at exvessel revenue and profits as measured by VCNR. VCNR is net revenue calculated as total exvessel revenue minus variable costs and relates to daily decisions on whether or not to go fishing and what strategies to pursue.[11] Of all the trawl strategies, DTS is most likely to be limited by the availability of sablefish because on per pound of sablefish it brings in the least revenue amongst the trawl gear strategies (Table 6), the lowest VCNR (Table 7), and highest volume of sablefish (Table 9). Whiting and midwater rockfish on the other hand are observed to have the highest revenue and VCNR per pound of sablefish, suggesting that they should be willing to pay to obtain sablefish QPs. This makes DTS the most vulnerable to competition with gear switching vessels, and with other trawl gear strategies. However, gear switchers have lower average levels of revenue and VCNR per pound of sablefish than the trawl strategies.

Table 6. Average proportion of trawl caught sablefish north landed, average ratio of non-sablefish species to sablefish north landed, and the average revenue per 1,000 pounds of sablefish north by trawl strategy compared to the average revenue per 1,000s pounds of sablefish by gear switching vessels, 2016-2019 and 2020. Source: PacFIN

Strategy	Proportion of Sablefish Taken by Trawl Strategy	Ratio of Landed Non-Sablefish Species to Sablefish North	Revenue ($) per 1,000 lbs of sablefish
	2016-2019 Averages		
DTS	72.4	8.3	5,834
Flatfish	11.8	15.9	12,791
Mixed Slope	8.2	15.3	10,944
Whiting	5.8	4,683.9	345,716
Mixed Shelf	1.4	39.3	27,487
Midwater Rockfish	0.5	1,907.3	732,714
	Trawl Total = 100%		Trawl Weighted Average = 512,175
Gear Switching			2,588
	2020		
DTS	56.5	9.4	5,033
Flatfish	7.2	18.6	13,367
Mixed Slope	20.1	12.2	6,661
Whiting	9.0	1,596	101,356
Mixed Shelf	6.8	16.9	8,426
Midwater Rockfish	0.6	1,712	388,049
	Trawl Total= 100%		Trawl Weighted Average= 286,137
Gear Switching			1,162

Internal Reference: June Analysis.RMD; Post September 2020 Analysis.RMD

[10] For gear switching vessels, sablefish comprised an annual average of 99.3 percent of the total revenue and 97.1 percent of total landings for 2016-2019.

[11] Fixed costs (e.g., equipment or gear purchases) are not subtracted VCNR. TCNR, which subtracts fixed costs from revenue to determine the net, is related to decisions on whether or not to stay in business.

Table 7. Variable cost net revenue ($) per 1,000 lbs of sablefish (quota earnings and costs are not included in analysis)

Target	2016-2019	2020
DTS	$2,702	$2,583
Flatfish	$5,780	$6,741
Mixed Slope	$5,205	$4,180
Whiting	$40,171	$23,438
Mixed Shelf	$14,450	$3,595
Midwater Rockfish	$29,561	$21,186
Gear Switching	$1,593	$589

Source: EDC data summary provided by Erin Steiner, September 2023.

The low VCNR per pound of sablefish might be interpreted as indicating that there is little chance that gear-switching vessels would be able to outbid trawlers for their QP. However, the situation is complex and consideration of the issue at the individual vessel level reveals different possible outcomes. Here we focus on annual vessel, per day, per metric ton, per pound of sablefish VCNR, primarily for DTS and gear-switching vessels. Additional detail can be found in Section 10.4.

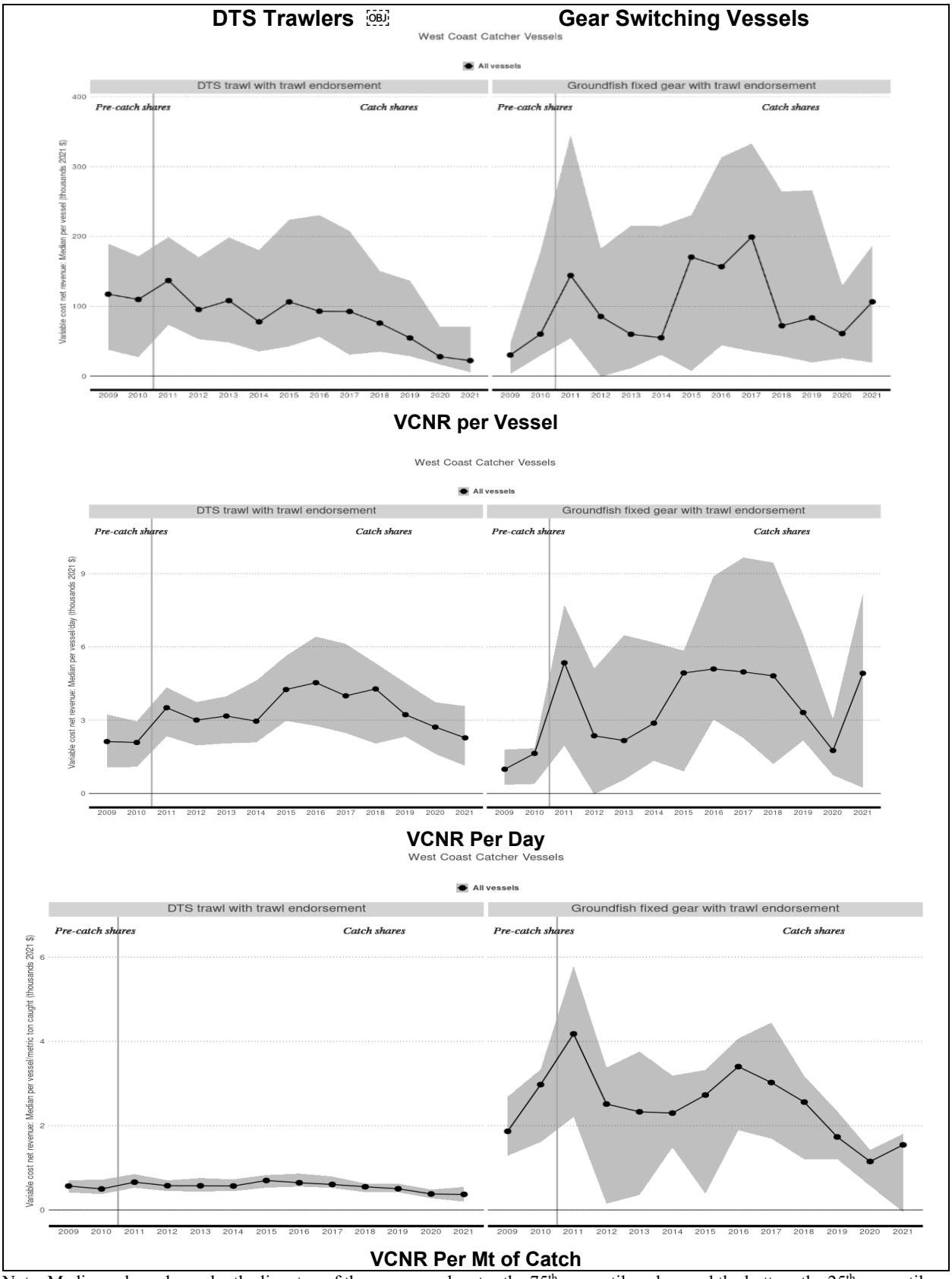
VCNR data per vessel and per day reveals two important contrasts. First, in each strategy there are some vessels that have a profit advantage over vessels in the other strategies. Figures generated from EDC FISHEyE system (Figure 12) show median values (dots) and shaded areas that are bounded on the top by the 75th percentile and on the bottom by the 25th percentile. For example, the top graphs of Figure 12 show VCNR per vessel and there it can be seen that the DTS vessels operating near the 75th percentile are substantially more profitable than the gear switching vessels operating near the 25th percentile.

Second, there is a between year variability which indicates that over time, different sectors will experience different relative profit advantages in the use of sablefish QP. For example, on an annual vessel basis, the median gear switching vessel had greater annual profits than the median DTS trawl vessel in 2011 and 2015-2020, while the median DTS vessels were more profitable in other years.

VCNR per day or per trip indicates more about the choices vessels have each day and the differences in opportunities by the strategies. As with annual catch, there are some vessels using the DTS strategy that are more profitable on a per day basis than gear switchers and vice versa (middle graphs of Figure 12). Distributions of VCNR per day for other strategies indicate that even where there substantial differences in the medians there is still considerable overlap in the distributions (Figure 13). Thus, while for purposes of illustration and discussion we will focus on competition between the DTS and gear-switching strategies, there is still a potential for competition for sablefish QP between gear switching and the other trawl strategies, as well as among the trawl strategies.

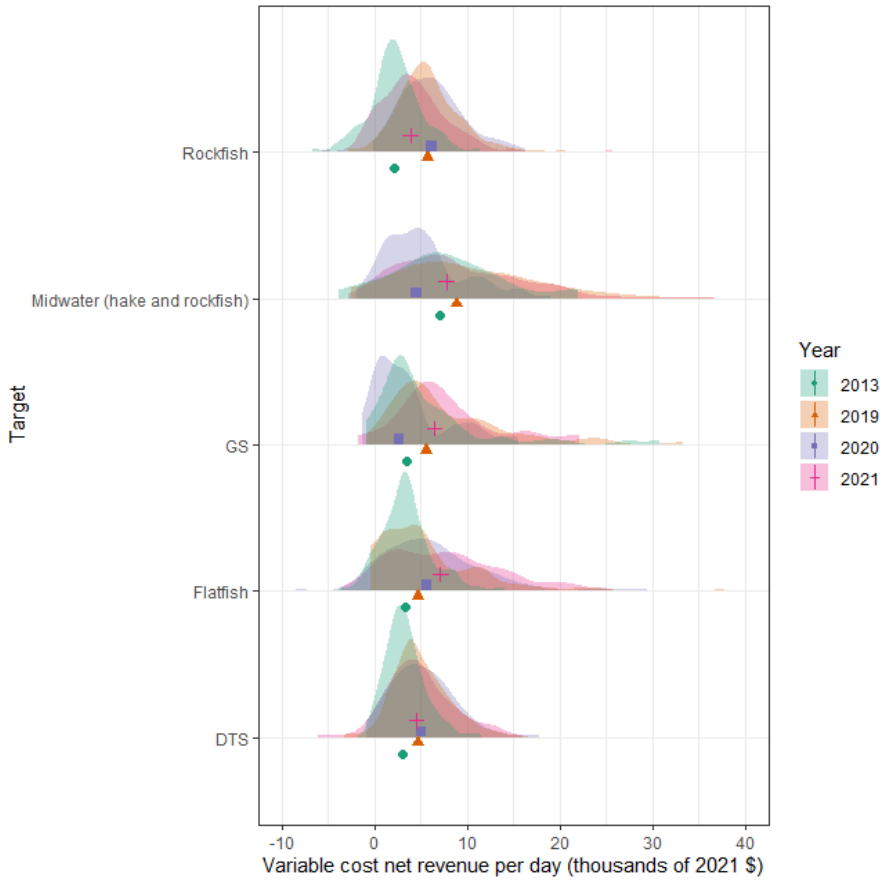
In contrast to the annual vessel and day/trip data, VCNR, per mt of catch for gear-switching vessels is typically much higher than for trawl vessels. A metric ton of gear switched catch is

comprised mainly of sablefish (high exvessel price) while a mt of trawl catch includes other species, most of which have a substantially lower exvessel price (one notable exception being Petrale sole). However, as with the per vessel and per trip data there is some deviation from the general pattern (note the lower bounds of the VCNR per mt distribution for gear switching vessels in some years compared to the range for the DTS vessels). Comparison of the annual vessel data to the per metric ton data (top of Figure 12 compared to bottom) indicates that volume of landings is important for the profitability of trawl vessels.



Note: Median values shown by the line, top of the gray area denotes the 75th percentile value, and the bottom the 25th percentile.

Figure 12. VCNRs for DTS trawlers and gear-switching vessels 2009 through 2021. Source: The FISHEyE application maintained by NOAA Fisheries, NWFSC, Updated September 29, 2023.



Note: Each shaded area represents the distribution of the trip data. Taller regions indicate more trips at the VCNR level indicated across the bottom. The range of VCNRs for a particular year (line) is indicated by how far the distribution extends horizontally. The markers represent the median for each year and target. The Rockfish category is a combination of the Mixed Shelf, and Mixed Slope targets.

Figure 13. Trip-level variable cost net revenue per day by target and three years (2013 (green, circles), 2019 (orange, triangles), 2020 (purple, squares), 2021 (pink, pluses).

Landings in the DTS and gear switching strategies require access to sablefish QP. There are some vessels in each strategy that have an overall level of profitability that should be sufficient to allow them to outbid some vessels in the other strategy for sablefish QP (on the basis of annual or per day profitability). The question is whether it makes economic sense to do so and this depends on the expected return for each additional pound of sablefish QP purchased (the marginal profits, see Section 10.4).

For harvesters driven by profit maximization, willingness to pay for sablefish QP will be related to the VCNR for all species that vessels can generate per pound sablefish caught. Table 8 provides VCNR per pound of sablefish on trips taken in the 2017-2021 period for the strategies shown in Table 7. For each strategy, trips were ordered from lowest to highest based on VCNR per pound of sablefish and values are displayed at 10 percentile intervals. The VCNRs displayed for each percentile indicate the most we would expect a vessel to pay for sablefish in order to make a trip like the 10th percentile trip. For example, for the DTS target strategy the trip at the 10th percentile had a VCNR of $0.86 per pound of sablefish, and the 90th percentile $10.79. A vessel expecting to make a trip similar to those that were ranked in the 10th percentile or below

would not be expected to pay more than $0.86 per pound for sablefish QP to support that trip. At the other end of the spectrum, a vessel expecting to make a trip similar to those that were ranked in the 90th percentile or above would be expected to be willing to pay at least $10.79 per pound for a sablefish QP to support that trip.

Table 8. Variable cost net revenue per pound of sablefish by target by decile for trips (2017-2021).

Target	10th	20th	30th	40th	50th	60th	70th	80th	90th
DTS	$0.86	$1.41	$1.85	$2.34	$2.90	$3.58	$4.73	$6.48	$10.79
Flatfish	$1.17	$2.86	$4.60	$7.74	$13.06	$23.45	$44.57	$104.91	$363.11
Mixed Slope	$1.11	$1.89	$2.87	$4.15	$6.11	$9.79	$16.34	$31.71	$75.90
Whiting	$2.49	$26.45	$99.05	$270.25	$533.98	$1,005.45	$1,835.64	$3,281.66	$6,111.63
Mixed Shelf	$0.14	$1.22	$2.55	$4.46	$9.02	$19.62	$40.21	$66.26	$163.37
Midwater Rockfish	$2.49	$4.87	$15.93	$24.43	$68.34	$134.07	$288.65	$1,180.13	$7,358.60
GS	$0.36	$0.63	$0.79	$0.98	$1.12	$1.36	$1.62	$1.87	$2.14

Table 9. Percent of **sablefish** landings by weight by decile for trips defined by variable cost net revenue per pound (2017-2021).

Target	[0-10th)	[10-20th	[20-30th)	[30-40th)	[40-50th)	[50-60th)	[60-70th)	[70-80th)	[80-90th)	[90-100%)	Total
DTS	7.43%	7.68%	6.67%	5.67%	4.67%	3.94%	2.99%	2.30%	1.66%	0.56%	43.58%
Flatfish	1.00%	3.09%	1.62%	0.93%	0.45%	0.24%	0.14%	0.05%	0.02%	0.00%	7.55%
Mixed Slope	1.66%	1.86%	1.63%	1.11%	0.64%	0.42%	0.24%	0.13%	0.08%	0.02%	7.80%
Whiting	4.12%	1.62%	0.21%	0.07%	0.03%	0.02%	0.01%	0.01%	0.00%	0.00%	6.09%
Mixed Shelf	0.13%	0.63%	0.41%	0.29%	0.17%	0.07%	0.05%	0.03%	0.01%	0.00%	1.79%
MWT Rckfish	0.56%	0.42%	0.15%	0.06%	0.02%	0.01%	0.01%	0.00%	0.00%	0.00%	1.23%
GS	1.55%	3.08%	3.90%	4.06%	3.14%	3.96%	3.52%	2.81%	2.23%	3.71%	31.95%

In general, trawl trips with lower VCNRs per pound of sablefish tend to use more total sablefish than those with higher VCNRs per pound of sablefish. This is because the lower VCNR trips have a higher proportion of sablefish in their catch, so each pound of sablefish caught is associated with fewer pounds of co-occurring species and thus less total revenue per pound of sablefish. Table 9 shows for each cell in Table 8 the amount of sablefish taken in the corresponding decile[12] (for each corresponding cell the percentile in Table 8 defines the upper bond of the decile in Table 9). As an example, using the first column for the DTS row in both

[12] Deciles are created by **ranking the data (in this case from lowest to highest VCNR per pound of sablefish) and splitting that ranking 10 equal groups.**

tables, it can be seen that 7.43 percent of the sablefish (Table 9) were taken on DTS trips that had VCNR of $0.86 or less per pound of sablefish (the 10th decile value in Table 8). Conversely, DTS trips that had a very high VCNR per pound of sablefish ($10.79 per pound, last column of Table 8) used very little sablefish (0.56 percent of the sablefish, last column of Table 9).

Between 2017 and 2021, over one third of the sablefish used in the DTS strategy was landed on trips with VCNR per pound of sablefish that was at the 20th percentile or lower (total of percentages in the first two columns of the DTS row in Table 9 divided by the total percentage for the row). Considering all the strategies and deciles in Table 9, the greatest proportion of sablefish (7.68%) was landed on DTS trips that earned between the 10th and 20th percentile of the VCNR per pound of sablefish.

It should be noted that Table 8 does not indicate the overall level of profitability for any particular trip made in a particular decile, but only the profit per pound of sablefish. As indicated above, on a daily basis a high volume of trawl catch can result in a high VCNR per day.

For any given decile, the VCNR per pound of sablefish is lower for gear switchers than trawl strategies. However, comparing target strategies across columns shows that the vessels making the more profitable gear-switching trips would be willing to pay more for a pound of sablefish than vessels making the less profitable DTS trips. For example, for 2017-2021 trips, the VCNR values for gear switchers above the 70th percentile are higher than values for DTS trips below the 20th percentile (see dark boxed areas in Table 8 and Table 9).

As fishery and market conditions change, relative profitability[13] changes and this can be demonstrated by comparing the distribution of VCNRs and sablefish landings for different time periods. Here we will compare a high sablefish price year (2017, see Section 2.5.3) to the 2017-2021 averages[14] (a lower price period of time, on average). The percentage of the trawl allocation and total pounds gear-switched in 2017 was second only to 2019 (Table 3). The year 2017 is used because the data can be more disaggregated without running into confidentiality issues and the comparison is made to the average (rather than a single more recent year), for the same reason. In general, compared to the 2017-2021 average, in 2017 substantially more of the gear-switching trips (more than half of the trips) had a greater VCNR per pound of sablefish than did the bottom 20 percent of DTS trips; those gear-switching trips took a greater portion of the gear-switched sablefish, and the bottom 20 percent of DTS trips took less sablefish. Thus, gear switchers in 2017 were much more able to compete with trawlers for sablefish QP as compared to the during the 2017-2021 period as a whole. The following paragraph goes over these results in more detail.

For the 2017-2021 period, the top 30 to 40 percent of gear switching trips (grey and dark boxed areas of gear-switching row in Table 8) yielded VCNRs per pound of sablefish that were greater than the bottom 20 percent of the DTS trips. But in 2017 a much larger portion of the gear-

[13] The relative profitability between DTS vessels and gear switchers is influenced by exvessel prices of all catch in hauls and other conditions such as fuel prices, CPUE, species mixes, etc.

[14] Our ability to make comparisons to a single more recent lower price year is limited due to confidentiality but more aggregated single year information is provided in Section 10.4.1.

switching trips had VCNRs per pound of sablefish that were greater than for the bottom 20 percent of DTS trips, somewhere between 50 and 60 percent of the top gear-switching trips[15]— (grey and dark boxed areas of Table 10). In terms of total amounts of sablefish harvested by the higher VCNR gear switching trips in 2017-2021 (boxed areas of Table 8), those trips took between 27 and 38 percent of the sablefish taken by gear switchers (grey and dark boxed areas of gear-switching row in Table 9 divided by the total for the row). In 2017, the top gear switching trips took between 56 and 66 percent of the gear switched sablefish. In terms of total amounts of sablefish harvested on the lower VCNR DTS trips (bottom 20 percent), for the 2017-2021 period, those trips caught 35 percent of the DTS sablefish (Table 9) while in 2017 those trips caught 30 percent of the DTS sablefish (Table 11).

Table 10. Variable cost net revenue per pound of sablefish by target by decile (DTS and gear-switching trips in 2017).

Target	10%	20%	30%	40%	50%	60%	70%	80%	90%
DTS	$1.40	$1.78	$2.23	$2.78	$3.15	$3.98	$4.85	$6.37	$9.53
GS	$0.42	$0.98	$1.42	$1.62	$1.86	$1.98	$2.09	$2.34	$2.49

Table 11. Percent of **sablefish** landings by weight by decile for trips defined by variable cost net revenue per pound (DTS and gear-switching trips in 2017).

Target	[0-10th)	[10-20th)	[20-30th)	[30-40th)	[40-50th)	[50-60th)	[60-70th)	[70-80th)	[80-90th)	[90-100th)	Total
DTS	7.4%	7.5%	7.7%	6.6%	5.9%	4.5%	3.9%	3.1%	2.6%	0.9%	50.0%
GS	3.1%	2.4%	2.3%	4.0%	3.1%	2.4%	2.7%	3.9%	4.3%	5.8%	33.9%

While the preceding analysis focused on variable costs, fixed costs may also affect the competitive dynamics between gear switchers and trawlers. The data summarized above includes some trawlers that only or primarily participate in the trawl fishery. For these trawlers, some of the income from trawling is needed to offset fixed costs (costs incurred regardless of how many trips are taken). Taking into account fixed costs reduces their average profit and may be a more appropriate measure of marginal profit for trawlers that do not have additional revenue sources from other fisheries. With respect to gear-switching vessels, approximately half of the gear switching vessels are those that maxed out their opportunity in the LEFG tier fishery (Table 13). It may be that they cover most or all annual fixed costs during the primary sablefish season, during the current or previous years. Such vessels would have higher profits at a given level of exvessel revenue than those that rely on gear switching to cover fixed costs. Therefore, for LEFG vessels that crossover and gear switch in the trawl fishery, average profit, excluding fixed costs, might be the best measure of marginal profit. In contrast, for vessels that are primarily or only trawlers, average profits including fixed costs might be the best measure. To the degree that this is the case, trawlers would be less competitive than indicated in the above analysis based on VCNR.

[15] Trips any-gear trips ranked at a percentile greater than somewhere in the mid-40 percentiles

2.4.5(c) Trip and Revenue Modification from DTS/Gear Switcher Competition

The previous section identifies the potential for some gear switchers to economically compete with and displace trawl activity. Of particular concern here is the impact of any displacement that occurs. Focusing on DTS activity, how does gear switcher acquisition of sablefish QP impact on DTS vessels? Does it have no impact because they are using sablefish QP that would otherwise have gone unused, impact trawlers by encourage DTS vessels to avoid sablefish but not change the amount of the complex caught, or cause a reduction in the amount of the complex caught due to a sablefish QP constraint.

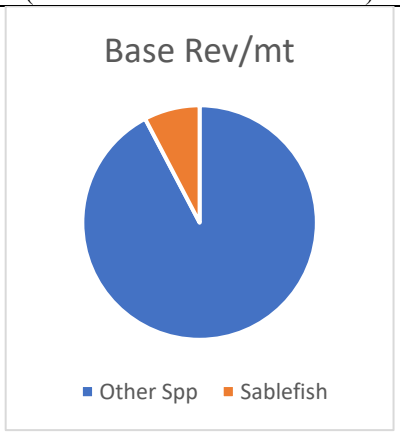
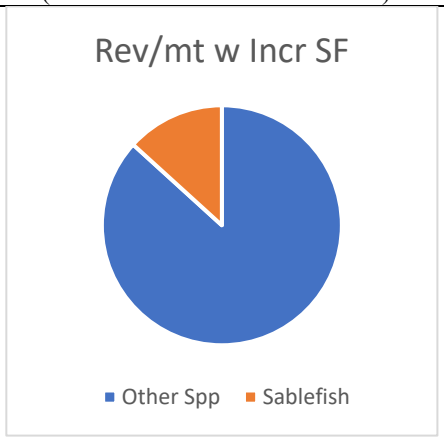
Gear switching use of sablefish QP might have no impact on attainment of non-sablefish species allocations if DTS vessels are not able to use the available sablefish QP to fish the DTS complex due to other limiting factors, such as limits that processors place on the amount of dover and thornyheads they are willing to receive (or pay fresh fish prices for, see Section 2.4.2).

If other factors are constraining harvest of complexes, gear switching could contribute to attainment of the sablefish allocation if without it, sablefish QP would go unused. However, if instead gear switcher use of sablefish QP is causing DTS vessels to avoid sablefish (as might be indicated by the sudden reduction of sablefish in the DTS catch with the implementation of the trawl catch share program, Figure 14) then rather than go unused, the sablefish QP used by gear switchers might be diminishing trawler profits. To illustrate the nature of the impact, consider the possibility that DTS trawlers are currently avoiding sablefish and a reduction in gear switching allowed them to reduce that avoidance. Consider a hypothetical trip with a Dover:sablefish ratio of 4.6:1 (typical for the range observed since the start of the program , Figure 14) and typical prices[16] that yields an exvessel value of $1,380 per mt and $24 per pound of sablefish caught (Table 12). If the DTS vessel was able to increase its catch of sablefish and reduce its Dover to sablefish ratio to 2.5:1 (a value within the range of the pre-IFQ fishery), the exvessel value per mt would increase to $1,438 while the value per pound of sablefish caught would decrease to $14. Further, if vessels are spending time and fuel avoiding high sablefish bycatch areas there could be cost savings as well. Thus, if amounts of DTS landings are limited by market factors,[17] gear switching may not be impacting attainment of dover and thornyheads but competition for sablefish QP could be impacting trawl profits. These issues are explored further in the context of the analysis of the alternatives (see Section 7.4.1).

[16] Example typical prices adjusted for inflation: Dover sole $0.51; longsping $0.49; shortspine, $0.76, and sablefish $1.87 (2011-2022).

[17] If DTS is limiting the amount of a complex taken, using the hypothetical examples provided here the typical exvessel of the complex that is lost per pound sablefish would be $24.

Table 12. Effect on revenue per metric ton from increasing the proportion of sablefish in the catch.

Base Per Mt (4.6 lbs of Dover/lb of sablefish)	Increase the Proportion of Sablefish (2.5 lbs of Dover/lb of sablefish)[a/]
 $1,380 exvessel value $24/lb of sablefish	 $1,438 exvessel value $14/lb of sablefish

[a/] The ratio change adds 217 lbs of sablefish per mt of catch.

If processor limits or other conditions are not constraining, gear switcher acquisition of sablefish QP could be constraining harvest of complexes and attainment of trawl allocations. The degree of gain in attainment and trawler revenue would depend on the nature of DTS trips made using the increased availability of sablefish QP (see Section 10.4.2). DTS VCNR may vary widely due to geographic and seasonal differences in dover/sablefish ratios (see Section 10.2), vessel operator knowledge and techniques, sablefish encounter rates that are different than expected when the trip and tactics decisions were made, and other factors. Geographic and other variations in the dover/sablefish ratios indicate opportunity for trawlers to have some control over Dover sole encounter rates. Data for the bottom trawl fishery illustrates that with implementation of the catch share program, trawlers used less sablefish per unit of Dover sole landed for those trips with both Dover and sablefish present–i.e., ratios of Dover sole per pound of sablefish increased from 3.35 in 2010 to 4.64 in 2011 and stayed at that higher level through 2020 (averaging 4.56 from 2011 through 2020—Figure 14).

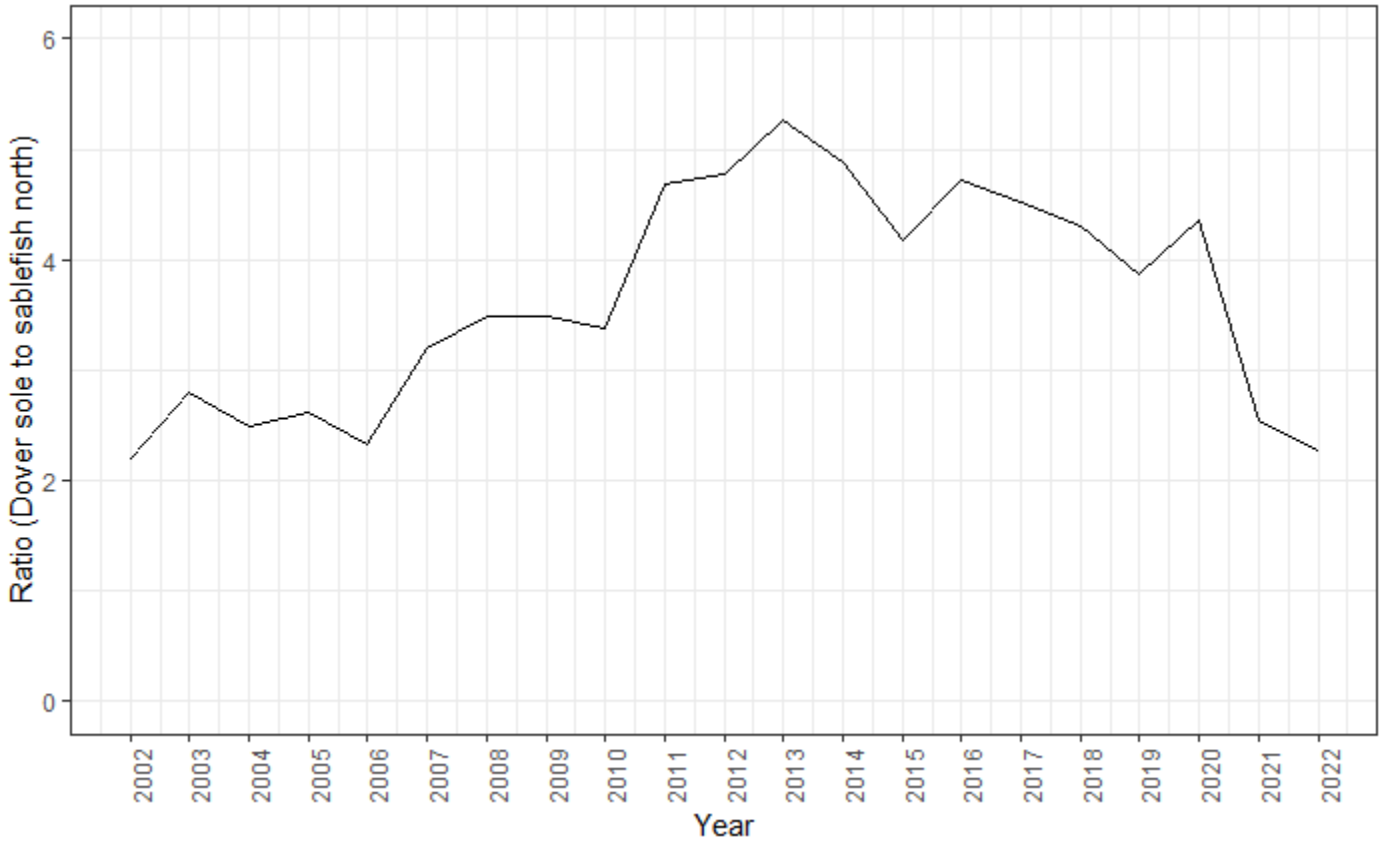


Figure 14. Catch ratio of Dover sole to sablefish on bottom trawl hauls with Dover and sablefish north present, 2002-2022. Sources: WCGOP.

2.5 Factors that Might Alter or Indicate Future Gear Switching Levels

When the Council decided to move ahead with its consideration of a limitation on gear switching, for at least some Council members the concern was not so much that the current level of gear switching is problematic but rather the unlimited expansion of gear switching would be undesirable. To consider the differences in impacts between no action and action alternatives, consideration must be given not only to current levels of gear switching but the possible directions and degrees of change in future years and the factors that make different outcomes more and less probable. This section reviews a number of factors that may influence gear switching in the future through their impact on vessel profitability and fishing opportunity. Much of this information has been previously presented in the September 2020, April 2021, and November 2022 analyses. Factors that might influence future levels of gear switching include:

- Normal variation and extraordinary events
- Biomass changes and changing ACLs
- Sablefish market prices
- Conditions in crossover fisheries
- The availability of latent and underutilized permits
- New entrants

- QS acquisition by gear switchers

2.5.1 Normal Variation and Extraordinary Events

Summary of main points:

- *Even if conditions are stable, gear switching levels may increase or decrease due to normal variation or extraordinary events (e.g., COVID-19 pandemic)*

There is a possibility that even if conditions in the fishery are relatively stable, gear switching may increase or decrease to some degree due to normal variation, as has been seen historically and also indicated by a random sampling analysis that is based on conditions present from 2011-2019 (see Section 3.1 of Agenda Item F.4, Attachment 1, April 2021). Additionally, changing fishing and marketing conditions and extraordinary events could decrease or increase levels of gear switching in the future. The recent COVID pandemic, during which gear switching declined from 35.3 percent of the annual allocation in 2019 to a low of 19.1 percent in 2021, provides an example of unexpected fluctuations. Some of the conditions likely to influence levels of gear switching are discussed in the following sections.

2.5.2 Sablefish Biomass and Changing ACLs

Summary of main points:

- *Changes in sablefish biomass and ACLs will affect the level of gear switching and trawl need for sablefish QP.*
- *Changes in biomass will change encounter rates (including species mixes), fishing costs, and revenue.*
- *Increases in the ACLs would increase the total QP available, and gear switching as a percentage of the total trawl allocation could either increase or decrease depending on the level of gear switching.*
- *Decreases in ACLs might result in lower total amounts of QP used in gear switching while at the same time raising the percentage of the trawl allocation harvested by gear-switchers.*
- *Whether these changes in gear-switching levels are problematic from a policy perspective will depend on how trawler demand for QP is impacted by the biomass and ACL changes and whether gear-switching is displacing trawl activity.*

One of the questions on which the current policy deliberation turns is with respect to whether or not gear-switching is constraining trawl allocation attainment in the present or is reasonably likely to do so in the future. This section discusses the influences of changing biomass and ACLs on gear-switching levels and likelihood that gear switching constrains attainment of trawl allocations of other species. Section 7.4 details what might happen under different scenarios and ACL levels given a reduction in gear switching under an action alternative. Here the focus is on No Action.

With respect to gear switchers, an increase in biomass alone (prior to an increase in ACLs) might decrease gear-switching costs per unit of catch, potentially increasing profitability. At the same time, if average fish size declines (as seen in 2023), this would exert a downward influence on

revenue per unit of catch because lower prices are generally paid for smaller fish (Section 10.5.2). The net effect of these changes will depend on the particular combination of conditions that prevail—potentially causing either an increase or decrease in the amount of gear-switching.

As ACLs are increased, the amount of sablefish landed could increase, possibly providing another source of downward exvessel price pressure. This downward pressure on exvessel prices might be at least partially offset by decreasing QP prices, depending on the impact of the increased biomass and ACLs on trawl demand for sablefish QP. In general, it might be plausible that an increase in biomass and sablefish ACLs could result in an increase in the amount of QP used for gear switching and possibly an increase in the percentage of the trawl allocation taken by gear switching, depending on interaction with trawl demand for the increased QP. However, the opposite occurred in 2021 and 2022, where allocations increased but the amount and percentage of gear switching decreased relative to previous years. Whether increases in gear switching due to increases in biomass is problematic from a policy perspective will likely depend on how trawler demand for QP is impacted by the biomass and ACL changes.

For trawl vessels, an increase in biomass could have impacts similar to those on gear switchers with respect to changes in CPUE, costs, fish sizes, and prices. In the trawl fishery, a change in CPUE could show up as an increase in the proportion of sablefish in the trawl catch and total revenue per unit of a complex landed.[18] The increase in revenue from the greater portion of sablefish in the catch may be tempered though if the sablefish are smaller sized, which bring a lower price per pound than larger sized sablefish (Table ; Section 10.5.2). At the same time, for a given unit of catch, if the sablefish ratio increases, the total amount of other species that trawlers would be able to land in a haul or trip would decline. Thus, in order to maintain previous landing levels of the co-occurring species, trawlers would need more sablefish QP, increasing the likelihood that fixed gear use of sablefish QP would compete with trawl needs. Further, if sablefish encounter rates increase for several trawl strategies at the same time, the competition for sablefish QP between trawlers and gear switchers may increase. For example, large year class recruitment events that lead to increased sablefish bycatch in the whiting fishery, like those seen in recent years, have increased the amount of sablefish QP needed for that fishery. Section 2.4.5 discusses how whiting and other strategies are likely able to economically outcompete strategies such as DTS for sablefish QPs.

As increases in biomass are reflected in increased trawl allocations, QP constraints may be partially alleviated. For complexes such as DTS, the increase in sablefish QP might allow vessels to land the same amount or increase landings of other species in the complex, or trawlers may choose to increase the sablefish QP in their catch, if markets allow. If encounter rates increase proportionally more than the trawl allocation, to maintain landings levels trawlers might need not just an increase in the amount of QP but an increased proportion of the QP they use.

The influences of decreases in biomass and ACLs would generally be the inverse of those described above. Assuming gear-switching is creating a constraint on trawl activity, a decline in biomass prior to a decline in ACLs could reduce those constraints if the sablefish encounter rates decline with the declining biomass while the amount of QP issued remains unchanged. Decreasing ACLs as biomass declines might increase competition between trawl and gear

[18] Unless the sablefish caught does not have a higher exvessel price than other species in the complex

switching strategies. However, this depends both on how the changes in ACL impacts gear switcher cost and revenue relative to the trawl gears, what is happening in sablefish markets (price and total volume demanded), and what happens to the rates at which sablefish is encountered in the trawl fishery.

Overall, biomass and ACL increases could, but do not necessarily, create more opportunity for gear switchers and trawlers. Similarly, biomass and ACL decreases could increase competition with trawl vessels for sablefish QP, decreasing gear switching opportunity, or decrease competition with trawl vessels, depending on how encounter rates change. Prevailing market prices will be important in determining the outcome; and for sablefish these market prices may be driven by market conditions that are not strongly influenced by West Coast production levels.

2.5.3 Sablefish Market Prices (Exvessel and QP)

Summary of main points:

- *Differences in exvessel prices and costs that vary between gear types and are outside the range observed in the past may result in future levels of gear switching that are outside the historical range.*
- *Multiple market factors likely influence gear switching including exvessel value by gear-type, differences between exvessel values of the gear types, and QP prices.*
    - *Examination of the data show that, when the gear-switched/trawl price differential was above a dollar, the total amount of gear switching was greater than 1.6 million pounds (particularly if the first two years of the program are discounted as adjustment years).*
    - *Because of the multiplicity of factors involved, simple correlations are not likely to be fully explanative of expected levels of gear switching.*

As sablefish exvessel and QP prices vary (as well as other factors like costs), the amount of gear-switching is likely to vary. This section looks at how those factors have ranged over the period of the program. Future values could be outside those ranges and so influence the move or gear-switching or trawling activities to levels not yet seen over the first years of the program. Because of the multiplicity of factors involved, simple correlations are not likely to be fully explanative of expected levels of gear switching.

Trawlers and gear switching vessels tend to pay similar amounts for sablefish QP, as would be expected in a well-functioning QP market (see Figure 21 in Agenda Item H.3., Attachment 3, November 2022) Annual average sablefish QP prices generally fluctuate in a manner that tracks the major changes in exvessel prices (Figure 15), likely reflecting expected changes in profits.

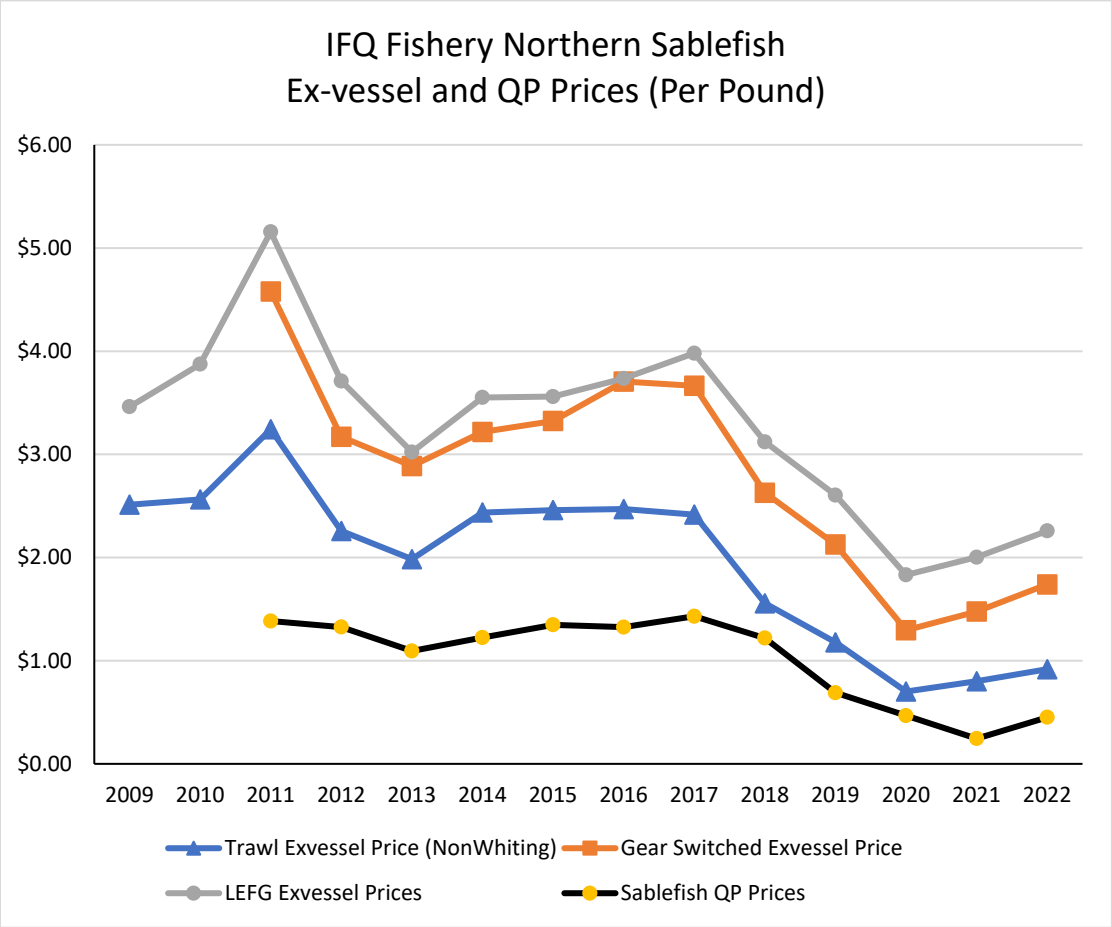


Figure 15. Average real price per round weight pound for trawl sector and LEFG sablefish north, by gear type (2009-2022) and QP prices per pound (2011- 2022). (Source: PacFIN and WCR Quota Pound Price Data). Internal reference: Sablefish and QP Prices.xlsx.

Differences between non-whiting trawl and gear-switched exvessel sablefish prices and fishing costs influence the relative incentive for each gear type to target sablefish. When the gear-switched/trawl price differential was above a dollar, the total amount of gear switching tended to be greater than 1.6 million pounds, the IFQ average for gear switching (particularly if the first two years of the program are discounted as adjustment years, Figure 16). In inflation adjusted terms, differences in sablefish exvessel price have varied from $0.59 per pound (2020) to $1.34 per pound (2011, Figure 16). As sablefish prices fluctuate, there is likely a greater proportional impact on the profit of gear switching vessels, which do not have the buffer from other species, than for trawl vessels. Prices per pound for species in the DTS complex other than sablefish tend to be more stable than those for sablefish (see Section 10.5).

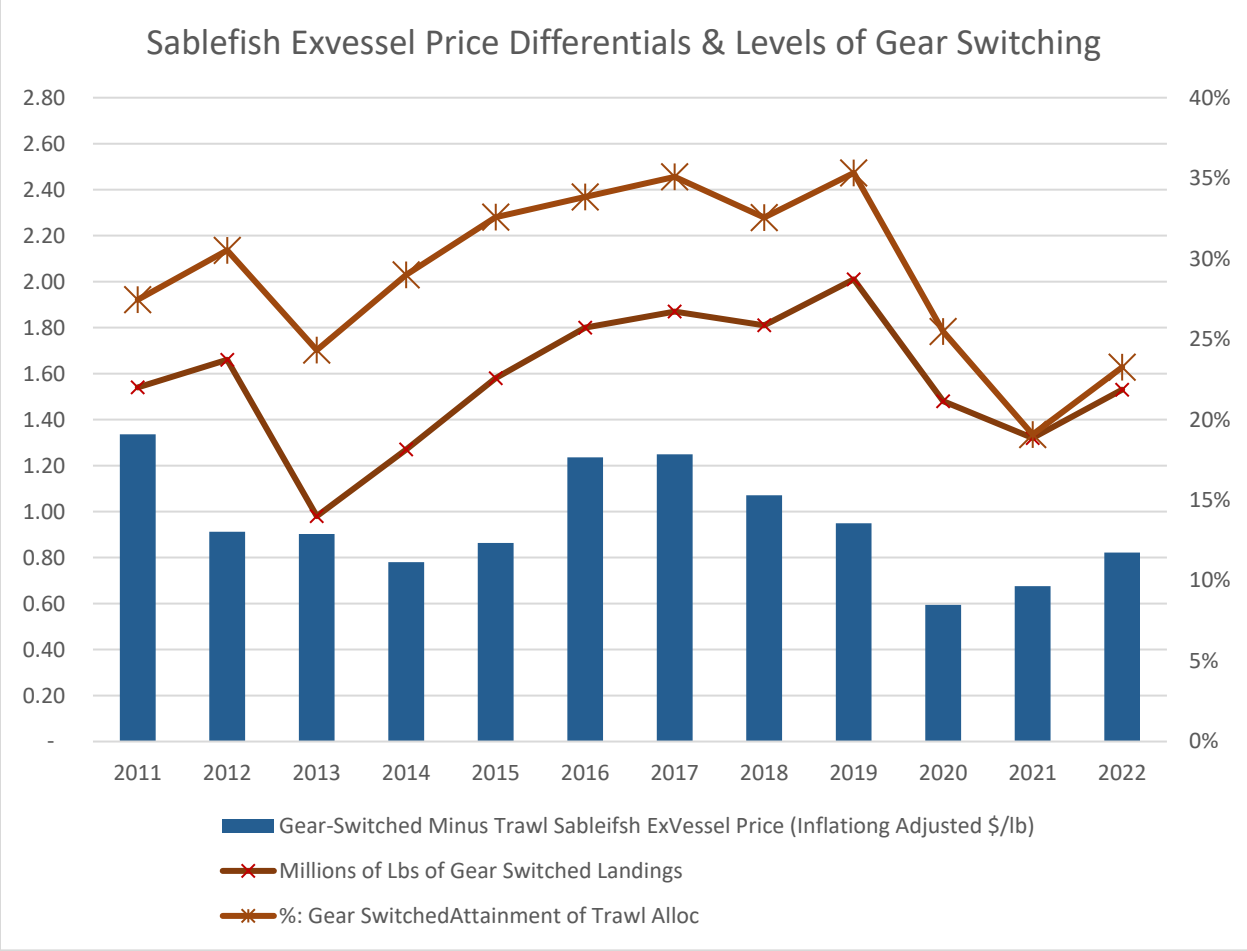


Figure 16. Levels of gear switching compared to difference between exvessel price per pound delivered and northern sablefish prices QP prices. Internal reference: Sablefish_TrawlAlloc_QP_Varability_StatAnalysis.xlsx.

2.5.4 Conditions in Cross-Over Fisheries

There are also examples of companies that were operating multiple vessels in the open access fishery and looked to consolidate their operations onto one vessel, fishing with trawl quota instead of exhausting multiple vessel limits. Though these individuals struggle to find buyers with first receiver licenses to purchase their catch.

Summary of main points:

- *Opportunities in other fisheries, in particular the Dungeness crab, Alaska IFQ sablefish, and LEFG primary tier fisheries, may result in changes in gear switching levels.*
- *The LEFG primary sablefish fishery experiences the most crossover with the IFQ gear switching fishery and recent and potential future changes with that program may increase or decrease the incentive to participate in gear switching.*

One of the driving factors for the levels of gear switching includes the opportunities present in other fisheries—both on the West Coast and Alaska. Previous analyses (September 2020 and

April 2021) discussed the primary fisheries where there is the most amount of crossover with the gear switching fleet—the Alaska IFQ sablefish fishery, West Coast Dungeness crab fishery, and the West Coast LEFG primary tier sablefish fishery.

Starting with Alaska, gear-switching vessels that also participate in the Alaska IFQ sablefish fishery appeared to have been prioritizing Alaska sablefish over West Coast sablefish. Comparing 2015-2018 to 2019-2022, Alaska sablefish quotas increased by approximately 71 percent (from 23.1 million lbs to 39.4 million lbs) while average Alaska landings increased and West Coast landings decreased. Continuation of that recent trend or a reduction in opportunity in Alaskan fisheries could result in less or more gear switching on the West Coast, respectively.

For Dungeness crab, there is a small proportion of crab vessels that also participate as gear-switching vessels (that is, two percent) compared to the large number of gear-switching vessels that also participate in the Dungeness crab fishery (that is, about 66 percent in recent years), which might indicate that a decline in opportunities in the crab fishery could lead to more gear switching if there were no restrictions on gear switching. Similarly, increasing opportunities or prices in the crab fishery might lead to less participation in gear-switching activities, though the prime fishing times in the crab fishery (early winter) do not strongly overlap with when most of the gear switching sablefish fishing occurs.

Crossover between the LEFG primary fishery and the IFQ sector (via gear switching) has been discussed extensively during consideration of gear switching limitations and the most recent LEFG primary tier program review. In most years, over half of the IFQ gear-switching vessels in a given year also participate in the LEFG fishery (Table 13). Likely motivations for crossing over to gear switching include the three-permit stacking limit and historical seasonal constraints (April 1-October 31) of the LEFG primary fishery. The maximum a vessel may harvest in the LEFG primary fishery (three tier 1 permits in 2023= 218,712 lbs) is substantially less than the opportunity available in the IFQ sector (386,266 lbs for an annual vessel QP limit in 2023). Apart from 2011 and 2012, either all vessels or all but one vessel every year that crossed over had the maximum of three permits stacked.

Table 13. Number of IFQ gear switching (GS) vessels that also participated in the LEFG tier fishery by the number of tier permits registered in a given year, number of gear switching vessels that did not crossover to the LEFG tier fishery, and total IFQ gear switching vessels, 2011-2022.

Year	Number of GS Vessels by Number of Tier Permits			GS vessels that didn't crossover	Total GS Vessels
	1	2	3		
2011	1	2	2	12	17
2012	3	2	3	12	20
2013	1	0	4	6	11
2014	0	1	6	8	15
2015	0	0	6	8	14
2016	0	0	7	9	16
2017	0	0	5	11	16
2018	0	0	7	8	15
2019	0	1	9	5	15
2020	0	1	4	4	9
2021	0	1	4	2	7
2022	0	1	5	4	10

Of the 62 gear switching vessels that also participated in the tier fishery with 3 tier permits from 2011-2022, 15 caught more in the tier fishery than in the IFQ sector. For those 15 vessels to harvest the amount of sablefish they caught as IFQ gear switchers within the LEFG fishery, on average they would need 3.4 tier 1 permits, 7.4 tier 2 permits, or 13 tier 3 permits (based on tier limits in year in which crossed over). However, it's really vessel dependent, as shown in Figure 17 below. While the average number of tier 1 permits needed to cover the gear switched catch was over the current stacking limit of 3 permits, it ranged from nearly 0 (i.e., a vessel caught just about 1/3 of a tier limit) to over 5 permits (exact value not shown to protect confidentiality).

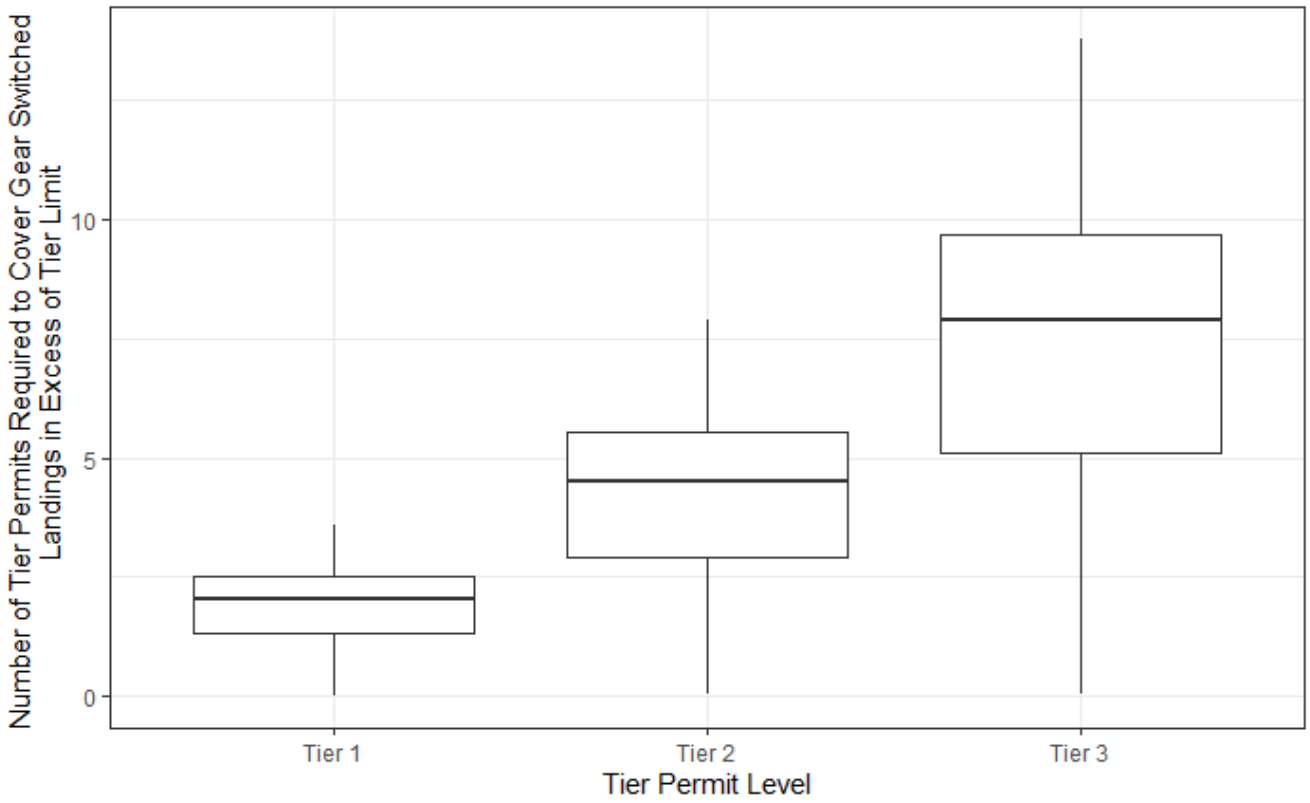


Figure 17. Number of tier permits that vessels which participate in gear switching and crossed over to the LEFG fishery would require to cover their gear switched landings, 2011-2022 (only includes vessels with 3 stacked permits).

Another reason vessels may choose to crossover to gear switching from the tier fishery is the flexibility in gear. Vessels fishing in the tier fishery are limited to fishing with the gear endorsed on their sablefish-endorsed LEFG permit—either longline or pot,[19] whereas the IFQ program allows the harvest with any legal non-trawl gear. In other words, any vessel with a trawl permit could utilize pot or longline gear to gear switch for sablefish whereas there are only 36 of 164 sablefish endorsed LEFG permits that permit pot gear harvest For vessels that only gear switch (i.e., do not cross participate in the LEFG fishery), the majority of those vessels have historically fished with pot gear (Table 14). From 2019-2022, all of the gear switched landings by vessels that only gear switched were done using pot gear.

Table 14. Range of number of vessels that only gear switched and did not participate in the LEFG tier fishery by gear type and average of gear switched landings, 2011-2014, 2015-2018, and 2019-2022.

Years	Number of Vessels		Average of Landings (lbs)	
	HKL	Pot	HKL	Pot
2011-2014	0-5	6-11	77,081	529,226
2015-2018	1-2	7-10	18,783	794,269
2019-2022	0	2-5	0	482,145

[19] Four LEFG sablefish endorsed permits are endorsed for both longline and pot gear.

To achieve the same amount of opportunity in the tier fishery, pot vessels that have previously not crossed over would need an average of 2.6 tier 1, 5.8 tier 2 or 10 tier 3 permits with a pot-endorsement to cover historic gear switched landings. However, the range is wide (see Figure 18 below). Moreover, the Council is considering removing the gear endorsements for tier permits as a part of the LEFG follow-on actions (scheduled for PPA in June 2024), which would increase the opportunity in the tier fishery for these pot vessels.

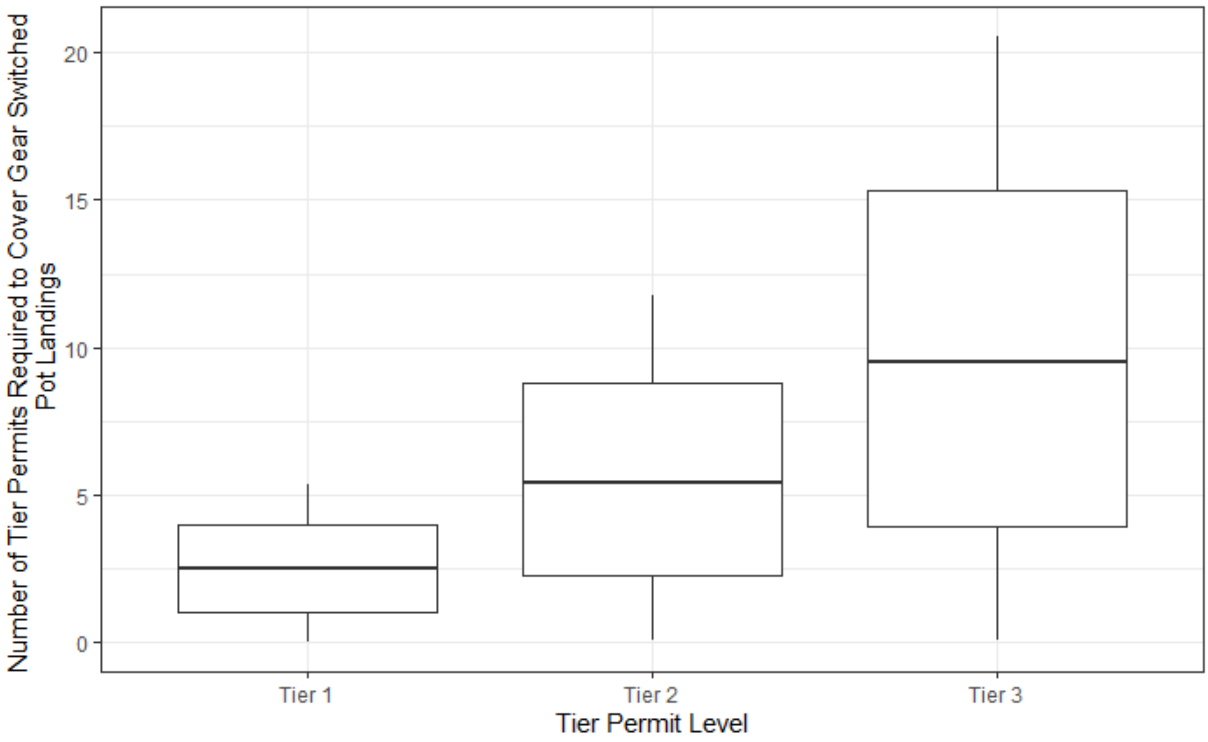


Figure 18. Number of tier permits required to cover gear-switched landings made with pot gear by gear switching vessels that did not fish in the LEFG Tier fishery in the same year.

Finally, starting in 2023, the primary tier season is permanently extended to December 31st. This extension would allow vessels to fish their tier quota over a longer period of time and later in the season off the West Coast, potentially reducing some vessels' incentives to participate in gear switching.

While there are total opportunity and seasonal advantages that may attract non-trawl vessels to the IFQ fishery, there are other economic advantages for vessels that participate in the LEFG primary fishery. In contrast to the trawl IFQ fishery, vessels participating in the LEFG primary fishery do not have to pay buyback loan fees, cost recovery, or monitoring costs (100 percent industry paid monitoring required in the IFQ program). On the one hand, this profit advantage and attractiveness of the LEFG primary fishery might be further increased if monitoring or other costs of participating in the trawl IFQ fishery are increased, potentially reducing gear switching. On the other hand, efforts to reduce those costs in the trawl IFQ fishery or the imposition of cost recovery in the LEFG fishery (being considered under the LEFG follow on actions package-scheduled for PPA in June 2024) could increase the relative attractiveness of gear switching.

2.5.5 Latent and Underutilized Permits

- *The number of latent and underutilized trawl permits available is substantial, indicating that acquisition of such permits is not likely to be a barrier to entry of new gear switchers.*

Gear switching can increase through expansion of the efforts of existing participants or through new entry. New entry requires access to a trawl permit. The number of permits that are latent (i.e., unregistered to a vessel) or inactive (i.e., registered to a vessel but not used for IFQ landings) indicates the availability of trawl permits for potential new entrants. From 2011-2022, there have been 61 trawl endorsed permits that were unregistered to a vessel for an entire year, with five being latent over the entire period. The number of latent permits increased from an average of 22 per year between 2011-2014 to 32 from 2015-2018 to 38 in the most recent four years (2019-2022). The number of trawl permits that have been registered to a vessel but not used for IFQ landings for an entire year ("inactive") from 2011-2022 has been relatively stable at an average of 35 permits. There have been 100 different trawl permits that have been inactive for a year, with three being inactive the entire period. This suggests that if conditions change such that more entities become interested in gear switching, the acquisition of a trawl permit might not be a substantial barrier to the expansion of gear switching, since they would not need to be acquired from an active IFQ participant.

2.5.6 New Entrants and Effects of Control Date

- *Prior to COVID (2016-2019), levels of gear-switching participation and utilization had stabilized, potentially indicating that gear-switching may have reached an equilibrium for the conditions present at that time. However, the control date was announced early in that period and the influence of that date needs to be taken into consideration.*

Recent trends in new entry can indicate whether, under current conditions, and profit opportunities, gear switching participation has stabilized, is still attracting new interest, or is not sufficient to maintain current interest, such that participants are leaving the fishery-. Prior to the COVID-19 pandemic, gear-switching participation had stabilized both in terms of numbers of vessels and permits (Figure 19) and levels of gear switching (between 32.5 and 35.3 percent of the trawl allocation, Table 3), indicating that an equilibrium might have been reached for the conditions present at that time. Figure 19 below shows the cumulative number of distinct permits and vessels with gear switched landings (lines) compared to the yearly totals of permit and vessel participants in the fishery in a year. While gear switching participation declined during COVID (2020 and 2021), there were still some new participants in each of those years (i.e., some new entry but more vessels exiting for the year or longer-term).

With respect to interpreting these trends, the effect of the control date needs to be considered. A total of six vessels and permits entered the gear switching fishery after the control date—when it was announced that any gear switching activity after the fact may not be considered in allocating opportunity in the future. On the one hand, the control date may have discouraged others from newly entering into the fishery, in which case one might expect to see an expansion of participation if the Council decides not to take any action. On the other hand, it may have

encouraged some new entry, such that some of those who have entered since the control date did so on speculation that the control date would change and they might then become eligible for some future consideration.

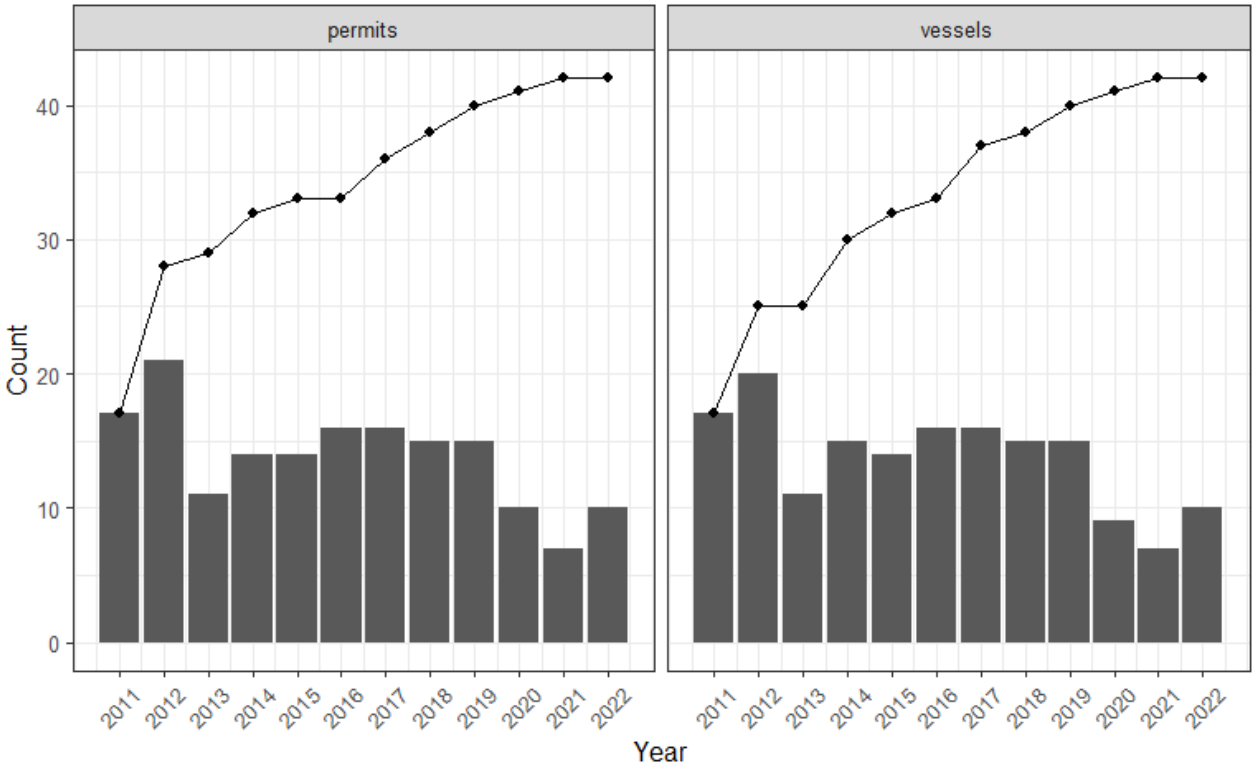


Figure 19. Cumulative number (lines) compared to yearly count (bars) of permits and vessels with participation in the gear switching fishery, 2011-2022.

2.5.7 Trends in QS Acquisition by Gear Switchers

- *QS ownership among gear switchers has been relatively stable in recent years, though there was a slight uptick in 2022.*
- *Investments in QS by gear-switching entities may have been muted by the announcement of the 2017 control date*

A trend toward increasing investment in QS ownership by gear switching entities might indicate the potential for further expansion in the amount of gear switching. The following tables show that most of the QS acquisitions occurred after trading started in 2014, but since then QS ownership levels have been relatively stable.

It is difficult to fully ascertain QS ownership by gear switching operations because detailed ownership information is available only for QS accounts and vessel accounts, but not permits. For permits, ownership determinations for this analysis were based on an examination of names, addresses, and a review of publicly available business records to identify businesses with common ownership interest. Another challenge is developing a measure for a group (gear switchers) whose membership and participation changes from year-to-year, such that changes in

QS ownership may be related to who is participating in a particular year, rather than trends in acquisition or divestment. This is seen in Table 15 where QS ownership has generally fluctuated with the number of participants. Also note that with respect to entities that own a gear switching permit, in some cases these may be trawl entities that leased their permit to a gear switching vessel and, therefore, these trawl entities are classified as gear switchers in the following table. .

Table 15. Annual sablefish north QS amount owned by gear switching permits and vessels within a given year, 2011- 2022.

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
QS owned by Permit Owners	22.58	21.364	9.67	14.678	13.792	15.053	14.623	13.382	15.965	12.179	10.12	Not available
Total GS Permits	17	21	11	14	14	16	16	15	15	10	7	10
QS owned by Vessel Owners	5.418	14.173	6.432	9.705	8.567	10.812	11.654	9.624	5.978	4.939	2.653	7.191
Total GS Vessels	17	20	11	15	14	16	16	15	15	9	7	10
GS Vessels that Owned QS	7	10	5	8	9	9	10	8	7	5	3	6

Looking at the set of vessel owners that gear switched at least once since the start of the program and that group's holdings in each year, there has been some QS acquisition since QS trading began in 2014. These vessel owners have increased their holdings from 16.23 percent to 19.91 percent, an increase of 3.68 percentage points (Table 13). However, since the year after trading first started (2015), levels of QS ownership by this set of vessel owners have been relatively stable. There was some net acquisition in 2022 (compared to 2021) but the total QS owned by this group was still less than the 2016 peak. As with the number of participants discussed in the previous section, investment trends in QS may have been muted by the announcement of the 2017 control date. Of the 42 vessels that had some gear switching history between 2011 and 2022, 23 vessels had owners that also owned QS over the time period.

Table 16. Amount of sablefish north QS owned by vessels that gear switched anytime between 2011-2022

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
QS Owned	16.23	16.23	16.23	17.27	19.60	21.08	19.58	19.13	19.33	19.33	19.33	19.91

The 2011-2022 time period includes some vessels that primarily trawled but tried gear switching in a year or two at the start of the program but did not return to it. Therefore, it may be instructive to look at just those vessels that gear switched in more recent years (that is, around 2015) when gear switching participation started to level out. Vessel owners that gear switched at least once between 2015-2022 held 12.12 percent of the QS in 2015 and have recently acquired

additional QS in 2022 compared to historical levels (any degree of commonality in the vessel account and QS account was used in determining common ownership, Table 17). Of the 26 vessels that had some gear switching history in this period, 17 vessels had owners that also owned QS.

Table 17. Amount of QS owned in 2015-2022 by vessels that GS anytime between 2015-2022

Year	2015	2016	2017	2018	2019	2020	2021	2022
QS Owned	12.118	13.346	13.346	12.872	13.073	13.073	13.073	13.647

3.0 ALTERNATIVES

3.1 Description of Gear Switching Control Mechanism by Alternative

Relative to No Action, the action alternatives would limit gear switching only with respect to sablefish north of 36º N. lat. For a complete description of the alternatives, please see Attachment 2.

No Action (iPPA): Under No Action, the regulatory regime would not change in connection with this deliberation, but the fishery will continue to change in response to changing environmental, economic, and social conditions, as well as other regulatory actions. Northern sablefish QS would be restricted to a 3 percent control limit and vessels would be subject to a 4.5 percent annual vessel limit.

Alternative 1 – Gear Specific QS: Northern sablefish QS will be converted to trawl-only and any-gear QS and each year, trawl-only and any-gear QP will be issued for each type of gear specific QS, respectively. The proportion of an owner's QS that is converted to any-gear QS will be affected by their personal history of gear switching and the amount of QS they own as of the control date. Those QS owners with qualifying gear-switching history will have all of their QS converted to any-gear QS (except for amounts in excess of what they owned on the control date). All QS owners that have some QS on the control date and at the time of implementation will have at least some of their QS converted to any-gear QS. The total amount of QS designated as any-gear QS will be 26.1 percent or less (to which 29 percent or less of the QP would be allocated—after AMP QP are issued). The maximum amount of gear-switching allowed would not decline over time.

Alternative 2 – Gear Specific QP (iPPA): A ratio of trawl-only to any-gear northern sablefish QP will be designated for each QS Account. Each year, trawl-only and any-gear QP will be issued to each account in the ratio designated for the account. The ratio of trawl-only and any-gear QS provided to a QS Account will be the same proportion for every account except those owned by legacy participants. A legacy participant is a person that, as of and since the control date, owned QS and a limited entry permit with enough gear switching history to qualify. Legacy participants will be issued only any-gear QP for amounts of QS up to what they owned as of the control date. Any additional QS owned by legacy participants will be issued trawl-only and any-gear QP in the same ratio as for non-legacy participant owned QS accounts. Initially the

amount of annually issued any-gear QP issued will be 29 percent. Depending on options selected, this percentage may decline over time but would not go to zero.

Alternative 3 – Seasonal Approach: Each year, participants in the shorebased IFQ fishery would be able to retain sablefish north with non-trawl gear until 29 percent of the allocation is projected to be attained, at which point retention will no longer be allowed. There will be no change in the QS or QPs issued for sablefish north. The maximum amount of gear-switching allowed will not decline over time—except through separate regulatory actions that may be recommended at a later time.

3.2 Alternatives and Options Considered but Rejected Early On

To be completed.

This section will document and reference to earlier consideration of alternatives and options rejected. The list will include, but not be limited to:

Alternatives:

Endorsement Approach: Limiting gear-switching by requiring gear-switching endorsements that would have individualized gear switching limits (see Section 11.0).

Geographic Shift of Harvest Opportunity: Providing more sablefish to the trawl sector by shifting some of the south of 36º N. lat. allocation of sablefish into the north of 36º N. lat. area.

Features and Provisions

- Alternatives to the 29 percent maximum
- Complete phase-outs of gear-switching
- Qualification for a gear-switching permit endorsement based on vessel history.
- Allowing for individuals that do not own QS to qualify.

4.0 SUMMARY OF ANALYTICAL RESULTS

This section summarizes the analytical results which are detailed in Appendix 7.0. The approach to the analysis, including scenarios used to address uncertainty, baseline years, and short- and long-term considerations are discussed in Section 7.1.

4.1 Comparison of Action Alternatives Design and Mechanism

This section focuses on two types of impacts:

- Impacts that are determined by particular design elements (Section 4.1.1).

- Impacts that are driven by the main gear-switching limitation mechanism around which the alternatives are designed (Section 4.1.2).

Differences among the alternatives based solely on impacts related to the particular design elements considered here should probably not be used to choose between the alternatives—since, the design elements can generally be adapted and moved between the alternatives (except that direct allocational provisions would not be adaptable to Alternative 3). For example, the total amount of gear switching allowed can be changed across any of the alternatives. Impacts driven by the main gear-switching limitation mechanism are more likely to be specific to the alternative.

4.1.1 Impacts of Design– Differences Driven By Specific Design Elements

Each of the action alternatives includes some key design elements that could be adopted into alternatives other than that in which they are currently placed. Specifically:

- The amount of gear switching allowed
- How gear switching opportunity is allocated- particularly to qualified gear switching participants (Alternatives 1 and 2 only)
- The impact of the phase out/expiration of gear switching opportunity to qualified gear switching participants (Alternative 2 only)

As discussed in the previous section, the choice between alternatives should not be based on the preference for one or more of these elements—since there is some interchangeability between alternatives.

4.1.1(a) Amount of Gear Switching Allowed

Summary of main points:

- *Each alternative has an option that would allow for 29 percent gear switching in the short and long term.*
- *Additionally*
    - *Alternative 1 has an option that would cap gear-switching at 1.8 million lbs, applicable upon implementation of the alternative.*
    - *Alternative 2, QP alternative, has an option for the lowest allowed level of gear switching in the long-term.*

While each alternative has an option that would allow 29 percent gear switching in the short and long term, the design of each alternative and the selections of options within the alternative would drive the initial starting point and the long-term gear-switching maximum. Table 18 displays the range of maximum amounts of gear switching that could occur under each alternative, depending on options selected. For Alternatives 1 and 3, there is no difference between the short and long term. For Alternative 2, there is an option for a phase down of gear-switching opportunity (see Section 4.1.1(c) and 9.2.). Options could be added to any of the alternatives to allow lower or higher levels of gear switching.

Table 18. Range of the amount of gear switching allowed in the short and long term by Alternative

Amount of GS Allowed	Alternative 1	Alternative 2	Alternative 3
Short Term	29% or 1.8 mil lbs	29%	29%
Long Term	Same as short term	18.8-29%	Same as short term

4.1.1(b) Initial Allocation of Gear Switching Opportunity

Summary of main points:

- *Using the qualifiers currently associated with the alternatives, Alternative 1 has the potential to qualify more gear switching individuals than Alternative 2*
- *Under Alternative 1, history of the individual is used to meet the qualification criteria whereas Alternative 2 it is the asset (permit) that the person owns.*
- *Individuals that leased permits to use on their vessels or sold their permit after making qualifying landings (potentially before the control date) may be most impacted by the choice between the Alternative 1 and 2 approaches to qualification.*

The initial allocation of gear switching opportunity to qualified gear switching participants will depend on the qualification criteria included within the alternative and may influence other impacts tied to the control mechanism described in Section 4.1.2. Table 19 provides a summary of the allocations of gear-switching opportunity to qualified gear switchers and others under Alternative 1 and 2. Note that all values are subject to change at the time of implementation, due to QS divestiture or ownership changes that occur prior to implementation, or other factors such as data updates. Since Alternative 3 does not allocate any privilege to individuals, it is not discussed in this section.

Alternative 1 has the potential to qualify more gear switching individuals than Alternative 2 and therefore could initially allocate higher amounts of gear switching opportunities to those individuals overall (assuming they own more QS in total). Alternative 1 also allows qualification through group membership (co-op or QS ownership group) and has a suboption that would allow first receivers to qualify.

Table 19. Summary of a preliminary assessment of some of the allocation related quantitative impacts of each alternative.

	Alt 1—Gear-Specific QS	**Alt 2—Gear-Specific QP**
Number of Qualified Gear Switchers	16-38 Individual Entities Note: Co-op options not included.	19 Individual Entities
Number of QSAs associated with Qualified Gear Switchers in 2022	13-42	14
Total Amount of GS Opportunity (% of trawl allocation) Initially Distributed to Qualified Gear-Switchers Based on Qualification Avenue	8.7-22.8%	12.6%
Vessel History	8.7-17.4%	N/A
Permit History	N/A	12.6%
QS Ownership Group Membership	0-4.1%	N/A
Co-op Membership	Not available until implementation	N/A
First Receiver History	1.3%	N/A
Total Amount of GS Opportunity Initially Allocated (% of trawl allocation) Received by Those Not Qualifying as Gear Switchers	6.2-20.3% (to be reduced by the amount owned by qualifying co-ops; dependent on QP Split Option) [a]	16.4%
Maximum Amount of Individual Gear Switching Opportunity		
Long-term (QS Control)	11.5-12.8% of the any-gear quota (based on the 3% control limit and depending on the total amount of gear-switching allowed)	Legacy Participants – varies depending on each individual's control date ownership of QS, (but no Legacy Participant is at the 3 percent control limit).
Short-Term (QP Acquisition)	15.5 percent for QP Split Option 1 and somewhat more for Split Option 2	15.5-23.9% (based on 4.5 percent vessel limit and dependent on QP Distribution Option)

[a] Values assume QP Split Option 1 (71 percent trawl only, 29 percent any gear).

4.1.1(b)(1) Basis of Qualification

One of the key design elements that differentiates the alternatives in terms of qualifying for gear switching opportunity is history used for qualification as a gear switcher. Under Alternative 1, it is the history of the individual that is used to meet the qualification criteria whereas Alternative 2 is based on the history of the asset. Alternative 1 determines if someone who owned QS on the control date had pre-control date history of owning a vessel while it gear switched. To qualify, that individual did not need to maintain ownership of that vessel (or any vessel) after the gear switching activity. On the other hand, Alternative 2 only considers if a QS owner had ownership of the gear switching asset (permit) as of and since the control date. Details of how this affects qualifiers can be found in Section 8.2.

4.1.1(b)(2) Breadth of Distribution of Gear Switching Opportunity

While Alternatives 1 requires that individuals with a qualifying vessel ownership history must own QS on the control date to qualify, Alternative 1 includes additional methods for qualifying as a gear switcher. These additional methods affect the overall distribution of gear switching opportunity. For Alternative 2 there are no additional methods for qualifying (besides owning a qualifying permit and QS on the control date).

First, as mentioned above, under Alternative 1, individuals could qualify through membership in a QS ownership group or membership in a co-op in which at least one member qualifies based on vessel ownership history. Under Alternative 1, Qualification Option 1, three additional individuals would qualify based on group membership. None would qualify under Option 2. The number of qualifying individuals based on co-op membership is unknown and will not likely be known until the time of implementation.

A second avenue through which individuals could qualify under Alternative 1 is if the Council includes a first receiver suboption to the qualification criteria–in which all of their eligible QS would be converted into any-gear. There are three individuals who would qualify under this suboption, of which some would also qualify under Alternative 2 (i.e., some of the five that are listed as only qualifying under Alternative 2; Table 44).

Alternative 1 also broadens distribution through consideration of family members. Under Alternative 1, QS transferred to a family member after the control date would be considered to be owned by that family member as of the control date. The qualification status would not be considered to transfer along with the QS. However, if a family member owned a vessel that gear-switched and then after the control date received QS from another family member, they could then qualify as a gear-switching participant. The same rule applies with respect to qualifying as a non-gear switching participant under Non-Gear-Switching Participant Option 2. At this time, we do not have information on how many individuals this provision might affect.

4.1.1(b)(3) Fraction of Ownership Required

Under Alternatives 1 and 2, for qualification criteria that involve ownership of an asset, any degree of ownership of the asset is sufficient assuming the gear-switching qualification levels are

met (e.g., landings pre-control date). Where ownership of two assets is required to qualify (e.g., a qualifying permit and QS) previous iterations of gear switching alternatives have required at least a 50 percent common in ownership of assets. If desired, the Council could specify a particular ownership level required of an asset (e.g., own at least 50 percent of qualifying permit). Fraction of ownership also relates to the individual and collective approaches to allocation, which are not further analyzed here due to time constraints.

4.1.1(c) Phase Down/Expiration

Summary of main points.

- *Currently a phase down is only provided for Alternative 2 but something could be developed for either of the other two action alternatives.*
- *A phase down for Alternative 3 could be more difficult because of the potential for substantially shortening the season.*
- *While a built in phase-down is only addressed in Alternative 2, Section 7.12.1(b) discusses the flexibility each alternative provides to reduce (or increase) levels of gear switching through future action.*

None of the alternatives include a complete phase out of gear switching opportunity, but a phase down is included in Alternative 2. Under Alternative 2, legacy participant status is associated with the individual and not transferable. Therefore, if the legacy participant were to sell their QS, either the ratio of any-gear to trawl-only QP received by all other non-legacy QS owns would increase, in order to maintain issuance of 29 percent any-gear QP (QP Distribution Option 1); or the standard trawl-only to any-gear QP ratio would remain unchanged and the total amount of any-gear QP issued would decline (QP Distribution Option 2). In either case, the new owners of the QS sold by the legacy participant would receive the same ratio of any-gear and trawl-only QS as all other non-legacy QS owners.

While Alternative 1 does not include a phase down, the absence of a phase down should not be used to discriminate between Alternatives 1 and 2, since a phase down could be designed and added to Alternative 1, if desired. Similarly, the amount of gear-switching under Alternative 3 could be phased down over time. However, this could lead to a competition for fish if the gear switching limit were reduced to a level where participants were concerned that they would not be able to gear switch at their desired level before the cap was hit. For Alternative 3 in particular, a sunset date might be preferable to a phase out, if a reduction in gear-switching is desired after initial implementation.

4.1.2 Impacts Tied to Gear-Switching Control Mechanism

This section covers impacts that are driven by the main gear-switching limitation mechanism and so cannot be changed or moved between alternatives with changing the fundamental nature of the alternative.

4.1.2(a) Likelihood of Attaining Gear Switching Allocation

- *In terms of likelihood of attaining the level of gear switching maximum allowed under the Action alternatives, Alternatives 1 and 2 are likely to see high attainment for the any-*

gear quota allocated to qualified gear switchers. Use of any-gear quota allocated to non-qualifiers would largely depend on acquisition and trading levels amongst participants. This will be more challenging if any-gear QS or QP is distributed across many QS accounts.

- *Alternative 1 provides an opportunity for any-gear QS to be consolidated by gear switchers. As this occurs, it would become more likely that a greater proportion of the any-gear QP would be utilized for gear switching.*
- *Alternative 2 provides a much more limited opportunity for gear switchers to consolidate the any-gear QP—for any QS they acquire, only a relatively small portion would be issued as any-gear QP.*

- *Alternative 3's attainment of the 29 percent seasonal limit would be mainly driven by the factors affecting gear switching under No Action.*

The likelihood of attaining the maximum amount of the gear switching allowed under each Action alternative would depend in part on the same set of factors that impact gear switching levels under No Action (described in Section 2.5) and would be further influenced by the gear-switching limitation mechanism and how the gear switching opportunity was initially allocated. Details of how each alternative may influence attainment can be found in Section 7.4.3.

4.1.2(b) Nature of Changes to Access Privileges

Summary of main points:

- *Other than creating a gear restriction on QP and QS, Alternative 1 would not modify access privileges.*
- *In addition to creating a gear restriction on QP, Alternative 2 would associate an gear-switching history based opportunity with the individual that would not be transferable to others (the legacy participant, for whose QS all QP would be issued as any-gear).*
- *Alternative 3 would modify the access privileges by specifying that a seasonal restriction may be imposed, as necessary to ensure a certain level of gear-switching is not exceeded (the possibility of a restriction on the time of year during which the privileges conveyed by QS/QP could be fully exercised).*

Under No Action, access to and harvest of the trawl allocation is controlled by a system of trawl LEPs, QS, and the QP that are issued annually to the QS owners. Each of these assets is transferable to anyone eligible to own a US fishing vessel, although QP can only be transferred to and among vessel accounts. Any legal groundfish gear can be used to harvest the trawl allocation, as along as a trawl LEP and QP are properly registered to a vessel. QP owners have relatively unlimited flexibility with respect to their time and pace of fishing. Each of the action alternatives would modify or place a different type of constraint on these access privileges (Table 20).

Alternative 1 would limit the gear used to catch the northern sablefish trawl allocation by creating gear-specific QS and QP (trawl only and any-gear). Alternative 2 would create only gear-specific QP (not QS) and Alternative 3 would not impose a gear limitation on QS or QP.

After the initial implementation step, Alternative 1 would make no other substantive changes to the system of access privileges. Alternative 2 requires a means by which the gear-specific QP

would be distributed among QS that is not gear specific. This would be done based on the status of the individual QS owners as either legacy or non-legacy participants (see Section 4.1.1(b) on initial allocation criteria and Section 9.2 on the distribution of QP among different types of participants). The legacy participant status would not be transferable to others and, in addition to the initial non-qualifiers, all new entrants to the fishery would receive non-legacy status ("new entrants" being those who began to gear switch after the control date). Legacy participants would "exit" the fishery by divesting themselves of their QS,[20] and, correspondingly, the amount of any-gear QP issued for legacy participants would decline.

Alternative 3 would modify when the access privileges could be used by putting a new seasonal constraint on retaining northern sablefish while fishing with non-trawl gear.

Table 20. Changes to the nature of the trawl allocation access privileges for each of the action alternatives.

	Alternative 1	Alternative 2	Alternative 3
Long-term Access Privilege— Permit	Trawl LEP (no change)	Trawl LEP (no change)	Trawl LEP (no change)
Long-term Access Privilege—Quota	Gear Specific QS	QS (no change)	QS (no change)
Annual Access Privilege—Quota	Gear Specific QP	Gear Specific QP	QP (no change)
Other Changes	None	Nontransferable allocation privileges tied to the individual: gear switching history-based any-gear QP allocations provided to legacy participants. Option for attrition (Partial expiration of gear-switching opportunities over time.)	Possible season closure on sablefish retention while gear switching

4.1.2(c) Opportunity For Recent or New Entrants

Summary of main points as detailed in Section 7.7:

- *Recent (post-control date) entrants and new entrants (post implementation) would have the same opportunity under each of the action alternatives, although recent entrants may be impacted to a greater extent depending on investments after the control date.*
- *Under Alternatives 1 and 3, recent or new entrants would be able to acquire the same mixes of gear-switching access privileges (QS and/or QP) as those already in the fishery (including qualified gear-switching participants, under Alternative 1).*
    - *Recent entrants who purchased QS after the control date to gear switch would receive all of their QS as trawl only and therefore would need to acquire any-gear QS and/or QPs.*

[20] Legacy participants might continue in the fishery in other roles (e.g., as a vessel or LEP owner).

- *Under Alternative 2, recent and new gear switchers would have some substantial disadvantages relative to legacy participants.*
    - *Under QP Distribution Options 1 and 2, to acquire the same level of gear-switching opportunity as those who qualify as legacy participants, recent or new entrants would either have to acquire more QP on the market each year or acquire more total QS (since only a portion of the QP non-legacy participants receive would be any-gear QP). The three percent cap on QS ownership would place an upward limit on new entrant ability to secure access to any-gear QP through QS ownership.*

4.1.2(d) Harvester Flexibility

One of the objectives of the trawl catch share program was to increase operational flexibility in pursuit of the goal of increasing net benefits, economic stability, and more fully utilizing the trawl sector allocations. The following are the main points covered in Section 7.6.1(a) and discussed briefly with respect to NS-6 (Section 4.2.6).

- *Relative to No Action, the impacts of Alternatives 1 and 2 on fishermen flexibility to scale the size of their individual gear-switching operations occur through dynamics similar to those described for impacts on new entrants.*
    - *Under Alternative 1, for the gear-switching fleet as a whole, constraint is determined by the amount of any-gear QS and QP issued. Flexibility for individual operations would be similar to No Action: individual vessels would have flexibility to determine their amount of gear switching and whether to support their gear switching plans only with annually issued QP or to also secure long-term stability by acquiring QS. Competition for the necessary quota will be greater than under No Action, likely increasing the cost.*
    - *Under Alternative 2:*
        - *The opportunity for a participant to scale up gear switching levels by acquiring more QS would be significantly more costly than under Alternative 1, because for any QS acquired, only a portion of the QP would be issued any-gear.*
        - *The fact that anyone acquiring QS would only receive a portion of their QP as any-gear combined with the three percent QS control limit would mean that someone who attained QS up to the QS control limit would secure long-term access to less QP eligible for use in gear switching than they would under status quo.*
        - *While individual vessel ability to use QS ownership to secure long-term access to any-gear QP would be limited, they would still be able to fish at levels similar to No Action through the annual acquisition of any-gear QP, although competition for the necessary QP will be greater than under No Action, likely increasing the cost.*
- *Under Alternative 3,*
    - *Flexibility for individual operations and competition for the necessary quota would be similar to No Action.*

- *Rather than competing for quota, gear-switchers would compete to fish first. This competition would only occur if the conditions were such that the fleet as a whole would gear switch more than 29 percent. If the season shortens, flexibility to gear switch any time of year could become more constrained.*

4.1.2(e) Manager Flexibility

Manager flexibility has to do with what it would take to modify a gear switching limitation policy in response to changing conditions or unanticipated impacts. Consideration of flexibility relates to the complexity of revising the policy under no action or any of the action alternatives and the degree to which those changes might create controversy or disrupt those who are impacted. Consideration of future flexibility is important for the purpose of evaluating a management system's ability to respond to contingencies, and particularly to unusual future conditions that might result from climate change. Depending on the alternative chosen, policy revisions might be needed to either create, eliminate, increase, or decrease the gear-switching limitation. The following are the main points covered in Section 7.12.1(b) and discussed briefly with respect to NS-6 (Section 4.2.6).

If at some future time the Council determined that the amount of gear switching allowed should be either increased or decreased:

- *Under No Action, to modify (restrict) gear switching levels in the future, the Council would be facing a similar set of circumstances as it is today and would likely need to republish a control date at the start of such deliberations.*
- *For Alternatives 1 and 2, the analytic, rule-making, and administrative burdens for changes are different but might be roughly comparable, as would be the direct impact of changes on QS owners and gear-switching operations. For the most part, changes would be a matter of changing the mixes of any-gear and trawl-only QP issued to QS holders without changing the QS holdings.*
  - *For Alternative 1, a modification would involve either giving QP of one gear-type to a QS owner of the other gear-type or changing the amount of QP allocated to each type of QS. The former might be more administratively complicated and the latter more reallocative in that the total QP a QS owner received would change.*
  - *For Alternative 2, the Council could choose to modify the types of QP provided to legacy participants (issuing some trawl-only QP to reduce gear switching), or adjust the standard ratio given to all non-legacy participants. The former might be more administratively complicated than the latter.*
- *For Alternative 3,*
  - *the analytic, rule-making, and administrative burdens would likely be lower than for the other action alternatives, since it would only involve changing the percentage of gear switching that triggers a seasonal limitation.*
  - *if a substantial reduction in gear switching opportunity is desired, that could elevate the importance of other regulatory issues and potential impacts (e.g., the date on which sablefish retention while gear-switching starts—season opening date) and substantially shorten the gear switching season (potentially leading to a more intense competition for the opportunity to gear-switch).*

4.1.2(f) Impact on Quota Values and Revenue from Selling QP to Gear Switchers

Summary of main points from the discussion in this section and Section 7.8.2(a):

- *All of the action alternatives may have some impact on QS and QP prices relative to No Action.*
    - *Under Alternatives 1 and 2, relative to generic sablefish QP under No Action,*
        - *the price for any-gear QP is likely to increase, and*
        - *the price for trawl-only QP might decrease by a small amount, though prices could be…*
            - *notably lower if trawlers are unable to use most of the available trawl-only QP (by catching more of other species or increasing the ratio of sablefish in their catch), and*
            - *notably higher if the action has its desired effect in increasing the proportions of the trawl allocations of other species harvested through investments in processing capacity and market development (higher for both trawl-only and any-gear QP).*
    - *Under Alternative 3, the price for sablefish QP might decrease a slight amount relative to No Action, to the degree that QP demand from gear-switchers is constrained by the 29 percent limitation.*
    - *Sablefish QS prices will generally be higher/lower if QP prices are higher/lower, though the result is difficult to predict for Alternative 2 where any-gear and trawl-only QP prices might move in opposite directions but would be issued for the same generic northern sablefish QS.*
    - *Prices of non-sablefish QS/QP could increase if the policy is successful in increasing the harvest of trawl complexes.*
- *Those who rely on revenue from selling or trading sablefish QP to gear switchers may be adversely affected if*
    - *under Alternatives 1 and 2,*
        - *trawl-only QP prices are lower than QP prices would have been under No Action (see previous set of bullets);*
        - *the proportion of their allocations they receive as any-gear QS and/or QP is less than the proportion they usually sell to gear switchers, the price of trawl-only QP is lower than No Action, and any increase in the price of any-gear QP relative to No Action is not sufficient to make up for reduced sales/trading opportunity*
    - *under Alternative 3, the seasonal constraint substantially reduces demand by gear switchers to levels below what it would have been under No Action and that demand is not made up by demand from trawl vessels (reducing the price of QP).*
    - *For those who sell QP to gear-switchers, under Alternatives 1, there would be some opportunity to increase the amount of any-gear QP they receive by trading out (buying/selling) trawl-only for any-gear QS, but at a net cost. Under Alternative 2, the cost and difficulty would likely make such an adjustment prohibitive.*

4.1.2(g) Costs (Implementation and Ongoing)

Summary of main points covered in Section 7.12.1(a).

- *NMFS will provide more specific estimates of implementation burden and cost after a PPA is selected.*
- *With respect to implementation costs,*
  - *Alternative 1 costs would be relatively low (Agenda Item G.5, NMFS Report 1).*
  - *Alternative 2 would likely have somewhat lower initial qualification determination costs than Alternative 1 because it includes more different types of qualifying criteria, but it would have higher initial programming costs.*
  - *Alternative 3 would have lower implementation costs than Alternative 1 or 2.*
- *With respect to on-going costs,*
  - *Alternative 1 would require little new work (Agenda Item G.5, NMFS Report 1).*
  - *Alternative 2 would have some ongoing new tasks, but for the most part those tasks might be automated during the implementation phase.*
  - *Alternative 3 would require some ongoing monitoring and the issuance of a notice when closure is required.*

4.1.2(h) Impacts to First Receivers (Including Processors)

Summary of impacts that are further discussed in Section 7.10:

- *Alternative 1 provides FRs and others dependent on gear switching with the opportunity to secure long-term access to the needed any-gear QP by acquiring any-gear QS. It also includes a suboption that would provide an initial allocation of any-gear QS for qualified FRs.*
- *Alternative 2 provides FRs and others a very limited ability to secure long-term access to any-gear QP and there are no other avenues for qualifying.*
- *No Action and Alternative 3 do not provide any particular opportunity to secure gear-switching deliveries. Other than capping total gear switched landings, Alternative 3 would not likely disrupt current activities, unless the northern sablefish retention season for gear-switching is substantially shortened.*
- *All the action alternatives are being proposed with the hopes that they will increase harvest of trawl allocations, which benefit FRs receiving those deliveries. If a gear-switching restriction is effective in that regard, Alternative 2 QP Distribution Option 2 is the option that would place the greatest limitations on gear switching over the long term.*

4.1.2(i) Impact to Communities

In terms of impacts of communities, this analysis which is detailed further in Section 7.11 finds that:

- *Communities would also be impacted through changes in fish deliveries and vessel activities, as well as the income of those working for vessels, processors and supporting sectors.*
- *Under Alternatives 1 and 2, the impacts to communities will be driven by the distribution of gear switching opportunity to qualified gear switchers and how that distribution*

changes over time (e.g., consolidation of any-gear QS under Alternative 1 and exit of legacy participants from the fishery under Alternative 2).

- *Under Alternative 3, seasonal approach, the impacts to communities will depend on whether the gear switching limitation results in a shortening of seasons with a consequent change in the location of gear switching.*
- *Background data on community involvement in gear-switching and trawl fisheries is provided in Section 10.3*

4.1.2(j) Biological Impacts

In terms of biological impacts, this analysis which is detailed further in Section 7.3 finds that:

- *With respect to the action alternatives, for a given level of gear switching,*
  - *the mechanism selected to limit gear switching would not be expected to result in substantially different biological impacts,*
  - *except that under Alternative 3, if the season substantially shorten, due to competition among gear switchers or with vessels using trawl gear, gear-switching effort might be shifted to earlier in the year and to different geographic areas, which might change the biological impacts.*
- *Impacts to sablefish will be similar to No Action under any of the action alternatives; and any changes to impacts to other groundfish species resulting from the action alternatives are uncertain and will be dependent on how trawlers respond to a limitation of gear switching and increases in available sablefish.*
- *Impacts to protected or prohibited species may change depending on the shift in gear usage as trawl gears tend to interact with select species more than fixed gear (e.g., eulachon or salmon) and vice versa (e.g., whales). However, all impacts for any alternative are expected to be within that analyzed under the harvest specifications and management measures EA at the time of implementation.*

4.1.3 Summary of Impacts from Action Alternative Design Elements and Gear Switching Control Mechanisms

The following table summarizes some of the main contrasts covered in Sections 4.1.1 and 4.1.2.

Table 21. Summary of Impacts from Action Alternatives

	Alt 1	Alt 2	Alt 3
Gear Switching Control Mechanism	**Gear-Specific QS**	**Gear-Specific QP**	**Seasonal Management**
Specific Design Elements			
Amount of GS Allowed	Up to 29% in short and long term	29% in short term, 18.8-29% in long term	29% in short and long term
Qualification			
Gear-Switching History Evaluated	Personal history as a vessel owner.	History of the permit a person owns on the control date.	N/A

	Alt 1	Alt 2	Alt 3
Requirement to hold qualifying permit or vessel	May divest of vessel after qualifying landings made.	Must hold permit continuously from control date until implementation.	N/A
Requirement to hold QS	Must hold QS on the control date and at the time of implementation (may divest between).	Must hold QS on the control date and at least some QS through to the time of implementation.	N/A
Other bases for qualification as gear-switcher	Membership in a QS owner group[a] Membership in a registered Co-op[b] First Receiver	None	N/A
Expiration of gear switching opportunity	No	Yes, for legacy participants.	N/A
Breadth of Distribution of Gear Switching Opportunity			
Gear-switching opportunity initially provided for:	Gear-switching and non-gear-switching participants	Legacy and non-legacy participants	Same as No Action
Gear Switching Limitation Mechanism Driven Differences			
Likelihood of Attaining Gear Switching Maximums	Initially high for any-gear QS owned by gear switching participants; lower for QS/QP owned by others but increasing over time as QS/QP transfers and consolidation occurs	High for any-gear QPs owned by legacy participants, lower for QP owned by others and decreasing over time as legacy participants exit fishery	Moderate (Under No Action, 29 percent was exceeded in 6 of 12 years—6 of 10 if COVID years are excluded)
Changes to Access Privileges	GS requires any-gear QP Long-term access to any-gear QP available through any-gear QS acquisition.	GS requires any-gear QP Only a portion of any-gear QP will be issued for QS owned by non-legacy participants. Legacy participant status is not transferable.	No new access privilege required to gear switch.

	Alt 1	Alt 2	Alt 3
Fisherman Flexibility	Gear-specific QS and QP divisible/ separately transferable. Easy to scale level of harvesting.	Generic QS (not gear-specific) and gear-specific QP. Flexibility to acquire any-gear QP similar to Alt 1 but limited ability to secure long-term access to any-gear QP due to generic nature of the QS and distribution of a proportion of any-gear QP every non-legacy owned account.	Could become more constrained if seasonal measure becomes necessary.
Manager Flexibility—Responding to Changing Conditions by Changing Gear Switching Levels	Adjust by: allocating a greater portion of the total QP to QS of one gear-type (and less to the other) OR allocating opposite type of QP to a particular QS type (e.g., issue trawl-only QP to any-gear QS holders in order to decrease gear switching.)	Potentially comparable to Alt 1 but could be simpler, if adjustments are implemented by changing the ratio of QP gear-types going to non-legacy participant QS.	The analytic, rule-making, and administrative burdens would likely be lower than for the other action alternatives. Increases would be uncomplicated but substantial reductions in gear-switching could trigger other management concerns (e.g., short seasons and timing of season opening dates).
Impact on QS/QP Value	Split QS and QP Market with QS prices driven by QP values for the respective gear-specific quota. Relative to No Action, any-gear QP prices will likely increase. A successful policy could also result in trawl-only QP prices increasing.	A single QS market in which QS prices will be driven by a mix in the value of trawl-only and any-gear QP.	N/A
Costs—Implementation	Relatively low.	Initial allocation costs likely somewhat lower than Alt 1, but programming costs likely somewhat higher.	Lowest.
Costs—Ongoing	Little new work required.	Some ongoing new tasks (many likely automated)	Some ongoing season modelling and closure notices.
Impacts to FRs/Processors	FRs considered in initial allocation. Opportunity to secure long-term access by acquiring any-gear QS.	FRs not explicitly included in initial allocations. Limited opportunity to secure long-term access by QS acquisition.	Same as No Action unless gear switching season is substantially shortened

	Alt 1	Alt 2	Alt 3
Impacts to Communities	Any-gear QS can be aggregated and, depending on who acquires, redistributed to match the existing distribution of gear-switching or among different communities.	Any-gear QP will be more dispersed and cannot be aggregated. Might be more likely to result in a redistribution of gear-switching activity among communities.	Season limitations, if substantial, could result in geographic redistribution.
Biological Impacts	For sablefish, similar to No Action. For non-sablefish groundfish, dependent on trawl response. May result in minor changes to protected species encounters, but likely within levels in the harvest specifications analysis.	Similar to Alternative 1.	Similar to Alternative 1, unless season shifts significantly.

[a] Requires at least one member to qualify based on vessel criteria.
[b] Requires at least one member to qualify based on vessel criteria and for QP to be transferred to that member.

4.2 MSA National Standard Analysis

4.2.1 NS1 – OY

> 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 MSA definition of "optimum," with respect to optimum yield, is "the amount of fish which…will provide the greatest overall benefit to the Nation, particularly with respect to food production and recreational opportunities…." Sec. 3, (33). Optimum yield (OY) is MSY as reduced by economic, social, or ecological factors, in order to achieve that national benefit. None of the action alternatives will likely change the Council's ability to prevent overfishing and attain MSY, but they will potentially alter national benefits.

The NS 1 guidelines include economic, social, or ecological factors to be weighed in determining national benefits such as: fish resource utilization for food production and nutrition; recreational opportunities and non-consumptive fishery uses; and commercial and recreational fishery contributions to national, regional and local economies. These benefits flow from protection of the marine ecosystem (including both the fishery and unexploited species) while accommodating human use. The NS 1 guidelines also indicate that Council FMPs should be consulted in determining the relevant social, economic, ecological factors that should be used in determining OY (§600.310 I(3)(iii)(A)&(B)) (see Section 4.4).

In reaching a decision on whether to pursue one of the action alternatives, the Council will need to review the related information, make its best judgement of the probability that gear switching is a constraint on attainment of the trawl allocation, and weigh those probabilities with the potential positive and negative effects from constraining gear switching, relative to No Action.

Section 2.4 reviews evidence on whether or not gear switching might be preventing trawl vessels from more fully attaining their allocation, i.e., are trawlers leaving/selling sablefish QP they do not need to gears-witching vessels or are gear-switching vessels out bidding them for it?

Even if gear switching has not been a constraint to date, some Council members have indicated that an unconstrained expansion of gear-switching would not be desirable. Section 2.5 evaluates factors that might influence or indicate future expansions or contractions of gear switching. The Council might determine that the likelihood of adverse impacts in the future warrants a preventative measure in the present, balancing the probability and size of those possible future adverse impacts against current implementation costs along with adverse impacts and disruption from program change and reallocation.

For each of the action alternatives (relative to no action), potential cost and benefit impacts that relate to the overall benefit for the nation are summarized in Section 4.5.2, including under conditions in which gear switching is or is not constraining. With respect to net impacts of a reduction in gear switching on overall benefits to the nation, there are three outcomes/scenarios to consider. The first would apply to the degree gear switching is constraining attainment of the trawl allocation and the latter two would apply if gear switching is not constraining trawl allocation attainment.

1. trawlers increase their harvest of trawl target species complexes;
2. trawlers do not increase their harvest of trawl target species complexes but increase the ratio of sablefish in their catch; and
3. trawlers neither increase their harvest of trawl target species complexes nor the ratio of sablefish in their catch, leaving sablefish unharvested by trawlers.

A mix of all three is possible, with trawl vessels increasing their harvest of complexes until market constraints are reached, then increasing their catch of sablefish to the degree it is technically and economically feasible—with any sablefish remaining going unharvested. Different vessels may take different approaches or some vessels may employ a simultaneous mix depending on the individual vessel portfolios. The degree to which the likely outcomes change concurrent with changes in OY depend on the degree to which sablefish encounter rates vary as OY and biomass changes, the degree to which trawlers are able to control the ratio of sablefish in their catch, and prevailing market prices for sablefish. There is some indication of that trawlers are able to control the sablefish ratio in their catch, for example, the sudden reduction of the ratio of sablefish in the trawl DTS catch that occurred and endured after the start of the trawl IFQ program (Figure 14) and other data showing that catch composition ratios depend on geographic location and time of year of catch (see Section 10.2). For a given rate of sablefish encounters, when sablefish Oys are low, it may be more likely that the first one or two scenarios will prevail; and when sablefish Oys are very high the latter scenarios may be more likely.

With respect to assessing the potential gain or loss under the scenarios outlined, under the first scenario, the reduction in gear-switching vessel harvest would likely be offset by an increase in the trawl complex harvests. The total volume of fish landed would increase (increasing biological yield, Goal 3 of the FMP), increasing protein production and total exvessel value (see Table 22). Those benefiting from the increase would include crew, as well as communities

where trawl vessels deliver and where their fish are processed (see Sections 7.11 and 10.3). Consumers would benefit from an increase in the total volume of protein produced by the fishery (see 7.13). While this should result in increases in overall fishery production, those increases would be at least partially offset by losses to the gear switching vessels and crew along with the communities and processors which rely on them (to the degree that there are not overlaps between these communities and processors (see 7.10 and 7.11). Impacts to QS owners would depend on their ability to continue to sell QP and the effect on the market value of the QS they own (see 7.8.2). Different consumers would be impacted differently since many of the trawl caught fish tend to go more to domestic fresh and frozen markets while sablefish (particularly sablefish caught with fixed gear) tends to be sold to international markets. Also impacting domestic consumers is whether the domestically produced fish augments or displaces imports. Either would be expected to result in overall price reductions for consumers while the latter would likely have some positive impact on the international trade balance and domestic economy (see Section 7.13). The potential effects from changes in efficiency are discussed in connection with NS 5 (Section 4.2.5).

Under the second scenario, fixed gear caught sablefish, which tends to bring higher exvessel prices than trawl caught sablefish, would be displaced by trawl caught sablefish. Trawl caught sablefish have an average 2011-2022 price that is $0.95 a pound less than gear switched sablefish (adjusted for inflation, also see Section 10.5.2). Because of the fish grade and exvessel value differences between the gears, it has been estimated that the flexibility of targeting sablefish with fixed gear generated an average of over 10 percent more total exvessel revenue ($1.17 million) as compared to catching the sablefish with trawl gear (taking into account only the value of the sablefish for the 2011-2016 period, Krigbaum and Anderson 2021). These values then reflect the net exvessel value reduction that would have been expected over that period if there had been no opportunity to gear switch (taking the losses for fixed gear vessels together with the gains for trawl vessels.

Under the last scenario, the policy change would likely result in a loss to overall national benefit because gear-switching vessels' opportunity to harvest sablefish would be reduced and there would be no compensating increase from trawl vessel harvest.

Changes to exvessel value provide one indicator of the magnitude of impacts that could result from a limitation on gear switching. Section 7.1 details an analysis using 2013, 2019, and 2021 as baseline years under each of the scenarios. Using each of these scenarios and baseline year conditions (i.e., ex-vessel prices, competing strategy use of sablefish), we can compare what a given decrease in gear switching would potentially look like. As an example, we will look at six percentage point reductions.[21] For any particular cap on gear switching, actual gear switching levels might be lower depending various factors including the effort required to gather together any-gear quota that is dispersed across many accounts and other factors (Alternatives 1 and 2 only). Under a scenario in which trawlers are able to respond to the limit on gear switching by expanding their harvest of complexes, exvessel revenue for the sector as a whole (trawl and gear switchers combined) might increase by $1.70 to $1.75 million (Table 22; scenario 1). If trawlers do not increase their harvest of complexes but harvest the additional sablefish (scenario 2), then a

[21] Any percentage point level could have been used for this example, but imposition of a 29 percent gear-switching cap would have reduced gear switching by 6 percentage points in 2019.

$0.25 million to $0.30 million loss might be expected. If trawlers do not expand their harvest of trawl target species complexes or sablefish and sablefish QP goes unused (scenario 3), then a $0.60 million to $0.75 million loss of exvessel revenue might expected. It is also possible that the result would be a mix of these scenarios. For example, if the 6 percent reduction is spread across the three scenarios (i.e,, 2 percent sablefish QPs assigned to each) then there might be a net gain of between $0.20 and $0.28 million.

Table 22. Changes to exvessel revenue for a 6 percent reduction in gear switching using baseline year inflation adjusted prices and catch ratios (results from Table 24 and Table 26.

	Net Changes to Exvessel Revenue (Trawl Gains Minus Gear Switched Vessel Losses)		
	2013 Baseline	2019 Baseline	2021 Baseline
	4.0 million lb trawl allocation	5.7 million lb trawl allocation	6.6 million lb trawl allocation
Scenario 1 Trawlers Expand DTS	GS Change: -$0.70 Trawl Change: $2.40 Net Change: $1.70	GS Change: -$0.75 Trawl Change: $2.45 Net Change: $1.70	GS Change: -$0.60 Trawl Change: $2.35 Net Change: $1.75
Scenario 2 Trawlers Increase Sablefish Retention	GS Change: -$0.70 Trawl Change: $0.45 Net Change: -$0.25	GS Change: -$0.75 Trawl Change: $0.40 Net Change: -$0.30	GS Change: -$0.60 Trawl Change: -$0.30 Net Change: -$0.30
Scenario 3 Trawlers are Unable to Use the Sablefish	GS Change: -$0.70 Trawl Change: - Net Change: -$0.70	GS Change: -$0.75 Trawl Change: - Net Change: -$0.75	GS Change: -$0.60 Trawl Change: - Net Change: -$0.60

For the action alternatives, there are some other possible outcomes. First, in the short term, with very high OYs, it may be that neither group is constrained by the new policy. Alternative 1 would constrain gear switching to either 29.0 percent or less, depending on the QP split option selected. Alternative 2 would either start and remain at a 29 percent constraint or start at 29 percent and decline to 18.8 percent. Alternative 3 would limit gear switching to 29 percent. For trawl allocations above 6.9 million pounds, a 29 percent constraint would allow gear switching to continue unconstrained in terms of total QP that could be gear switched, relative to maximum historical levels (2.01 million lbs). The 2023 trawl allocation is 8.6 million pounds and current projections are that the trawl allocations are likely to be well above 6.9 million pounds for at least the next few years. Alternative 1, QP Split Option 2 would cap the any-gear QP at 1.8 million lbs, about 10 percent below this historic maximum. For trawl allocations above 20.7 million pounds, an 18.8 percent constraint (Alternative 2, QP Distribution Option 2) would allow gear switching to continue unconstrained in terms of historic maximum poundage levels. In all of these scenarios, the amount of QP left for trawl vessels would be equal to or greater than their maximum 2011-2022 poundage.

Second, if trawlers are not likely constrained in the present (and that absence of constraint would have continued under No Action), benefits might still accrue over the long-term if the limitation encourages investments in processing equipment and trawl-market development. For those benefits to accrue the expansion would have to be sufficient to increase trawl demand to the point at which gear switching would be constraining.

4.2.2 NS 2 – Best Scientific Information

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

The analysis of these alternatives relies primarily on EDC Program data collected at the NWFSC, fish ticket data from PacFIN, WCGOP data, IOPAC estimates of income impacts source in the NWFSC, Department of Commerce data, Bureau of Labor Statistics data, Council approved stock assessments and related research, and literature reviewed research. None of the action alternatives are expected to have an impact on the future quality of fishery data.

4.2.3 NS 3 – Management Units

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.

Sablefish is assessed coastwide and managed with area-specific ACLs north and south of 36° N. lat. None of the alternatives proposed under this action, including no action, will change the management unit of sablefish or any other co-occurring species.

4.2.4 NS 4 – Allocation

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 manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.

With respect to the NS 4 allocation criteria, all Council management measures are reasonably calculated for conservation. These measures also have socio-economic impacts and often have elements the main purpose of which is to improve net benefits while achieving the conservation objective, as required to achieve optimum yield (see NS1 discussion). Once implemented, management measures are often revisited to explore opportunities for improvement, particularly if there are indications that objectives are not being met as well as they might. Anticipating that outcomes may be different than expected or that changing fishery conditions change projected impacts is an issue addressed more fully with respect to NS-6 on contingencies. Here, the main point is that while the action alternatives considered here would be reallocative in nature they are part of an overall system calculated to promote conservation and would also address other management objectives. There is almost always some uncertainty about the impacts of new regulations and learning from post-implementation experience often provides information that leads to consideration of adjustments.

Post-implementation experience noted by trawl fishery participants indicates the possibility that gear switching might be having unexpected negative consequences on the achievement of OY.

Through these deliberations, the Council is determining whether is it reasonably likely that a constraint on gear switching will increase the attainment of the trawl allocations, and hence improve overall benefits to the nation. If so, it would seek to identify the action alternative that might best achieve OY, including taking into account fairness and equity considerations with respect to those impacted.

The action alternatives would directly change the allocation of sablefish harvest opportunity among QS owners by restricting the gear types used with the QP they receive (Alternatives 1 and 2) and among groups of vessels that use different gears (all three action alternatives). The guidelines for NS 4 note that "[t]he motive for making a particular allocation should be justified in terms of the objectives of the FMP; otherwise, the disadvantaged user groups or individuals would suffer without cause…" (§ 600.325 I(3)(i)(A)); and an allocation of fishing privileges may impose a hardship on one group if it is outweighed by the total benefits received by another group or groups" (§600.325 (c)(3)(i)(B)). Groups might be looked at individually (the trawl gear group and gear-switching group) or more collectively (communities or the nation as a whole). If it is reasonably determined that gear switching is likely constraining harvest of the trawl allocation, then a reduction in gear switching could increase OY attainment and further groundfish FMP Goals 2 and 3, which emphasize maximizing the value and biological yield of the overall groundfish fishery (see discussion in Section 4.2.1). Effects on efficiency and how that relates to total benefits to the nation are discussed in Section 4.2.5. There may be other FMP goals and objectives that would be advanced by a modification of the allocation between these two gear groups, in relation to the discussion provided in Section 2.1 and 2.2, but these are not an emphasis of the purpose and need statement for this action

Appendix 7.0 provides a broadly defined assessment of overall benefits to the nation, including distributional effects of each alternative. These include the following:

- Potential increases in revenue and profit for segments of the trawl fleet that are most likely to benefit from a reduction in gear switching.
- The decreases in revenue and profit incurred by gear-switching entities.
- Changes in sablefish QS value, particularly for QS owners that sell or barter their sablefish QP to gear switchers and for gear switchers who acquired QS that might no longer be usable for gear switching (including consideration of opportunity to offset losses by selling QS or selling QP to vessels using other strategies).
- Other investments by gear switchers, such as investments in gear.
- Impacts to those reliant on the activities of each group (including crew, processors, and communities).

Because of varying views in our society on what constitutes fairness and equity, there are not widely accepted standards against which an objective analysis can conclude that one allocation decision is fairer and more equitable than another. There are no measuring sticks for fairness and equity similar to what is available for evaluating considerations such as efficiency. At the same time, the MSA requires that Councils consider certain specific factors that relate to fairness and equity, for example, the consideration of investments and recent and historical participation as well as opportunities for new entrants. Part of determining fairness and equity includes

providing a well-articulated rationale for any action (such that it is not considered arbitrary and capricious).

The following sections discuss different types of allocations affected by the alternatives and a discussion on excessive shares. All three action alternatives change the allocations between groups operating within the trawl sector. Alternatives 1 and 2 directly reallocate gear-switching opportunities while Alternative 3 would allocate indirectly between individuals via a season closures (i.e., first come, first serve). The post implementation transferability that varies between the alternatives is also a form of allocation.

4.2.4(a) Initial Allocation

Because only Alternatives 1 and 2 are directly reallocative, they will the primary focus of this section on initial allocation. The following aspects of the initial allocation formula have a particularly substantial impact on allocation result:

- the time frame used for qualification
- who or what is evaluated to do determine qualification for an allocation (the unit of allocation)
- the activity(ies) and level(s) of activity required to qualify

The time frame to qualify for initial allocations is covered in 8.1 and 8.2. Section 8.1 explains why only pre-control date (September 15, 2017) fishing activity is evaluated for the purpose of determining gear-switching history-based allocations. Section 8.2 covers both who/what is evaluated when determining qualification; and it describes how those decisions interact with the time frame used to evaluate history, including the consideration of historical and recent participation as well as investment. Under both Alternatives 1 and 2, individuals must own QS and maintain that QS ownership at the time of implementation (there are allowances for some QS divestments and reacquisition between those two times). Some of the important allocational contrasts between the alternatives that are further explained in Section 8.2 include the following.

Under Alternative 1, pre-control date gear-switching history of individuals as vessel owners (personal history) is evaluated to determine whether a QS owner qualifies for a history-based allocation.

1. Personal history cannot be transferred to others.
2. Those who qualify would have all or most of their eligible QS converted to any-gear QS (depending on the conversion option).
3. Only the amount of QS owned on the control date would be eligible for a history-based conversion.
4. Vessel owners that gear switched using leased trawl LE permits would receive the history-based allocations.
5. Those who do not qualify for a history-based allocation but owned QS on the control date may have a portion of their QS converted to any-gear QS and the remainder would be trawl-only QS.
6. Any non-qualifier that acquires QS after the control date (or acquires more QS than they owned on the control date) will have all of that QS converted to trawl-only QS.

Under Alternative 2, pre-control date gear-switching history of the trawl LE permit owned by a QS owner is evaluated to determine whether a QS owner qualifies for a history-based allocation. The QS owner must own the permit as of and since the control date.

1. Permits with qualifying history could have been transferred to a QS owner any time up until the control date and qualified the QS owner receiving the permit.
2. Those who qualify would receive any-gear QP for all of their eligible QS.
3. Only the amount of QS owned on the control date would be eligible to receive any-gear QS.
4. Vessel owners that gear switched using leased trawl LE permits would *not* receive the history-based allocations.
5. Those who do not qualify for a history-based allocation but owned QS on the control date would receive any-gear QP for a portion of their QS and the remainder would be trawl only QS.
6. Any non-qualifier that acquires QS after the control date would also receive any-gear QP for a portion of their QS and the remainder would be trawl only.

For Gear Switching Participation Option 2 of Alternative 1, the impacts of the qualification requirements will interact with the control date to give little credit for participation and dependence on gear switching after 2015. While the noticed control date was in 2017, qualifiers must have entered the fishery no later than 2015 because three years of activity would be required. Thus, investments and history in gear switching from 2016 through the control date would not be able to qualify someone for a history-based allocation. In contrast, for Alternative 1 Gear Switching Participation Option 1, only one landing is required across the entire qualification period (2011-control date). As described above, for Alternative 2, gear-switching history is associated with the permit a person owns on the control date. Thus, any time up until the control date, someone who invested in buying a permit with history would potentially be eligible for a history-based allocation.

One factor that influences the impact of an allocation on investment and dependence is the degree to which an investment may be recovered by putting it to other uses or selling it. For example, for those vessels that cross between the LEFG and gear-switching fishery (see Section 2.5.4), investments in gear might be recovered through use of that gear in the LEFG fishery. For vessels that are not crossing over from another fixed gear fishery (primarily pot vessels), there may be less such opportunity to recover their investment by continuing to use it in the other fishery. For vessels that acquired QS to gear switch but can no longer do so because they did not qualify, there is the option of selling that QS and acquiring more any-gear QS (Alternative 1) or annually acquiring any-gear QP (Alternative 2). Under Alternative 3, if the seasons began to shorten vessels wanting to recoup their investment could do so either by deciding to fish less and selling their QS or fishing earlier in the year The impact of selling the QS will depend in part on the price they can to sell at compared to what they paid for it originally and their ability to transition to other sources of income (see Section 2.5.4).

Section 8.3 provides background on the information used in the selection of the level of activities used for qualification and Sections 9.1 and 9.2 provide information on the number of qualifiers

and non-qualifiers under the Alternatives 1 and 2. Further information on the distribution of allocations among groups are included in the detailed analysis of the impacts (Section 7.0).

4.2.4(b) Quota Transferability and Sector Divisions

Quota transferability, relative to this action, is related to the post implementation allocation of gear-switching opportunity over time. After implementation, under Alternative 1, the history-based allocations of gear-switching opportunities reside with the QS designated as any-gear QS and are transferable to anyone else, including new entrants. Under Alternative 2, the history-based allocations of gear-switching opportunity reside with the legacy QS owners (is personal to them) and expire as those individuals divest themselves of their QS (legacy QS owners receive 100 percent any-gear QP for their eligible QS). There is no opportunity to transfer those history-based allocations provided under Alternative 2.

Under both alternatives, there is also a non-history-based allocation of gear-switching opportunities. For Alternative 1, like the history–based opportunity, it is issued in the form of transferable any-gear QS and may be accumulated by existing gear switchers or new entrants, as well as trawl gear users. For Alternative 2, the non-history-based gear-switching opportunity is allocated annually among all non-legacy QS owners as a constant proportion of any-gear QP. There is no way for QS owners to increase the proportion of any-gear QP they receive annually for their QS. However, as the legacy participants divest themselves of their QS, the proportion of any-gear QP received by the remaining non-legacy QS owners will either increase or stay the same, depending on the option selected.

The differences in post implementation transferability of the history-based portion of the initial allocations reflect important differences in the Alternative 1 and 2 policies—particularly with respect to the allocation of sablefish between the two gear groups that traditional define the trawl and nontrawl/fixed gear sectors (see Sections 2.1 and 2.2). Alternative 1 allows those desiring to gear switch the means by which to secure that opportunity over the long-term by acquiring any-gear QS (though capped in aggregate at 29 percent or something close to it and individually at the 3 percent QS control limit, discussed below). Such transfers create a somewhat stable reallocation between the two gear groups (Section 2.2)—though it is not regulatorily fixed in that any-gear QS acquired by gear-switchers can still be purchased and used by trawlers.

The Alternative 2 limit on transfer reflects an intent to phase-out the history-based opportunity while preserving a common degree of gear switching opportunity for anyone owning QS (i.e., any-gear QP issued annually in the same proportion to all accounts). The history-based opportunity that is eventually phased out would represent an acknowledgement of the investment by gear switchers and provide an adjustment period to reduce the disruptive effects of making changes to the program. Over the long-term, each year those interested in continuing to gear switch at previous levels, as well as new entrants, would have to supplement the portion of any-gear QP they receive for their QS by acquiring additional any-gear QP.

4.2.4(c) Excessive Shares

Both NS 4 and MSA Section 303A on LAPP programs require the consideration of the accumulation of excessive shares. Among the action alternatives, there is substantial variation in

the proportion of the gear switching opportunity that any single entity would be able to control. Under the trawl IFQ program, there is a 3.0 percent limit on the amount of sablefish north QS an entity can own or control, a 4.5 percent limit on the amount of sablefish QP that any vessel can use, and no limits on the number of trawl LEPs an entity can own. No additional limits have been proposed under the action alternatives. Under Alternative 1, an entity that acquires 3 percent any-gear QS would control 11.5 -12.8 percent of the any-gear QS issued for QS holders.[22] Under Alternative 2, after all QSAs that were at least partially owned by gear switching participants expire, all remaining QSAs would receive the same standard split, as follows. For an entity that controls 3 percent of the QS, that standard split would be the equivalent of between 0.8 percent and 0.9 percent of all any-gear QP issued each year. Under Alternatives 3, no gear designations are added to the QS or QP (all sablefish north quota remains usable with any gear), similar to No Action. While the accumulation limits would remain as under status quo, a vessel could be limited in its ability to use its quota for gear switching because of the first-come/first-served nature of the seasonal approach in Alternative 3.

Table 23. Maximum achievable share of gear switching opportunity achievable over in the long-term..

Maximum Portion of the Any-Gear QP	Alt 1 – Gear Specific QS	Alt 2 – Gear Specific QP	Alt 3 – Seasonal Approach
Issued to QS Owners Based on Initial Allocation Amounts (assuming an historic participant owns 3% of the QS)	11.5%-12.8%[a]	11.5%	11.5%[b]
Over the Long Term (Limited by 3% QS Control Limit)	11.5%-12.8%	3%	
That Can Be Accumulated by Vessels (Limited by 4.5% Vessel QP Limit)	15.5%-17.3%	15.5%-23.9%[c]	15.5%[d]

[a] Lower end of the range for QP Split Option 1 and higher end for QP Split Option 2 (assuming 2021 level ACL).
[b] Assumes the QS owner is able to gear-switch the maximum number of QP allowed before the season closes (the 3 percent control limit for northern sablefish).
[c] Lower end of the range for QP Distribution Option 1 (29 percent any-gear QP available) and higher end for QP Distribution Option 2 (18.8 percent any-gear QP available after legacy participants leave).
[d] Assumes the vessel is able to gear-switching take the maximum number of QP allowed before the season closes (the 4.5 percent vessel QP limit for northern sablefish).

[22] The amount of any-gear QS in QSAs converted would be 26.1 percent under QP Split Option 1 and 23.4 percent under QP Split Option 2 (using 2021 allocations; actual amount would be determined at time of implementation if selected). Additional percentages of any-gear QS would be held as AMP QS.

4.2.5 NS-5—Efficiency

> 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.

Economic allocation is not the sole purpose of this action, as described in the discussion of NS-1. The NS-5 guidelines provide the following guidance on "efficiency in the utilization of resources."

> The term "utilization" encompasses harvesting, processing, marketing, and non-consumptive uses of the resource, since management decisions affect all sectors of the industry. In considering efficient utilization of fishery resources, this standard highlights one way that a fishery can contribute to the Nation's benefit with the least cost to society: Given a set of objectives for the fishery, an FMP should contain management measures that result in as efficient a fishery as is practicable or desirable.
>
> (2) ***Efficiency.*** In theory, an efficient fishery would harvest the OY with the minimum use of economic inputs such as labor, capital, interest, and fuel. Efficiency in terms of aggregate costs then becomes a conservation objective, where "conservation" constitutes wise use of all resources involved in the fishery, not just fish stocks.

The question of efficiency in relation to this action can be broken down into two parts

- Will the proposed action improve efficiency in the fishery?
- Will the proposed actions further other management objectives in the most efficient manner?

Section 2.4.5(b) demonstrates that some gear-switching vessels may be more profitable than some trawl vessels and may displace some trawl catch by outcompeting those trawlers for sablefish QP (including by offering a high enough price to bid quota away from the trawlers, convincing them to sell it). In an individual fishery quota system with a freely and fully functioning market, these transactions would be expected to increase overall efficiency in the fishery. The action alternatives being considered here would restrict gear switching and therefore potentially restrict those more efficient outcomes, depending, in part, on whether the market is freely and fully functioning. However, as mandated by the MSA, a number of other policy objectives have been incorporated into the program, as well as the overall management system for the groundfish fishery. Management measures associated with these policies may interfere with efficient market outcomes. The following considers measures that relate to gear-switching and that may distort markets and whether or not a limitation on gear-switching could compensate for the consequent market interference.

Trawl accumulation limits: QS control limits may be inhibiting an efficient market-based response to uncertainty created by the presence of gear switching, as discussed in Section 2.4.4(a). The control limits prevent businesses from overcoming the uncertainty about the

reliability of the supply of trawl caught complexes by limiting vertical integration (the normal market based response to such situations). A limit on gear switching could counter part of the market interference by reducing uncertainty about supply reliability for trawl complexes.

LEFG tier program accumulation limits and separate longline and fishpot endorsements: Both of these measures appear to be contributing to the engagement in gear-switching by fixed gear vessels seeking more fishing opportunity (and with respect to the stacking limit, seeking potential efficiencies related to increased operational scale; see Sections 2.4.4(b) and 2.5.4). Reduction of gear switching may limit adverse impacts, if any, related to the participation of these vessels in gear switching but would not resolve the issues that motivate their entry into the fishery and could reduce efficiency benefits derived from gear switcher participation in the trawl sector.

Unidirectoinal cross-over between the LEFG and trawl IFQ fishery: The LEFG tier program does not allow vessels to take sablefish with trawl gear. The more efficient LEFG vessels might displace less efficient trawl vessels in the trawl sector but, if so, those displaced trawl vessels do not have an opportunity to compete as trawlers in the market for LEFG tier permits (and therefore quota)--potentially displacing LEFG vessels that have even lesser efficiency; thereby, potentially hindering a mechanism to increase efficiency in the LEFG sector of the fishery. Reducing gear switching could reduce any displacement of trawl gear vessels in the trawl sector, if it is occurring, but at the loss of the efficiency that would have otherwise been gained through gear switching vessel participation. It would not address the efficiency issue related to unidirectional cross-over.

Finally, the division of the groundfish fishery into trawl and LEFG sectors was intended to achieve certain broader management objectives (discussed in Section 2.2). Allowing gear switching in the trawl sector might improve efficiency in the groundfish fishery (see discussion of VCNRs in 2.4.5(b)) but have potential adverse impacts on broader management objectives supported by trawl sector activity.

If the decision is made to restrict gear switching, Alternative 1 is most likely to achieve this aim with the greatest efficiency due to its full reliance on the features of existing QS program (requiring little long term modification to the management system) and the market based flexibility and related efficiency gains that system provides to participants.

Alternative 2 is likely to be the least efficient, mainly because it limits market function by not allowing for consolidation of long-term access to any-gear QP. This will impose higher annual transaction costs related to gathering the any-gear QP from many accounts and create uncertainty about annual quota costs that may adversely impact long-term investments. Alternative 2 will require modifications to the existing QS program and a few tasks that are likely to continue indefinitely or for many years (see Section 7.12.1 on management costs).

As long as the gear-switching opportunity ran close to a full year, Alternative 3 may have a similar efficiency outcome for fishery similar to Alternative 1 and could potentially have long-term management costs similar to or lower than Alternative 1. If the season is shortened due to

reaching the 29 percent limit, vessel flexibility and efficiency would be reduced and other management issues may arise requiring Council attention.

4.2.6 NS-6—Contingencies

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

The NS-6 guidelines note that:

> Each fishery exhibits unique uncertainties. The phrase "conservation and management" implies the wise use of fishery resources through a management regime that includes some protection against these uncertainties. The particular regime chosen must be flexible enough to allow timely response to resource, industry, and other national and regional needs. §600.335(b)

Further, the NS-6 guidelines state that "variations arise from biological, social, and economic occurrences, as well as from fishing practices" §600.335I(1) and that "Unpredictable events…are best handled by establishing a flexible management regime that contains a range of management options through which it is possible to act quickly without amending the FMP or even its regulations." §600.335(d)

The MSA implicitly anticipates that catch share programs may have unanticipated impacts and includes requirements for periodic program reviews. Amendment 20 tried to provide some opportunity for responding to unexpected outcomes by providing a quota set aside for adaptive management. Additionally, the trawl catch share program itself provided participants with considerable flexibility for organizing their fishing activities.

As with many of its management decisions, in its deliberations on gear switching the Council will need to make a judgement under conditions of some degree of uncertainty. Here the Council will be evaluating whether or not it is likely that gear-switching activity is constraining trawl allocation attainment and the potential consequences of both a correct and an incorrect judgement in that regard. Therefore, the decision on whether or not to limit gear switching warrants consideration of the Council's ability to respond if outcomes vary from what it anticipates in making its final decision.

4.2.6(a) Variations and Contingencies for Managers

As summarized in Section 4.1.2(e) and discussed in more detail in Section 7.12.1(b), if the Council selects no action, it will continue to be in a situation like it is in the present. If at some time in the future it is determined that gear switching is substantially limiting trawl attainment and it wants to resolve that issue, it might need to republish a control date. Each action alternative is different with respect to the flexibility it provides for modification of gear switching levels in the future.

There are two approaches identified for Alternative 1. The first changes the amounts of each type of gear-specific QP that QS owners receive but would not change the total amount of sablefish QP received for a unit of QS. It would add regulatory complexity and put a burden on the management and data system. Moreover, NMFS will need to further review the approach to determine its feasibility. The second Alternative 1 approach (changing the total QP a person receives for a given amount of QS) would be less administratively burdensome and less regulatorily complex but substantially more reallocative by changing the amount of QP an individual received for a given amount of QS. However, it would have a parallel in Alternative 1 QP Split Option 2, under which, as trawl allocations move above 6.2 million pounds, all the additional QP issued each year would be issued as trawl-only QP to trawl-only QS owners. The amount received by any-gear QS would not increase, because the any-gear QP would be capped at 1.8 million pounds—29 percent of 6.2 million lbs.

For Alternative 2, there are also two approaches for modifying gear-switching amounts. Similar to Alternative 1, one approach would have some reallocative effects (issuing some trawl-only QP instead of any-gear QP to legacy QS owners). The other approach would modify the ratio of any-gear to trawl-only QP issued to all other QS owners, thus being relatively simple from a regulatory perspective but also having some reallocative effect. Neither approach would change the total sablefish QP a QS owner received.

Making changes to the level of gear switching allowed under Alternative 3 would involve the least regulatory burden and complexity, so long as the season length does not shorten substantially due to increased interest in gear switching. If in the future the Council determines that there is a need to reduce gear switching to levels below 29 percent, that might contribute to shortening seasons. If highly shortened seasons developed, the Council might then reconsider other means of limiting gear switching—assuming it determined that a continuation of a limit on gear-switching were desirable.

The process by which changes might occur, either through the biennial specifications or through a different rulemaking, could be described further after the selection of the PPA.

4.2.6(b) Variations and Contingencies for Harvesters

The current IFQ program (No Action) provides a flexible regulatory system that gives harvesters an opportunity to optimize their operations and respond to changing fishery and market conditions. Alternative 1 and 3 continue the same operational and planning flexibility for gear-switchers that the IFQ program provides, albeit at lower levels of opportunity and with certain exceptions. For Alternative 1, there would be a more limited amount of quota that could be used for gear switching. For Alternative 3, the amount of quota available for gear switching would be the same but flexibility may be reduced if vessels increase their pace of fishing to ensure they are able to gear-switch as much as they want and as a result seasons are shortened to keep the fishery within the gear-switching cap. Alternative 2 would create obstacles that impede gear-switchers' flexibility to secure long-term access to quota usable for gear switching (acquire QS) and scale their operations—increasing the costs and effort required to do so. Harvesters desiring to secure gear switching opportunity through the acquisition of QS would be limited by the 3 percent control limit; and for any additional QS they acquire 29 percent or less of the QP they receive would be any-gear QP. Thus, acquiring more QS secures access to more trawl-only QP than

any-gear QP. On an annual basis, gear switching vessels have the opportunity to accumulate any-gear QP by acquiring it from other QS holders, however, since only a portion of the QP in non-legacy owned accounts would be valid for any-gear, they would likely need to acquire QP from more QSA than under no action or Alternatives 1 or 3, increasing effort and costs related to QP transactions.

4.2.7 NS-7—Cost Minimization

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

Costs of the alternatives are summarized in 4.1.2(g) and detailed in 7.12.1(a). The following table provides a general overview of the costs relative to a no action scenario in which there is no need to impose a constraint on gear switching in the future. If instead, the Council returns to deliberate on gear switching at some time in the future, then there would be costs related to No Action. NMFS will provide more specific cost estimates after a PPA is selected.

	Implementation Costs	Ongoing Costs
Alternative 1 – Gear-Specific QS	Relatively Low	Very little new work.
Alternative 2 – Gear-Specific QP	Lower than Alt 1	Some new ongoing tasks
Alternative 3 – Seasonal Approach	Lowest	Inseason projections & closure actions.

Enforcement costs should also be considered. There is likely minimal to no additional enforcement costs for any of the action alternatives compared to No Action. With full at-sea monitoring, even if there is a shortening of the gear switching "season" under Alternative 3 (i.e., less than a full year of opportunity to retain sablefish while gear-switching), the season closure would not be expected to substantially increase enforcement costs.

The alternatives also vary with respect to the costs of dealing with unexpected outcomes, as discussed in Section 4.2.6(a).

NS 7 also states that analyses for management measures should consider the costs not only to the agency and Council, but to the industry. Particularly, it discusses the need to identify the burdens and gains from the proposed alternative. "Management measures should be designed to give fishermen the greatest possible freedom of action in conducting business and pursuing recreational opportunities that are consistent with ensuring wise use of the resources and reducing conflict in the fishery." Under No Action, there is the greatest flexibility to participants and distribution of quota would be based on the market outcomes (though the effective function of those markets would be diminished relative to markets in a less regulated sectors—see discussion in Section 2.4.4). Each of the action alternatives would add constraints to gear switching opportunities. Alternative 1 would constrain gear switching while preserving a degree of flexibility similar to no action in that the any-gear QS would be fully transferable. Under Alternative 1 the flexibility and certainty of access would be greater than for Alternative 2, which would disperse any-gear QP across all QS accounts. Vessels would still have the same flexibility to gear switch at different levels as they would for Alternative 1, but the cost of sweeping up the necessary QP each year would be greater and there would be less certainty about their ability to do so. This reduced certainty about access to the needed QP would reduce

investment and may impact a vessels ability to get financing. Alternative 3 would preserve current flexibility so long as seasons do not shorten, as would occur if interest in gear switching exceeds 29 percent of the trawl allocation. Shortened seasons would diminish harvest flexibility, with the degree of diminishment depending on how far the seasons are shortened.

Under Alternative 1, the cost of any-gear QS/QP would likely increase and the costs of trawl-only QS/QP would go down relative to northern sablefish QS/QP under no action. Compared to no action, under Alternative 2, there could be some reduction in QS costs due to reduced demand from gear-switchers while the price of any-gear QP might increase due to the more limited supply of QP usable for gear-switching. Under Alternative 3, there could be some reduced demand and prices for sablefish QS/QP relative to no action, if there would have been substantial increases in gear switching in the absence of the 29 percent limit.

Since costs of this program are recoverable through fees on industry, the management costs may also impact future industry costs.

4.2.8 NS-8—Communities

> 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 paragraph (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.

Under No Action, communities on the West Coast would continue to be impacted by the activities of all West Coast fisheries—both commercial and recreational. Sablefish is used primarily by the commercial fisheries, with different commercial sectors employing different strategies. Communities are impacted differently based on how the sectors and deliveries are distributed among them. Some communities receive deliveries from vessels from all sablefish-dependent sectors while others receive deliveries from only one or two sectors. Under no action, fishing activity and ownership, and the related income and profits, would continue to redistribute among communities in response to changing economic and market conditions and differences in the economic health of the different sablefish dependent sectors. Other non-sablefish/non-groundfish sectors that operate in community ports could be impacted by the changes, to the degree that sectors are co-reliant on one another to provide sufficient demand to maintain services in a community. The variation in fishing activity under no action will be largest if gear switching is constraining the trawl fishery's harvest of trawl complexes and changing market conditions for fixed-gear caught sablefish cause large fluctuations in the amount of sablefish QP that trawlers are able to access (see the factors described in Section 2.5 regarding influences on gear-switching levels in the future). On the other hand, gear-switching might not constrain overall catch of the trawl complex but rather could cause a change in the composition of the catch (i.e. causes trawlers to reduce the proportion of sablefish they take in the complex) such that fixed gear caught sablefish deliveries are substituted for trawl caught sablefish. In that case the impact to communities from allowing gear switching will depend on the balance between the higher value of fixed-gear caught sablefish and the lower value of trawl-

caught sablefish. Finally, if trawlers leave sablefish QP unharvested, then the presence of gear-switching opportunity would be an overall advantage to West Coast fisheries and communities because their landings of sablefish that would otherwise go unused contribute to achieving OY relative to NS1. No Action provides the most flexibility for trawl catch share participants to fish in the manner that suits their needs amid other constraints (e.g., opportunities in and competition with other fisheries) and related activity would fluctuate among communities.

The action alternatives would affect communities in a number of ways including through changes in fishery production levels, through the redistribution of deliveries and vessels among ports as opportunities in different segments of the fleet are increased or reduced; the direct redistribution of gear-switching harvest opportunity among communities via modifications to the harvest privileges (e.g. creation of any-gear QS) or differences in seasonal opportunities; and the geographic redistribution of the QS as geographically-dispersed QS owners reconfigure their portfolios and fishing areas in response to the modification of the harvest privileges.

If gear switching is constraining trawl attainment, reducing it will result in more total fish product and economic activity, including the possibility of increased investment in infrastructure for those ports that receive trawl deliveries, particularly for DTS (see Section 7.10 for more discussion). If gear switching is not constraining, the limitation could reduce the economic benefits distributed among communities, either as fixed gear caught sablefish is replaced by trawl caught sablefish (which has a lower exvessel price than fixed gear caught sablefish) or possibly as sablefish goes uncaught (if trawlers are unable to increase their sablefish ratios sufficiently to use the sablefish no longer used by gear switchers).

With respect to changes in the pattern of deliveries among communities, the distribution of trawl and gear-switching activities among communities and community dependence and vulnerability are described in Section 10.3 and available for Council and public consideration. If gear-switching is reduced then communities more dependent on fixed gear landings are likely to be adversely impacted. Conversely, if trawl deliveries increase then communities more dependent on trawl landings will be most likely be positively impacted. Communities with both gear switched and bottom trawl landings might be able to recoup some losses from gear switching with increases in trawl landings. However, it is difficult to provide quantitative predictions of redistributions and therefore the degree to which each community would be impacted.

Beyond a reduction in gear-switching, Alternatives 1 and 2 will directly redistribute the opportunity to gear switch (the any-gear QS/QP). In response, fishing activity might be redistributed depending on the degree to which existing gear switchers are able to continue to acquire the quota they need. Currently gear switchers are thought to own the QS for about 15 percent of the sablefish north QP (Table 17) and the rest is acquired annually through the QP market. The geographic distribution of the gear switchers that would and would not access any-gear QP through the market is not possible to predict. Alternative 3 would cause some degree of redistribution of gear switching activity if gear switching would otherwise have been above 29 percent. The pattern of that redistribution would depend on the ports in which late season activity is most likely to be cut short by an early season closure of GS activity resulting from the 29 percent GS cap being attained.

Direct redistribution of the opportunity to gear switch may also cause some longer-term geographic redistribution of QS ownership. Redistribution of QS impacts communities to the degree that it changes where profits from QS ownership is spent. We can identify where individuals that might be impacted reside, but over the long-term it is more difficult to predict how QS might be redistributed. The most movement of QS might be expected under Alternative 1 in that those interested in gear-switching may increase their efforts to acquire any-gear northern sablefish QS. Under status quo, these individuals can acquire QP valid for any-gear from any QS owner. Under Alternative 1, there will be a more limited amount QP that can be acquired for gear switching and therefore potentially more uncertainty about acquiring QP. Additionally, any-gear QS/QP will be initially spread across more QSAs, increasing transaction costs and generating additional incentive for gear-switchers to consolidate the any-gear QS. These factors make it more likely that QS will be traded (redistributed) than under status quo, leading to more possibility of geographic reallocation after the initial distribution. Under Alternative 2, consolidating QS for the purpose of acquiring access to any-gear QP will be of limited value since, at most, 29 percent of the QP issued for the acquired QS would be any-gear QP. Gear-switchers who do acquire QS might seek to trade their trawl-only QP to trawlers (possibly along with some non-sablefish QP) in return for the trawlers any-gear QP. In general, there would be less incentive for QS to transfer after implementation than there would under Alternative 1. Alternative 3 is not expected to result in a noticeable redistribution of QS as compared to No Action.

4.2.9 NS-9—Bycatch

> 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.

With respect to groundfish the, shorebased IFQ program requires 100 percent catch accountability for all IFQ species, with other non-IFQ species managed via cumulative landing limits. None of the action alternatives change the bycatch minimization measures in place for the IFQ fishery. Additionally, the Council and NMFS have mitigation measures available (e.g., block area closures). Limited bycatch of non-groundfish species, including prohibited species (Dungeness crab), ecosystem component species, and other non-groundfish occurs in the IFQ program and the overall rate does not vary substantially between trawl and gear switchers (see Agenda Item G.1.b, NWFSC Report 2, September 2023). Thus, a limitation on gear switching is not expected to substantially change bycatch or bycatch mortality for non-groundfish species. There are also would not be any concerns about protected species, as indicated by the discussion in Section 7.3.

4.2.10 NS-10—Safety

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

Under No Action and Alternatives 1 and 2, participants with the necessary QPs could gear switch or trawl any time during the year when weather and sea conditions are safe. Under Alternative 3, while there may be no change to the ability to gear switch under the seasonal approach,

depending on interest, allocations, and other factors, there could safety concerns in the future if the 29 percent limit becomes constraining to interested gear switchers. While unlikely at current trawl allocation levels, in years when the OY is lower, there may be greater likelihood of a shortened season if market prices and other conditions encourage sufficient effort. For further discussion on the potential for the shift in fishing under Alternative 3, please see Section 9.3.

4.3 Other MSA Required Considerations- 303(B) (Discretionary Provisions) & MSA 303A (Limited Access Privilege Programs)

Of the numerous requirements of MSA 303(b) the following, in particular, are applicable and should be taken into account in the current action:

- present participation in the fishery;
- historical fishing practices in, and dependence on, the fishery;
- the economics of the fishery;
- the capability of fishing vessels used in the fishery to engage in other fisheries;
- the cultural and social framework relevant to the fishery and any affected fishing communities
- the fair and equitable distribution of access privileges in the fishery

In the next draft of this document, impacts and Council discussion on these issues will be summarized in this section.

The MSA 303A section on allocation, in its entirety, is as follows:

303A(5) ALLOCATION.—In developing a limited access privilege program to harvest fish a Council or the Secretary shall—

(A) establish procedures to ensure fair and equitable initial allocations, including consideration of—

(i) current and historical harvests;

(ii) employment in the harvesting and processing sectors;

(iii) investments in, and dependence upon, the fishery; and

(iv) the current and historical participation of fishing communities;

(B) consider the basic cultural and social framework of the fishery, especially through—

(i) the development of policies to promote the sustained participation of small owner-operated fishing vessels and fishing communities that depend on the fisheries, including regional or port-specific landing or delivery requirements; and

(ii) procedures to address concerns over excessive geographic or other consolidation in the harvesting or processing sectors of the fishery;

(C) include measures to assist, when necessary and appropriate, entry-level and small vessel owner-operators, captains, crew, and fishing communities through set-asides of harvesting allocations, including providing privileges, which may include set-asides or allocations of harvesting privileges, or economic assistance in the purchase of limited access privileges;

(D) ensure that limited access privilege holders do not acquire an excessive share of the total limited access privileges in the program by—

(i) establishing a maximum share, expressed as a percentage of the total limited access privileges, that a limited access privilege holder is permitted to hold, acquire, or use; and

(ii) establishing any other limitations or measures necessary to prevent an inequitable concentration of limited access privileges; and

(E) authorize limited access privileges to harvest fish to be held, acquired, used by, or issued under the system to persons who substantially participate in the fishery, including in a specific sector of such fishery, as specified by the Council.

4.4 Groundfish FMP Goals and Objectives

The following are the goals and objectives of the FMP that the Council will consider in its deliberations. Once a PPA is selected, the analysis related to each will be summarized in this section.

Goal 1 – Conservation.

Prevent overfishing and rebuild overfished stocks by managing for appropriate harvest levels and prevent, to the extent practicable, any net loss of the habitat of living marine resources.

Goal 2 – Economics.

Maximize the value of the groundfish resource as a whole.

Goal 3 – Utilization.

Within the constraints of overfished species rebuilding requirements, achieve the maximum biological yield of the overall groundfish fishery, promote year-round availability of quality seafood to the consumer, and promote recreational fishing opportunities.

Conservation Objectives

- Objective 1 – Maintain an information flow
  Maintain an information flow on the status of the fishery and the fishery resource which allows for informed management decisions as the fishery occurs.

- Objective 2 – Harvest Specifications, Management Measures, and Capacity.
  Adopt harvest specifications and management measures consistent with resource stewardship responsibilities for each groundfish species or species group. Achieve a level of harvest capacity in the fishery that is appropriate for a sustainable harvest and low discard rates, and which results in a fishery that is diverse, stable, and profitable. This reduced capacity should lead to more effective management for many other fishery problems.

- Objective 3 – Rebuilding

For species or species groups that are overfished, develop a plan to rebuild the stock as soon as possible, taking into account the status and biology of the stock, the needs of fishing communities, recommendations by international organizations in which the United States participates, and the interaction of the overfished stock within the marine ecosystem.

- Objective 4 – Impacts to Non-Groundfish Species
  Where conservation problems have been identified for non-groundfish species and the best scientific information shows that the groundfish fishery has a direct impact on the ability of that species to maintain its long-term reproductive health, the Council may consider establishing management measures to control the impacts of groundfish fishing on those species. Management measures may be imposed on the groundfish fishery to reduce fishing mortality of a non-groundfish species for documented conservation reasons. The action will be designed to minimize disruption of the groundfish fishery, in so far as consistent with the goal to minimize the bycatch of non-groundfish species, and will not preclude achievement of a quota, harvest guideline, or allocation of groundfish, if any, unless such action is required by other applicable law.

- Objective 5 – EFH
  Describe and identify EFH, adverse impacts on EFH, and other actions to conserve and enhance EFH, and adopt management measures that minimize, to the extent practicable, adverse impacts from fishing on EFH.

Economic Objectives

- Objective 6 – Net Economic Benefits
  Within the constraints of the conservation goals and objectives of the FMP, attempt to achieve the greatest possible net economic benefit to the nation from the managed fisheries.

- Objective 7 – Year-Round Marketing

  Identify those sectors of the groundfish fishery for which it is beneficial to promote year-round marketing opportunities and establish management policies that extend those sectors fishing and marketing opportunities as long as practicable during the fishing year.

- Objective 8 – Use of Gear Restrictions

  Gear restrictions to minimize the necessity for other management measures will be used whenever practicable. Encourage development of practicable gear restrictions intended to reduce regulatory and/or economic discards through gear research regulated by EFP.

Utilization Objectives

- Objective 9 – Full Utilization
  Develop management measures and policies that foster and encourage full utilization (harvesting and processing), in accordance with conservation goals, of the Pacific Coast groundfish resources by domestic fisheries.

- Objective 10 – Management by Species/Species Groups and Gear
  Recognize the multispecies nature of the fishery and establish a concept of managing by species and gear or by groups of interrelated species.

- Objective 11 – Bycatch and Discard Mortality Minimization and Monitoring
  Develop management programs that reduce regulations-induced discard and/or which reduce economic incentives to discard fish. Develop management measures that minimize bycatch to the extent practicable and, to the extent that bycatch cannot be avoided, minimize the mortality of such bycatch. Promote and support monitoring programs to improve estimates of total fishing-related mortality and bycatch, as well as those to improve other information necessary to determine the extent to which it is practicable to reduce bycatch and bycatch mortality.

Social Factor Objectives

- Objective 12 – Equity
  When conservation actions are necessary to protect a stock or stock assemblage, attempt to develop management measures that will affect users equitably.

- Objective 13 – Gear Conflicts
  Minimize gear conflicts among resource users.

- Objective 14 – Least Disruption of Fishing, Marketing and Environment
  When considering alternative management measures to resolve an issue, choose the measure that best accomplishes the change with the least disruption of current domestic fishing practices, marketing procedures, and the environment.

- Objective 15 – Small Entities
  Avoid unnecessary adverse impacts on small entities.

- Objective 16 – Communities
  Consider the importance of groundfish resources to fishing communities, provide for the sustained participation of fishing communities, and minimize adverse economic impacts on fishing communities to the extent practicable.

- Objective 17 – Safety
  Promote the safety of human life at sea.

4.5 RIR Summary and Cost Benefit Analysis

4.5.1 Elements of the RIR and Their Location in this Document

The RIR is intended to assist the Councils and NMFS in selecting the regulatory approach that maximizes net benefits (including potential economic, environmental, public health and safety,

and other advantages; distributive impacts; and equity), unless a statute requires another regulatory approach.

The required elements of the RIR and the location in this document

- Statement of the Problem.....See Section 1
- Description of the fishery and other affected entities .....See Section 2.0
- Description of the management goals and objectives .....See Section 4.4
- Description of the Alternatives.....See Section 3.0
- Cost-Benefit Analysis of the Action Alternatives .....See Section 4.5.2

4.5.2 Cost Benefit Analysis

A cost benefit analysis will be provided in Supplement Attachment 4.

4.6 Initial Regulatory Flexibility Analysis Summary

To be completed as needed after selection of PPA.

4.7 Other Applicable Law Summary

To be completed as needed after selection of PPA.

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7.0 APPENDIX: DETAILED ANALYSIS OF IMPACTS

7.1 Approach to Analysis of Impacts

7.1.1 Challenges

While a considerable amount of analysis can be done to inform this action, there are areas in which the analysis will be limited. The following is a brief overview of some of the challenges in relation to important questions that must be considered in the analysis.

How much gear switching would occur under no action and the action alternatives?

> Due to changing conditions in fisheries and markets and limited projection models, making reasonable forecasts of the expected levels of gear switching under the alternatives will be difficult. For the no action alternative, the analysis will discuss reasons that gear switching levels might increase or decrease in the future, relative to baseline conditions. Depending on what would have happened under No Action, the impacts of the action alternatives will vary. For the action alternatives, the analysis will identify the maximum levels of gear switching possible and reasons that the actual levels of gear switching might fall below those maximums. Scenarios for different future conditions will be used to assess the impact differences between the alternatives.

Projecting redistribution of gear switching and trawl activities along the coast.

As was the case for the original Amendment 20 analysis, it is difficult to predict how geographic distributions would change under no action and the impacts of the action alternatives on those distributions. In this regard, the analysis is limited to a qualitative discussion supported by quantitative information identifying the areas in which trawl and gear switched landings have occurred and the relative importance of those landings in those areas.

The degree of specific port[23] activity and dependence on gear switching and trawl landings.

Information on the geographic distribution of the fishery is limited due to the relatively small number of first receivers and the requirement to maintain confidentiality (i.e. the "rule of three"). In order to provide finer levels of geographic disaggregation, multi-year time periods that include more first receivers are sometimes used, however, this limits our ability to provide information on trends in a port. Therefore, trends and other information must often be presented at higher levels of aggregation (such as a port group or region) from which it is difficult to infer what is happening in the ports with fewer first receivers.

The degree of change to QP prices (sablefish and other species) as a result of the action alternatives.

During the SaMTAAC discussions, there were requests for information on the likely effect of proposed actions on prices of sablefish QP, as well as the QP for other species. Models for making such predictions are limited and because of the uncertainties described above, predictions are difficult. Analysis of effects on prices will likely be qualitative and provided in the context of scenarios.

The impact of near future historic high ACLs and allocations.

Recent forecasts of sablefish models are projecting historic high ACLs and allocations in the near term, potentially more than triple what has been seen in the recent biennia. As described above for the amount of gear switching under no action or action alternatives, the level of gear switching and whether gear switching is a potential constraint to trawl activities is uncertain in these future climates. When ACLs are high encounter rates in all trawl complexes will also impact the degree to which sablefish is a constraint on the harvest of particular complexes and whether the amounts use by gear-switchers add to the constraint.

[23] Specific port level means, for example, Crescent City, rather than the Eureka port area or northern California, of which Crescent City is a part.

7.1.2 Analytical Scenarios and Short- and Long-Term Impacts

The analysis of No Action and the three action alternatives will consider scenarios in which gear switching is and is not displacing trawl gear catch and how trawl vessels may or may not respond to increased sablefish availability. The scenarios are:

1. Gear switching is constraining harvest of trawl complexes.
2. Gear switching is not constraining harvest of trawl complexes but is constraining trawler use of sablefish QP (i.e., trawlers are avoiding sablefish).
3. Gear switching is not constraining harvest of trawl complexes and sablefish QP would go unused if gear switchers were not present.

The scenario approach will be applied primarily with the short-term analysis, but the issue of whether or not gear switching is constraining the trawl fishery will also be addressed in the analysis of the long-term impacts.

Additionally, as the overall amount of sablefish also affects fishing activity and interacts with the scenarios described above on gear switching constraining or not constraining trawl activity, this analysis looks at three baseline years- 2013, 2019, 2021- in the short term analysis. These years represent the lowest allocation since the start of the IFQ program (2013), the highest level of gear switching under a higher allocation (2019), and the maximum allocation in the time series (2021; as of the time this analysis was developed in April 2021).

Overall, the level of gear switching that would be permitted versus what may actually occur under each of the alternatives will be dependent on the design of the gear switching mechanism (i.e. QPs, permit endorsements), whether gear switching is a limiting factor to trawl attainment, as well as the other factors described in Section 2.5 above.

7.2 Physical Environment Impacts

Effects of groundfish fishing gears, both trawl and non-trawl, are described in Appendix C to the Groundfish FMP. For most habitat types, historical studies used in the groundfish EFH review show that bottom trawl impacts are greater than fixed gear impacts and have a more extensive recovery time (see Table 3 Part A and Table 3 Part B in Appendix C). Recent studies (described on page 11 of Appendix C) have shown significant reduction in the impacts though, primarily due to gear modifications put into place by trawl vessels. Overall, impacts to the physical environment under No Action or any of the action alternatives will depend on the degree to which there is a change in effort to trawl gear from fixed gear. Under the action alternatives, there is likely minimal overall change to occur and therefore all impacts are expected to be within those described in the biennial harvest specifications and management measures EA at the time of implementation. Furthermore, the Council has identified several EFH conservation areas (EFHCAs) that prohibit the use of bottom trawl or bottom contact (i.e., trawl or fixed gear) from being fished in order to protect sensitive habitats. In 2019, the Council expanded the scope of several bottom trawl EFHCAs through Amendment 28, including areas that were to be opened with the removal of the trawl rockfish conservation area off Oregon and California.

7.3 Biological Impacts

7.3.1 Fishery Resources

For sablefish, it is likely that impacts to the stock resulting from changes in the gear used to harvest it would be similar to No Action under any of the action alternatives in the short and long term. Two previous analyses by former stock assessment teams (2011 and 2019) showed similar depletion results whether 100 percent of the trawl allocation was taken by trawl or fixed gear. In 2011, under the base case, the preliminary conclusion was that there was little difference in the depletions of the two catch scenarios. Working with the 2019 sablefish stock assessment team, this analysis was redone using the 2019 base case and produced similar results. (*SaMTAAC Agenda Item E.2, Analysis, Table 22, October 2019)* While there was an update assessment in 2021 and an expedited limited update in 2023, the analysis was not reproduced as of the drafting of this document.

As gear switching participants primarily target sablefish (see Table 2 of Agenda Item F.4, Attachment 1, April 2021), any impacts to groundfish species other than non-sablefish would be a factor if gear switching is limiting trawl activity. If gear switching is limiting and trawl activity increases due to increased access to sablefish, it is likely that these other groundfish species would see an increase in mortality. If gear switching is not limiting trawl attainment and there is not a corresponding increase in trawl activity through a reduction in gear switching, there would likely be negligible impacts to these other groundfish species. Regardless, because all groundfish species are managed with QPs (for IFQ species) or trip limits (non-IFQ species), it is expected that all mortality will be within those impacts disclosed in the appropriate environmental assessment for the harvest specifications of the year of implementation.

7.3.2 Other Biological Resources

Trawl and non-trawl gears typically interact with different protected and prohibited species. Trawl gears tend to interact with salmon and eulachon while non-trawl gears have the potential to interact with whales, turtles, and seabirds. Therefore, action alternatives that change the relative amounts of trawl and non-trawl effort within the IFQ sector may have some impact on protected and prohibited species that differ from status quo. A preliminary evaluation indicates that there is not substantial reason for concern about the impacts to prohibited and protected species from the effects of the action alternatives on the relative amounts of trawl and non-trawl effort.

If gear switching is a limiting factor to trawl attainment and gear switching is reduced, leading to an increase in trawl activity, there could be increases in interactions with salmon and eulachon. The groundfish fisheries currently operate under the 2017 BiOp for salmon, which includes thresholds for both the non-whiting and whiting sectors for coho and Chinook salmon. Since 2017, the non-whiting sector has been well within its thresholds (average of 13.9 percent for Chinook and 25.4 percent from 2017-2021[24]). Even if bottom trawl activity were to increase with a decrease in gear switching activity, it is likely that the bycatch would stay within the thresholds given recent bycatch totals and the Council's ability to institute inseason mitigation

[24] Includes 500 Chinook salmon and 138 coho salmon assumed mortality for non-trawl fisheries.

measures such as block area closures and gear restrictions (e.g., requirement to use selective flatfish trawl gear). Gear switching vessels in the IFQ sector had no recorded salmon bycatch from 2017-2022 (IFQ021 Report). Of all the groundfish fisheries, bottom trawl fisheries have historically, in most years, had the highest observed amount of bycatch of eulachon across the groundfish sectors, but the fisheries have been within the ITS limit (Agenda Item H.6.a, GESW Report 1, June 2023). It is important to note that "Based on the overall magnitude of bycatch in U.S. West Coast groundfish fisheries, either there is limited interaction with eulachon in these fisheries or most eulachon encounters result in fish escaping or avoiding trawl gear". There is also limited interactions for green sturgeon with the trawl fishery, but again, the fishery has been within the take limits.

For those species typically encountered by non-trawl gear types, if gear switching is reduced through an action alternative, there could be potential benefits to select protected and prohibited species. IFQ gear switchers typically target sablefish with the use of pot or longline gears, which are likely to have increased interactions with whales and some seabirds compared to trawl gears. Relative to this analysis and up to the time it was produced, vessels participating in the IFQ gear switching fishery have had no recorded whale encounters. While less than one percent of all recorded whale entanglements are attributed to the sablefish fishery from 2012-2022 (NOAA Fisheries, West Coast Entanglement Program), there are efforts to further reduce entanglements with whales and identify gear and sectors associated with those entanglements (see Agenda Item G.4.a, Attachment 2, September 2023 for more details). In terms of seabird bycatch, hook-and-line vessels overall see higher rates of encounters and mortalities than trawl fisheries, and pot gear fisheries show the lowest percentage of encounters (Jannot, et. Al 2021). Given that gear switching vessels primarily use pot gear, there is likely little change in impacts.

In terms of impacts that might distinguish between the action alternatives, the timing and area of gear switching activity could change depending on the mechanism used to limit it and other factors that influence when the gear switching may occur. As described in Section 4.1.2(d), Alternatives 1 and 2 would allow gear switching participants to operate when and where they wish—as long as they had the sufficient any-gear QPs to harvest sablefish. Under Alternative 3 though, there is the potential for regulation driven shift in timing and area of catch depending on whether changes in fishing behavior and conditions result in the season significantly shortening. Section 9.3 provides some details on the seasonality of the fishery and how seasonality might change under changing fishery conditions. At this time, there is not enough information to definitively distinguish between Alternative 3 and the other action alternatives based on biological impacts, but if Alternative 3 is selected as a PPA, a more in-depth evaluation will be conducted.

While the alternatives may result in minor changes to protected species encounters depending on the degree to which effort changes from status quo in terms of trawl and gear switching, fishing activities would still be monitored by NMFS and the PFMC, and vessels would still be subject to mitigation measures. In addition, the Endangered Species Workgroup would continue to report biennially on the status of the fisheries compared to current BiOps.

7.4 Overall Trawl Fishery Harvest, Exvessel Revenue and Attainment

The impacts to trawl fishery harvest, ex-vessel revenue, and attainment will be directly affected by the selection of an action alternative and strongly depend on whether or not gear switching is limiting trawl attainment. Reductions in gear switching could impact trawl attainment in the short term over a range of allocation levels and under different scenarios. The following analysis is an update of the analysis presented in Agenda Item F.4, Attachment 1, April 2021. Specifically, this analysis examines scenarios that consider:

- ACL range (2013, 2019, 2021)
- Levels of gear switching (0, 12, 20, 29 percent)
- Is gear switching limiting vs. not limiting trawl attainment?
- If gear is limiting and trawlers were able to utilize the sablefish, what would the result be if DTS absorbed the sablefish versus all competing strategies (DTS, flatfish, mixed slope, mixed shelf)?

The first part of this section will provide an analysis of the short- and long-term impacts of a reduction in gear switching (independent of the specific action alternative selected); and the second part will discuss the impacts of the alternatives and where the impacts may fall within the analyzed range under the various scenarios.

7.4.1 Short Term Impacts: Gear Switching Scenarios

7.4.1(a) Assumption: Gear switching is constraining trawlers and trawlers do not change their species mix.

If gear switching is limited by an action alternative and trawlers are able to increase their harvest of trawl complexes but do not change the mix of species in their catch, the change in total ex-vessel revenue for the trawl sector (including changes for both gear switchers and trawl vessels) would be positive and vary depending on the level to which gear switching is constrained (Table 24). For this analysis, it is assumed that the newly available sablefish QP are spread across those trawl strategies that are likely to be most in competition with gear switching for sablefish QP. While DTS is the strategy most likely to be competing, changing conditions could also bring mixed shelf, mixed slope, and flatfish into that competition (see 2.4.5). For a complete description of methods, see Agenda Item F.4, Attachment 1, April 2021 (page 53). As an example, if all 2 million pounds of gear switched sablefish taken in 2019 were instead redistributed across the identified trawl strategies, and markets are able to absorb the additional trawl landings, it could have resulted in an increase of approximately 20.4 million pounds of non-whiting trawl landings. In 2019, this would represent an approximate increase of 7.3 percentage points in overall non-whiting attainment (increasing attainment to 32.4 percent). Assuming that market prices remained stable and applying the average revenue per metric ton for each strategy, this hypothetical would result in additional annual revenue of $10.1 million ($2022), which would be 2.5 times greater than the ex-vessel revenue from the gear switched fishery in 2019 (Table 24).

Table 24. Summary of changes under gear switching levels applied retroactively to 2013, 2019, and 2021, ***assuming gear switching is constraining trawl harvest and trawlers do not change their species mixes in response to changing sablefish availability***. Changes in landings (millions of lbs) and revenue (millions of $2022 dollars) for gear switching, non-whiting trawl competitive strategies, and overall net change. Change in non-whiting trawl attainment. Grey rows indicate where actual gear switching levels were already below the proposed gear switching level.

Baseline Year	GS Level	Gear Switching a/		Non-Whiting Trawl b/		Net Change		Change in Non-Whiting Trawl Attain.
		Lbs (millions)	Rev (millions)	Lbs (millions)	Rev (millions)	Lbs (millions)	Rev (millions)	
2013	29							
	20	-0.2	-$0.4	2.0	$1.5	1.8	+$1.1	+1.5%
	12	-0.5	-$1.4	6.2	$4.8	5.7	+$3.4	+4.5%
	0	-1.0	-$2.8	12.4	$9.6	11.5	+$6.8	+9.1%
2019	29	-0.3	-$0.7	3.5	$2.5	3.2	+$1.8	+1.3%
	20	-0.9	-$1.8	8.8	$6.2	7.9	+$4.4	+3.2%
	12	-1.3	-$2.8	13.4	$9.5	12.1	+$6.7	+4.7%
	0	-2.0	-$4.3	20.4	$14.4	18.4	+$10.1	+7.3%
2021	29							
	20							
	12	-0.5	-$0.7	4.2	$2.6	3.8	$1.9	+1.5%
	0	-1.3	-$1.9	11.7	$7.3	10.4	$5.4	+4.3%

Internal Reference:Hypothetical Revenue Exercise September 2023rmd

7.4.1(b) Assumption: Gear switching is *not* constraining trawlers and trawlers do change their species mix.

As discussed in 2.4.5, if gear switching is not displacing trawl but is reduced under an action alternative, it is likely that trawlers could increase the proportion of sablefish in their species mixes assuming they are making a profit on their sablefish catch (independent of revenue from co-occurring species) and there is not a technical or market limit. In that case, trawlers will likely change their species mix to use the sablefish QP no longer usable by gear switchers, leading to an increase in the revenue per mt for the complex. Table 25 shows the range of gear switching levels and the range of revenue per mt that would hypothetically have occurred under a weighted average of the competitive non-whiting strategies, assuming 2019 non-sablefish catch composition and exvessel prices.

Table 25. Range of actual revenue per metric ton of trawl landings in strategies competitive to gear switching in 2019 and the hypothetical revenue per metric ton if gear switching were reduced to 0, 12, 20, or 29 percent retroactively, trawlers increased their utilization of sablefish, and average price per pound was maintained.

Gear Switching Level	Actual Revenue per MT	Hypothetical Revenue per MT With Increased Proportion of Sablefish
29%	$1279-$1536	$1292-$1541
20%		$1312-$1548
12%		$1329-$1554
0%		$1353-$1564

To provide a comparison to Table 24 in terms of the change in revenue associated with this scenario, Table 26 below assumes that the sablefish previously taken by gear switching vessels in each baseline year/gear switching level scenario is now taken by competitive trawl strategies- but those vessels do not change their other species mix (i.e., they increase the sablefish ratio in their catch). In other words, there is no change in the total amount of trawl sector landings or attainment for any species, but given the price differential between fixed gear and the competitive trawl strategies, this would result in an overall net loss in ex-vessel revenue for the fleet.

Table 26. Summary of changes under gear switching levels applied retroactively to 2013, 2019, and 2021, ***assuming gear switching is not constraining trawl harvest and trawlers change their species mixes in response to changing sablefish availability***. Changes in landings (millions of lbs) and revenue (millions of $2022 dollars) for gear switching, non-whiting trawl competitive strategies, and overall net change. Change in non-whiting trawl attainment. Grey rows indicate where actual gear switching levels were already below the proposed gear switching level.

Baseline Year	GS Level	Gear Switching a/		Non-Whiting Trawl b/		Net Change		Change in Non-Whiting Trawl Attain.
		Lbs (millions)	Rev (millions)	Lbs (millions)	Rev (millions)	Lbs (millions)	Rev (millions)	
2013	29							
	20	-0.2	-$0.4	0.2	0.3	0	-$0.1	0
	12	-0.5	-$1.4	0.5	1.0	0	-$0.4	0
	0	-1.0	-$2.8	1.0	1.9	0	-$0.9	0
2019	29	-0.3	-$0.7	0.3	0.4	0	-$0.3	0
	20	-0.9	-$1.8	0.9	1.0	0	-$0.8	0
	12	-1.3	-$2.8	1.3	1.6	0	-$1.3	0
	0	-2.0	-$4.3	2.0	2.4	0	-$1.9	0
2021	29							
	20							
	12	-0.5	-$0.7	0.5	0.4	0	-$0.3	0
	0	-1.3	-$1.9	1.3	1.0	0	-$0.9	0

Internal Reference:Hypothetical Revenue Exercise September 2023rmd

7.4.1(c) Assumption: Gear switching is *not* constraining trawlers and trawlers do *not* change their species mix.

If gear switching is not constraining and for some reason trawlers do not change their species mix to utilize the additional QP, then the reduced revenue from the gear switching limitation would be a net loss to the fishery (see the gear switching columns of Table 24). If this were to occur and were caused by an inability of trawlers to make a profit from their sablefish catch (not including revenue from co-occurring species), it would likely be a short-term phenomenon because sablefish QP prices would be expected to drop to levels at which trawlers were able to make a profit and so would buy and use the surplus sablefish QP. On the other hand, if not all sablefish QP were used because of a technical constraint in trawlers ability to land a higher proportion of sablefish or because the market could not take more trawl caught sablefish, then sablefish QP might go unused over a longer period.

7.4.2 Long Term Impacts

Long-term impacts associated with a change in gear switching levels are most likely to be associated with changes in investment. However, impacts caused directly by the regulatory changes may occur over a longer time frame if certain provision(s) phase in, depending on the alternatives used to limit gear switching. For example, Alternative 2 phases down the potential amount of gear switching under QP Distribution Option 2. As with the short-term impacts discussed above, the effects of gear switching reductions phased in over the longer term will depend on whether gear switching is a constraint to trawl vessels and the nature of the constraint.

If gear switching is displacing trawl harvest, or there is a concern that it might become a more substantial constraint in the future, then it might be creating uncertainty about trawler access to sablefish QP. If that uncertainty exists, it would constitute a risk that could inhibit some investments in more efficient processing equipment and marketing. Those investments, that would be foregone, might have otherwise increased the competitiveness of the trawl harvest of species like Dover sole, thus allowing for the expansion of trawl production (see discussion in Sections 2.4.2 and 2.4.4(a)). A example of this might be the potential investment by processors in fillet machines that can expedite the processing of trawl caught groundfish. In November 2020, public comment by Pacific Seafoods noted that they have acquired both a rockfish and flatfish filleting machine. These machines "can filet fish at the same quality and recovery rate as compared to a hand cut filet. Both machines are a first of their kind ever on the West Coast." However, each machine is a $5 million investment. Some new Dover sole processing equipment has now been installed in Westport. Processors have stated that without certainty of sablefish availability to the trawl gear users, it is difficult to make investments as the production might not be sufficient to offset the costs. Larger already highly capitalized companies might find this to be less of a barrier than smaller ones. In other segments of the economy, uncertainty about supply lines for key production inputs is often handled through vertical integration, but the ability to vertically integrate in the IFQ program is limited by QS control limits (see Section 2.4.4). Also, even if gear switching is limited, for someone investing in processing Dover sole or species from other trawl strategies, there will continue to be some uncertainty associated with competition for sablefish QP between different trawl strategies (for example, increasing utilization of sablefish by whiting and other trawl strategies discussed in Section 2.4.5).

There may be existing businesses that are dependent on leasing quota to gear switchers for part of their revenue stream and a reduction of that revenue stream could affect their investments over the long-term. Businesses unable to continue to lease might continue to operate as long as they are covering operating costs, but reduced revenue streams might alter their ability to make the reinvestments necessary to maintain their businesses over the long run. Similar impacts on long-term investment and business longevity could occur for fishing operations that gear switch.

Changes in investment also impact a community's workers and fishing infrastructure. Investments in automated filleting equipment reduces manual filleting jobs, replacing them to greater or lesser degrees with other kinds of labor associated with maintaining the equipment and a higher throughput of product.

Where there are declines in investment, there is always a concern that a related decline in fishing activity will critically affect the maintenance of infrastructure that other fisheries also depend on. Depending on circumstances in a particular port, a limitation on gear switching could increase or decrease total fishing activity or redistribute activity among communities—thereby having local effects that are different from coastwide effects.

7.4.3 Alternative Specific Impacts

Under the action alternatives, gear switching would be capped at 29 percent or less of the allocation, but the actual gear switching level, and therefore the amount available to be used by trawlers, would be influenced by the design of the alternative and options selected. Section 4.1.2(a) summarizes the likelihood that gear switching under each alternative would reach 29 percent. This section includes how gear-switching opportunity would be distributed among participants. An criteria for this distribution that varies among options is the unit that is evaluated to determine qualification. Differences among the alternatives in this regard are discussed in Section 8.2.1.

7.4.3(a) Alternative 1

For Alternative 1, the initial allocation of the any-gear QS amongst QS holders would likely impact how any-gear QP is used or sold over the short run. Over time, there is a likelihood that any-gear QS might be consolidated among fewer participants—most likely those that gear switch. QP issued for any-gear QS owned by gear switching participants is likely to be used for gear switching while QP issued to other entities is more likely to be subject to acquisition by either gear switchers or trawlers.

Qualified GS participants would receive all of their QS as any gear (up to the amount owned on the control date) under Conversion Option 1 and either 100 percent or 50 percent as any gear under Conversion Option 2. Gear switching participants are estimated to receive approximately 16 percent of the any-gear QS under GS Participation Option 1 and just under eight percent under GS Participation Option 2 (Table 27). Under Conversion Option 2, they would receive an intermediate amount. For most of the remaining any-gear QPs, there are two factors that would drive the likelihood that they would be transferred to gear switchers so that gear switching would reach 29 percent (or 1.8 million pounds)—the accumulation of any-gear QPs inseason (short term) and any-gear QS (long term). The non-gear-switching participation option selected would influence the number of entities with which gear-switching participants would need to trade or

purchase, with Non-Gear Switching Participant Option 1 having the any-gear QS spread across more accounts than Option 2 (see Table 49 in Section 9.1). Rather than acquiring QS, participants could increase the likelihood of attaining the maximum gear switching allowance through inseason transfer of any-gear QPs—however, this effort would require many trades each year. For example, under No Action, some gear switching entities may have long-term relationships to trade non-whiting QPs for sablefish QPs. Depending on the options, those QP trades may no longer be possible—at least at the historical levels—as non-gear-switching participants would receive only some any-gear QS (see Section 7.8.2(b)). Thus, participants would have to seek out new, and likely a greater number, of willing trading partners. However, if gear switching participants acquire any-gear QS, it would increase the likelihood of attaining the gear switching allowance over the long term.

Table 27. Amount of any-gear QS and corresponding QPs (including AMP) that GS and non-GS Participants would receive under QP Split Options, Conversion Options, and GS Participation Options for Alternative 1. Note- first receiver sub option qualifiers included.

Conversion Option	GS Participation Option	GS Participant		Non-GS Participant	
		QS	QPs	QS	QPs
		QP Split Option 1 (71% trawl only, 29% any gear)			
Option 1	GS Option 1	21.1	23.4	5.0	5.6
	GS Option 2	9.1	10.1	17.0	18.9
Option 2	GS Option 1/2	16.3	18.1	9.8	10.9
		QP Split Option 2 (74% trawl only, 26% any gear in 2021)			
Option 1	GS Option 1	21.1	23.4	2.3	2.6
	GS Option 2	9.1	10.1	14.3	15.9
Option 2	GS Option 1/2	16.3	18.1	7.1	7.9

Assuming gear switching is constraining and trawl vessels were able to utilize the available QPs for harvest of target complex species, the level of gear switching could be less than the amount of any-gear QP issued because either non-gear switching participant QS owners may not be willing to sell the any-gear QP or because of the transaction costs related to sweeping up all of the any-gear QP from many QSAs. While the majority of non-qualifying accounts are likely associated with trawlers, in some cases, QS accounts may be affiliated with non-fishermen or gear-switchers that did not qualify. If GS participants were unable to acquire more QS through purchase or QPs through leasing from these other any-gear QS owners, then there could be a reduction in the amount of gear switching to levels well below the total amount of any-gear QS available. Under GS Participation Option 1, approximately 23 percent of the QP would be expected to go to gear switchers and be used by them to gear switch. The amount of other any-gear QP that would find its way to gear switchers is uncertain. Depending on the year and other factors, this could result in an overall reduction of gear switching and increase in trawl harvest at levels at amounts between the 20 and 29 percent rows of Table 24. For GS Participation Option 2, which would allocate 10.1 percent of the QPs to GS participants, the results could be between the 0 and 12 percent rows. Conversion Option 2 could result in impacts between the 12 and 20 percent rows.

Assuming that at prevailing QP prices gear-switchers acquire all of the any-gear QP they need from non-gear switchers (or acquire the any-gear QS) (see section 2.5.7), then whether they

reach 29 percent would likely dependent on the total amount of the sablefish allocation and sablefish prices. For example, if ACLs continue to be at higher than historic levels (i.e., exceeding 2019 and 2021), the amount of QP gear switchers have used historically might be less than 29 percent under Alternative 1 or No Action, suggesting that this alternative might not reduce gear switching harvest from historical levels. Under the assumption that gear switching is constraining trawl activity, to the degree that gear-switchers do not acquire all the any-gear QP, there would be that much more available for trawlers. If trawlers are unable to expand their harvest of the complex but able to change their species mix to take the additional sablefish QPs being made available, they could increase their revenue per metric ton (as shown in Table 25), so long as they can take the additional sablefish at a profit. This scenario could result in a small decrease in the overall net revenue of the fishery compared to the scenario in which trawlers increase their landings on co-occurring species, depending on the allocation and GS participation option, but no change in the overall attainment. For example, under GS Participation Option 1 in conditions like were exhibited in 2019, the loss in revenue would be estimated between the 20 and 29 percent level (i.e., between $300,000 and $800,000).

If gear switching is not constraining and gear switching participants do not acquire the any-gear QS held by non-gear switchers or are unable sweep up the rest of the any-gear QPs, then impacts would likely be similar to the levels of the any-gear QPs held by the gear switching participants. As an example, under GS Participation Option 1 where 23 percent of the QPs are thought to be owned by qualifiers, there would be a loss of revenue to gear switchers of approximately $1.4 million under 2019 conditions (Table 26). Depending on the response of trawlers to the availability of any-gear QP (i.e., increases in trawl harvest of sablefish or no additional harvest of sablefish), then there would be a net loss to the trawl sector in revenue.

7.4.3(b) Alternative 2

For Alternative 2, the likelihood of attaining the gear-switching allowance will depend on the initial any-gear QP distribution to legacy participants and the ability of interested gear switching participants to accumulate any-gear QPs from across the other accounts to which it is distributed. Under all options, any-gear QPs issued to legacy participants will likely be used for gear switching (12.6 percent). For both QP Distribution Options, the remaining any-gear QPs would be spread across QS owned by non-legacy participants (for percentages, see Table 50). While historic gear-switching participants (including non-qualifiers) would likely accumulate additional any-gear QPs, given the number of QS accounts across which any-gear QP would be distributed, it is likely that the maximum level allowed would not be attained. Previous analysis on the SaMTAAC QP alternative shows an example of the number of QS accounts from which any-gear QPs would have to be acquired in order to reach the maximum (Agenda Item C.5., Attachment 3, September 2021).

If legacy participants are unable to acquire additional QPs inseason (or limited QPs inseason) and that available sablefish is used by trawling participants to harvest additional co-occurring species, it is likely that impacts could be similar to those presented in the 12 percent rows in Table 24. However, if trawlers only harvest the additional sablefish and do not increase their take of other species, there would likely be a loss in revenue and no change in overall attainment (12 percent rows in Table 26). If trawlers are unable to utilize that additional sablefish, it could

result in revenue losses of $700,000 to $2.4 million depending on the sablefish price per pound and other conditions.

Over time as legacy status expires (see discussion in Section 4.1.1(c)), the likelihood of reaching the maximum gear switching amount would decline, as the remaining any-gear QPs would be distributed proportionally across all non-legacy accounts under QP Distribution Options 1 and 2. Under Alternative 1, over the long-term, it is likely gear switchers could consolidate any gear QS, increasing the likelihood that gear switching levels approach 29 percent. As described in Table 23, under Alternative 2 the maximum amount of QS (3%) any entity could own or control would give them access to less than one percent of the any-gear QPs. While operations could have business arrangements with multiple QSAs to fund their vessels gear switching operations, it is likely that it would require several transactions to accumulate sufficient QPs to gear switch (depending on the size of the operation).

7.4.3(c) Alternative 3

Under Alternative 3, participants could buy, sell, and trade QS or QPs as under No Action. Therefore, the amount of gear switching will primarily be driven by the factors that influence gear switching levels under No Action but capped by the seasonal limit. There would be no limitations on an individual vessel's gear switching outside of the annual vessel limit (4.5 percent). Gear switching attainments have averaged 29 percent **of the trawl allocation** from 2011-2022, with six of twelve years exceeding 29 percent. As a reminder, the 29 percent gear switching limitation was based on the average gear switched percentage **of the total available pounds** (allocation + surplus carryover) between 2011-2016 (i.e., full years prior to the control date). If market conditions were positive and the allocations were at a level where the fleet capacity is sufficient, then it is likely that the 29 percent maximum would be reached. If those conditions were similar to 2019 and gear switching was at 35 percent for example, this could result in a hypothetical lost opportunity described in the 29 percent row of Table 24 for gear switchers. If trawlers were able to utilize that available sablefish to harvest other co-occurring species or just the sablefish, the impacts may be similar to those in the 29 percent row for 2019 in Table 24 and Table 26, respectively. However, if conditions were similar to recent years, then its likely that the 29 percent maximum would not be reached. Impacts would be similar to No Action in terms of overall trawl attainment, landings, and revenue and would be effected by the market conditions and other factors described in Section 2.5.

7.5 Efficiency -- Variable Cost Net Revenue

Section 2.4.5(b) demonstrates that some gear-switching vessels may be more profitable than some trawl vessels and may displace some trawl catch by outcompeting those trawlers for sablefish quota (including by offering a high enough price to bid quota away from the trawlers, convincing them to sell it). The trawl catch that is displaced as a result might be the complex associated with the sablefish QP taken instead by gear switchers, or the sablefish portion of the trawl complex (reducing trawl revenue). Alternatively, gear-switching vessels may be using sablefish QP that would not have been not taken by trawlers. In a freely and fully functioning market, any of these outcomes would improve overall efficiency in the fishery. The action alternatives being considered here would restrict gear switching and therefore potentially restrict

those more efficient outcomes, depending, in part, on whether the market is freely and fully functioning.

A transferable quota system, operating without other constraints, would be expected to resolve distributional questions in favor of the most efficient outcome. However, as mandated by the MSA, there are a number of other policy objectives that have been incorporated into the program, as well as the overall management system for the groundfish fishery. Management measures associated with these policies may interfere with efficient market outcomes. We will start here with a review of some of these measures that relate to gear-switching and may distort markets. For each we will consider whether or not a limitation on gear-switching could compensate for the market interference.

With respect to that trawl IFQ system, MSA mandated accumulation limits may be inhibiting an efficient market-based response to uncertainty created by the presence of gear switching, as discussed in Section 2.4.4(a). The potential for gear switching to expand creates some uncertainty around the reliability of the supply of trawl caught complexes. That uncertainty then may inhibit investments in infrastructure and market development. Normally, uncertainty about the reliability of supply of a key input would be overcome by vertically integrating (acquire the source of the needed input, QS in this case). QS control limits constrain this option. If the control limit is constraining the response to the potential for an expansion of gear switching, consideration could be given to increasing the limit (rather than limiting gear switching) but may have other undesirable results not related to efficiency. A limit on gear switching could counter part of the market interference effect of the control limit by reducing uncertainty about the reliability of the supply of trawl caught complexes.

The LEFG program also includes measures designed to pursue objectives other than rationalizing the fishery (the three-permit stacking limit) or that are no longer as useful in capacity control (separation of the fixed gear permits into longline and pot endorsed permits). Both of these measures appear to be contributing to the degree to which vessels are engaging in gear switching as a means of increasing their fixed gear fishing revenue. With respect to the stacking limit, vessels may also be seeking potential efficiency that can result from increasing their scale of operation beyond what is possible in the LEFG program(see Sections 2.4.4(b) and 2.5.4). With respect to the separation of line and pot gear endorsements, most of the gear-switching vessels that do not participate in the LEFG are using pot gear. This may be an indication that the relatively small number of pot permits in the LEFG fishery (36 out of 164 permits) is creating a constraint in that fishery which is being overcome by gear-switching in the trawl fishery. Reduction of gear switching may limit adverse impacts, if any, related to the participation of these vessels in gear switching but would not resolve the issues that motivate their entry into the fishery and could reduce benefits derived from gear switcher participation in the trawl sector, if any.

While the trawl fishery allows fixed gear vessels to fish on the trawl sector quota, the LEFG tier program does not allow vessels to take sablefish with trawl gear. In the current configuration of these two programs, the more efficient LEFG vessels might displace less efficient trawl vessels in the trawl sector but, if so, those displaced trawl vessels do not have an opportunity to see if they can compete as trawlers in the market for LEFG tier permits (and therefore quota). If trawl

vessels of lesser efficiency in the trawl sector are still more efficient than some of the vessels remaining in the LEFG fishery, the system does not provide an opportunity to realize those gains by allowing their participation in the LEFG fishery. Reducing gear switching could reduce any displacement of trawl gear vessels in the trawl sector, if it is occurring, but at the loss of the efficiency that would have otherwise been gained through gear switching vessel participation. Additionally, it would still leave unrealized efficiency gains that could result if there are trawlers that are more efficient than some of the less efficient LEFG vessels but do not have an opportunity to participate in the LEFG fishery.

Finally, the division of the groundfish fishery into trawl and LEFG sectors was intended to achieve certain broader management objectives (discussed in Section 2.2), including maintaining trawl activity that supports infrastructure which supports the activity and efficiency of other fishing sectors. Allowing gear switching in the trawl sector might improve efficiency in the groundfish fishery (see discussion of VCNRs in 2.4.5(b)) but have potential adverse impacts on management objectives for the broader fishery that are pursued through trawl sector related policies.

If the decision is made to restrict gear switching, Alternative 1 is most likely to achieve this aim with the greatest efficiency. The high level of efficiency would be expected due to its full reliance on the features of existing QS program. Those with gear-switching interests would be able to continue to acquire QS, as best serves their business planning as constrained by control limits (albeit the QS would now be any-gear QS). Overtime, any-gear QS would likely be consolidated such that each year, gear-switching vessels would have to deal with a relatively few QS owners in order to acquire the QP they need. Full reliance on the features of the existing QS program would also keep management costs down, after implementation. However, the number of different types of qualifiers under Alternative 1 may make the determination of qualifiers more costly than under Alternative 2 (see Section 7.12.1 on management costs).

Alternative 2 is likely to be the least efficient of the three alternatives, mainly because it does not allow for consolidation of long-term access to any-gear QP. Any-gear QP will be dispersed across all QS accounts with northern sablefish QP. Thus, utilization of the available any-gear QP by gear switching vessels would require consolidation of the any-gear QP each year. The need to rely on annual transactions also creates uncertainty about annual quota costs that may adversely impact long-term investments. Alternative 2 will require modifications to the existing QS program and a few tasks that are likely to continue indefinitely or for many years (e.g. tracking legacy participant exit from QS ownership).

As long as the gear-switching opportunity ran close to a full year, Alternative 3 may have a similar efficiency outcome for fishery similar to Alternative 1 and could potentially have long-term management costs similar to or lower than Alternative 1. If the season closes before the end of the year due to reaching the 29 percent limit, vessel flexibility and efficiency would be reduced. If seasons shorten, other management concerns often develop related to things like differences in weather and fishing opportunity along different parts of the coast at different times of year.

7.6 Vessels and Vessel Groups within the Fleet

7.6.1(a) Harvester Flexibility

Under Alternative 1, individuals would have flexibility to set their own time, place, and volume of gear switching similar to what that they would under No Action. Some historic gear-switching participants will not receive an initial allocation of gear-switching opportunity commensurate with their historic fishing volumes. These historic participants might be QS owners or others that do not qualify as gear-switching participants (including those entering after the control date) or those that qualify but receive an amount of any-gear QS that is less than what they typically use (e.g., those that relied more on acquiring QP each year than on owning QS). The general flexibility provided under this alternative would allow these individuals to restore their previous levels of gear switching if they so desired and are financially able, up to the 3 percent QS control limit and 4.5 percent vessel QP cap. Any-gear QS and QP would be available from both gear-switching and non-gear-switching participants. However, due to the limited amount of northern sablefish quota available for gear switching (at or just below 29 percent of the trawl allocation), the fishery might not be able to support as many gear-switching operations and the cost of the any-gear quota is likely to be somewhat higher than the cost of quota under No Action.

As with Alternative 1, under Alternative 2 vessels participating in gear switching would have flexibility to set their own time, place, and volume of gear-switching, similar to what that they would under No Action. Qualifying gear switchers that do not receive an initial allocation of gear-switching QP that is commensurate with their historic fishing volumes and those entering after the control date would have an opportunity to acquire the needed any-gear QP. The amount of gear-switching by any particular vessel would not be directly constrained compared to No Action (4.5 percent annual vessel QP limit). However, in contrast to Alternatives 1 and 3, vessels would not be able to acquire 3 percent of the QS and receive 100 percent as any-gear QP, because for any amount of QS owned only a portion of the QP they receive would be any-gear QP. Therefore, there would be more reliance on the annual QP market.

Any-gear QP would be available from both legacy and non-legacy participants; however, the amount of any-gear QP available over the long term might be significantly more limited, as compared to Alternative 1 and acquiring it might be more challenging. Under both QP Distribution options, the available any-gear QP would start at 29 percent but decline to as low as 18.8 percent over the long-term under QP Distribution Option 2,Table 18). As with Alternative 1, the amount of any-gear QP available might support fewer gear switching vessels. Acquiring any-gear QP would be more challenging than under Alternative 1 for two reasons. First, to secure long-term access to a given percentage of any-gear QP through the acquisition of QS, they would need to acquire substantially greater amount of any-gear QS, since for any amount of QS acquired, any-gear QP would only be issued for a portion. Further, depending on the amount they want to acquire, they could be constrained by the three percent control limit. For example, if someone that owned a gear-switching vessel but not a permit (i.e., could not qualify as a legacy participant) wanted to acquire QS to secure ongoing access to any-gear QP, the three percent QS ownership limit would mean they could not secure QS-based access to more than between 0.6 and 0.9 percent of the any-gear QP—i.e., between 18.8 and 29 percent of the 3 percent QS control limit (depending on the QP distribution option selected). Second, gear

switchers constrained in their ability to acquire any-gear QP through QS ownership would have to rely on the acquisition of any-gear QP issued across many QSAs each year. There are currently (based on 2021 data) 117 QS accounts that would not be owned by legacy participants and across which any-gear QP would be dispersed, with each QSA receiving between 18.8 and 29 of its QP as any-gear QP.

Under Alternative 3, the amount of gear-switching permitted by any particular operation would not be directly constrained compared to No Action (i.e., 3.0 percent QS ownership limit and 4.5 percent annual vessel QP limit) and the ease of entry and flexibility for new entrants would be similar to the past. The direct change to flexibility would be with respect to the times at which gear-switching for sablefish could be conducted. Some of the timing of gear-switching activity may be driven by gear-switching vessels desired time of fishing and some by the availability of QP. If seasons are shortened to keep the fleet's gear switching to less than 29 percent, the flexibility for gear-switchers to fish later in the year would be reduced. A more detailed discussion on trends in gear switching activity and potential factors that may affect the season length can be found in Section 9.3.

7.6.1(b) Sectors

Sections 2.1 and 2.2 describe the origins of the sectors and the intersector allocations for sablefish between fixed gear and trawl gear. Under no action and all of the action alternatives, that line between the trawl and fixed gear sectors would continue to be blurred with gear switching allowed in the trawl sector. The action alternatives would each put a limit on the amount of gear switching that could occur- thereby limiting the overall amount of sablefish north that could be taken by non-trawl vessels in either the non-trawl sector or trawl sector.

7.6.1(c) Vessel Strategy/Size

The impacts to vessels within the IFQ fishery under any of the action alternatives compared to No Action will be dependent on whether gear switching is constraining and how any sablefish made available to trawl vessels through a limitation on gear switching is utilized. As described in Section 2.4.5, it is most likely that vessels fishing in the DTS strategy and/or other bottom trawl strategies would be the ones to benefit from the action alternatives. Most trawl vessels participate using bottom trawl gear- with a proportion using both bottom and midwater trawl annually (Table 52). Assuming that the DTS strategy is the primary one to benefit, vessels that participate in bottom trawl fisheries only compared to both bottom and midwater trawl may benefit more under the action alternatives as there is a larger proportion of their revenues coming from DTS. In terms of proportion of revenue from DTS, for most DTS vessels there appears to be little difference in dependence on DTS for vessels that bring in larger volumes as compared to those bringing in smaller volumes. However, in some years there appear to be a few vessels in the smaller production category of bottom-trawl only vessels (less than $500,000 a year in total exvessel revenue on the West Coast), that are highly dependent on DTS (Figure 20). For those that do both bottom and midwater trawl, smaller operations may not be as impacted by limitations due to gear switching or changes to DTS opportunities as little to none of their revenue comes from DTS compared to larger operations. For gear switching vessels, smaller and medium sized operations may be more impacted by a reduction in gear switching overall as the

proportion of revenue coming from gear switching tends to be larger than larger operations (more than $1 million in west coast total revenue). For more details, see Section 10.1.

7.7 Recent (Post-Control Date) and Future Entrants

Under No Action, individuals are able to start gear switching by acquiring a vessel and the required access privileges (trawl LEP and QP). They are able to secure long-term access to QP by acquiring QS. Through such investments, new entrants can equip themselves with the same suite of access privileges as any other participant in the fishery, including those who received initial allocations.

Under Alternatives 1 and 3, new entrants would be able to continue to establish themselves as gear-switchers on a par with existing gear-switchers. Under Alternative 1, those who receive an initial allocation of any-gear QS might have some initial financial advantage over those who later acquire their any-gear quota. The financial advantage for those receiving an initial allocation under Alternative 1 would occur if the cost of acquiring any-gear QS is greater than the cost of acquiring QS before it became gear specific. For those that purchased QS after the control date in order to gear switch and would receive the entirety of their allocation as trawl-only under Alternative 1, there would be a potentially greater impact as that QS would not be able to be used for gear switching. The degree of that impact would be the differential in cost of that trawl-only QS compared to any-gear QS. Under Alternative 3, there would be no such difference (because there would be no gear-specific QS). Post-control date entrants would be able to utilize their QS as normal.

Under Alternative 2, recent or new entrants would not be able to establish themselves on a par with legacy participants and their opportunity would vary depending on the QP distribution option chosen by the Council. Neither recent nor new entrants would be able to become a legacy participant as both QS and a LEP with gear switching history had to have been owned as of and since the control date, and legacy status is not transferable. Under both QP distribution options, compared to legacy participants, non-legacy participants would receive a lesser amount of any-gear QP for a given level of QS owned. Given this, the three percent cap on QS ownership would place an upward limit on new entrant ability to secure access to any-gear QP through QS ownership that is lower than for legacy participants—because only a portion of the QP they receive for their QS will be any-gear QP. The same would apply for recent entrants. To gear switch at a level similar to a legacy participant, a recent or new entrant would have to either acquire more QS (in amounts in excess of the desired QP amount) or be more reliant on the any-gear QP market (Table 21). Under QP Distribution Option 1, the amounts of any-gear QP potentially available on the market would start and stay at 29 percent and under QP Distribution Option 2, start at 29 percent and decline as legacy participants leave (Table 22). The amounts of QP effectively on the market may be diminished by transaction costs. For non-legacy participant owned accounts with small amounts of QS (and hence receiving even a smaller amount of any-gear QP), the effort and costs associated with buying/selling QP in comparison to the potential sale revenues might not provide a net gain sufficient to make it worthwhile (see Section 4.1.1(a) for further discussion). After legacy participants leave, new entrants would have the same opportunity to gear switch as non-legacy participants already in the fishery.

Table 28. Opportunity for recent (post-CD) or new gear switching participants relative to established participants receiving an initial allocation of opportunity based on history.

		Alt 1	Alt 2	Alt 3
Possibility for recent or new entrants to acquire gear switching opportunities at the same level as qualified gear switchers already owning QS as compared to those qualifying gear switchers	Short-term (QP)	On a par	For any given amount of QS owned or acquired, would need to acquire more any-gear QP	On a par
	Long-Term (QS)	On a par (acquire any-gear QS on the market)	Lesser opportunity (more QS required to receive the same annual issues of any-gear QP)	On a par
Financial Differences		Possibility of some disadvantage (if, due to the action, acquiring any-gear QS is more costly than what existing participants paid for QS)	To establish a level of gear-switching similar to legacy participants, non-legacy participants would need to acquire more QS and/or be more reliant on the QP market.	On a par

Table 29. For Alternative 2, the amounts of QP potentially available for any participant to acquire on the market and proportion of any-gear QP that non-legacy participants would receive for their QS, by QP distribution option.[a/]

	QP Dist Opt 1	QP Dist Opt 2
Total Any-Gear QP Issued for Fleet in Year 1	29%	29%
as Legacy Participants Divest	Remains at 29%	Declines to 18.8%
Proportion of Any-Gear QP Issued to Each Non-Legacy QS Owner QS Account	Starts at 18.8% [a/] & increases to 29 percent as legacy participants divest	Starts and stays at either 18.8%

a/ For related information, see Table 19 and Table 50.

7.8 LEP and QS Owners

7.8.1 Trawl LEP Owners

Limited entry permit owners may be impacted by any of the action alternatives, to the extent that earn some revenue from leasing LEPs to gear switchers and gear switching would be restricted.

Previous analyses have looked at the leasing statistics of both gear-switching and trawling vessels based on publicly available information (Agenda Item C.5, Attachment 3, September 2021). Table 30 below provides an update of that analysis for gear switching vessels from 2011-2021. The number of vessels across some years may be in excess of the number of gear switching vessels shown in Table 3. These cases are where a vessel owner utilized both a leased permit and a permit they owned in a given year.

Table 30. Number of gear-switching vessels that leased or owned the trawl limited entry permit used to fish, 2011-2021.

Vessel Used Permit that was	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Leased	9	11	4	8	6	6	6	7	10	6	6
Owned	8	10	7	7	8	10	10	8	6	4	1

The differences in the initial allocation criteria between Alternatives 1 and 2 will also impact LEP owners differently. Under Alternative 1, owning a trawl permit used for gear switching will not provide the owner with access to a history-based allocation of any-gear QS. Under Alternative 2, those who own LEP permits on the control date that have been used for gear switching will have an opportunity to qualify for a history-based allocation. This includes those who owned and fished the permits themselves, those who leased their permit to a vessel that gear switched, and those who may have acquired an LEP with qualifying history after that gear-switching occurred but before the control date.

Examination of the leasing history used for Table 30 shows that for Alternative 2, which is based on permit history prior to the control date, four of the 11 permits that would qualify individuals for legacy status (there are 15 such individuals in total) were leased out to a gear switching vessel for the majority or all of the qualifying landing years. The vessel owners leasing these permits would likely qualify as gear-switching participants under Alternative 1 (assuming they own QS on the control date).

7.8.2 QS Owners

Under No Action, QS owners could continue to use, sell, or lease their northern sablefish QS or associated QPs to vessels using any gear type to harvest sablefish. The same is true under Alternative 3, noting that if the season were to be significantly shortened due to the 29 percent cap being hit, then the pool of participants available to use that quota would be more limited. Under Alternatives 1 and 2, QS owners would have less flexibility with the quota they own depending on their qualification as a gear switching participant.

7.8.2(a) QS/QP Value

The action alternatives may impact both the prices for QS and QP and the ability of QS owners to sell or trade their annual allocations of QP to gear switchers. QP prices will be impacted by the effects of the alternatives on the demand for the QP and the amount of QP available for use by gear switchers. QS prices will be impacted in part via the impact on QP prices and in part by

the effect of the alternative on the amount of QP that can be sold to gear switchers for any given amount of QS owned. These changes in quota utility and value will in turn impact those who annually sell or trade QP with gear switchers. For gear-switchers that purchased QS (or trawl LEP for which QS was issued), impacts on investment and finances will depend on their ability to either continue to use the quota for gear switching or to sell their modified quota at prices comparable to what they paid for it. Taking into account these impacts to quota value is in line with the SaMTAAC principle of considering the impacts of a limitation on existing operations/investments—modification of quota values is not a purpose of this action.

Under No Action, any QP (i.e., all QP issued for QS) can be sold to and used by gear switchers. Section 2.5.3 provides a discussion of some factors that might influence QS and QP prices under No Action. Impacts of the action alternatives, relative to No Action, are discussed in the following paragraphs and summarized in Table 31.

Under Alternative 1, any-gear QP would be issued to any-gear QS owners. Given a limitation on the amount of any-gear QP available, the price of any-gear QP might increase. The greater the amount of gear switching that would have occurred under No Action, the greater the price increase resulting from a limitation on the amount available QP that can be used for gear switching. An any-gear QP price increase would also increase the price of any-gear QS, relative to QS under No Action. The value of trawl-only QP and QS might decline relative to No Action. If market limits or other barriers prevent trawlers from using an increase in availability of QP to increase their harvest of non-sablefish species within trawl complexes, they would likely use the trawl-only QP by increasing the proportion of sablefish in their catch. In the event that those proportions could not be increased sufficiently to use most of the trawl-only QP available, there could be a more substantial decline in the price of trawl-only QP and the associated QS (see Section 4.6.2(a) of the November 2022 analysis for further discussion, Agenda Item H.3, Attachment 3). Any decline could be reduced over time if markets for trawl complexes (e.g., DTS) are further developed as a result of this action. Successful development of those markets could put upward pressure on the price for both any-gear and trawl-only QP, as well as the QP for other species caught in those complexes.

Those who rely on selling any-gear QP to gear switchers could be adversely impacted under Alternative 1. While qualifying gear-switching participants would receive any-gear QS for all their eligible QS, only a portion of non-gear-switching participant owned QS would be converted to any-gear QS (estimated at 3.6-18.3 percent, depending on options selected Table 48). Therefore, only a corresponding portion of the QP received by those entities would be any-gear QP. If the portion of the QP they receive as any-gear is sufficient to cover their typical annual sales to gear-switching interests, there might be no loss of revenue opportunity (and potentially a gain if prices increased). If the portion of any-gear QS they receive is not quite sufficient to cover previous transactions with gear-switchers, a portion of the revenue difference might be made up by a price increase in any-gear QP. Over the long-term, QS owners that sell to gear-switchers could make up a reduction in opportunity by divesting of trawl-only QS and replacing it with any-gear QS, though the QS cost differences may limit the profitability of such an exchange.

Under Alternative 2, legacy participants would receive all any-gear QP for their eligible QS and non-legacy participants would receive a portion of their QP as any-gear QP (QP Distribution

Options 1 and 2). One of the main factors influencing the price of both any-gear and trawl-only QP is the amount of any-gear QP issued each year (with the balance being issued as trawl-only QP). Under QP Distribution Option 1, a total of 29 percent of the QP would be issued as any-gear QP; and, as legacy participants divest of QS, the proportion of any-gear QP received by all others would increase (maintaining the total any-gear QP at 29 percent). For QP Distribution Option 2, 29 percent would be issued as any-gear QP at the time of implementation, but as legacy participants divest, the total amount of any-gear QP would decline to 18.8 or 24.1 percent (depending on the legacy participant qualification option selected).

Relative to Alternative 1 QP Split Option 1 (29 percent), under Alternative 2, the total any-gear QP available and QP price would likely be

- Comparable under QP Distribution Option 1
- Generally comparable under QP Distribution Option 2, but over time lower in quantity and somewhat higher in price

Under Alternative 2 QP Distribution Option 1, while the amount of any-gear QP would be the same as Alternative 1 QP Split Option 1 (29 percent), the price might be somewhat lower than Alternative 1 because the QP would be spread across more accounts. In contrast to Alternative 1, there would be no opportunity to consolidate the annually received any-gear QP by consolidating any-gear QS. This would mean higher transaction costs for consolidating the any-gear QP– reducing the value and, hence, selling price. The transaction cost effect would be expected under QP Distribution Option 2 as well and might be more pronounced over time because there would be less QP in each account than under QP Distribution Option 1.

Under Alternative 2, while the value of any-gear QP would be expected to increase relative to QP under No Action, the value of trawl-only QP would likely decrease, though this decline would not be expected to be substantial unless trawlers are unable to utilize the available trawl-only QP (either by increasing harvest of complexes or the proportion of sablefish in their catch, as described for Alternative 1). The likelihood of a trawl-only QP price decline would increase over time under QP Distribution Option 2, as the amount of QP issued as trawl-only increases. At the same time, there is some possibility of an increase in the price of trawl-only QP, if the policy of limiting gear-switching is successful in meeting its objective, as discussed for Alternative 1.

Under Alternative 2, QS would not be distinguished by gear-type and therefore there would be a single QS market price, as under No Action. The QS price would be driven by the value of the combination of any-gear QP and trawl-only QP issued for the QS. The balance of impact on QS prices resulting from the increases and decreases in prices for QP for different gear types is difficult to evaluate. However, because Alternative 2 results in a diminishment in the flexibility for the use of the QS, the value would be expected to decrease somewhat—with a substantial decrease occurring only if trawlers are unable to utilize the available trawl-only QP. Alternatively, if constraining gear switching is successful in encouraging market and infrastructure development, there could be an increase in the value of the QS, relative to No Action.

Under Alternative 2, as with Alternative 1, for those who sell or trade QP with gear switchers, if the portion of the QP they receive as any-gear is sufficient to cover their typical annual sales to gear-switching interests, there might be no loss of revenue opportunity. If the portion they receive is not quite sufficient to cover previous transactions with gear-switchers, the decrease in sales/trades might be made up by a price increase in any-gear QP. For Alternative 2, the amount of any-gear QP received by non-legacy participants would be 18.8-29 percent (QP Distribution Options 1 and 2; Table 50). The ability of non-legacy participants to restore their previous opportunity to sell or trade QP to gear-switchers would be much more limited under Alternative 2 than Alternative 1, because, for any amount of QS they acquire, any-gear QP would be issued for only a portion of it. Acquiring more QS solely for the purpose of restoring the amount of any-gear QP they have to sell to gear-switchers is not likely to be economically feasible and would be limited by QS control limits.

Under Alternative 3, the gear switching constraint would be achieved through a season limitation. Relative to No Action, a season limitation might decrease gear switcher demand for QP, particularly if there would have been increases under No Action. This could have some downward influence on QP and QS prices relative to No Action. The degree depends on how constraining the 29 percent limit is. For example, the 2011-2022 gear switching average is 29 percent of the annual allocations. Thus, historically, in some years a 29 percent limit would not have been a constraint while it would have been in others. The maximum gear-switching percentage was 35.3 percent of the allocation, which was nearly fully attained in that that year (2019). It is uncertain how much a 6.3 percent reduction in QP usage by gear switchers (18 percent of all gear switching utilization) would have affected QP price. As market conditions and trawl allocations change, the degree to which a 29 percent limit is a constraint relative to No Action could change substantially, altering the degree to which the limitation impacts quota prices relative to No Action. Similar to what was described for Alternative 2, if constraining gear switching is successful in encouraging market and infrastructure development, trawl vessel demand could put upward pressure on the value of the QS, relative to No Action.

Table 31. Relative to No Action, impacts of the action alternatives on the opportunity to sell QP to gear-switchers and impacts on quota prices.

		Changes Relative to No Action		
	No Action	**Alt 1**	**Alt 2**	**Alt 3**
QP Price	Driven by combination of trawl and gear-switching demand.	Any-gear QP: increase because of supply decrease. Trawl-only QP: possibility of some decreases (major decreases unlikely unless gear-switching would have grown substantially under No Action) major increases possible if action alternative policy is successful.	Any-gear QP: increase because of supply decrease (lowest for QP Dist Opt 1 and highest for QP Dist Opt 2). Trawl-only QP: possibility of some decreases (major decreases unlikely unless gear-switching would have grown substantially under No Action) major increases possible if policy is successful.	Possibility of a price decrease due to restriction of demand from gear-switchers – likely minor decreases unless gear-switching would have grown substantially under No Action; possibility of major increases possible if policy is successful.
QS Prices	Driven by combination of trawl and gear-switching demand and degree of certainty about future market conditions.	Any-gear QS and Trawl-only QS: similar to changes for QP.	Generic QS price depends on balance between changes in proportions of any-gear & trawl-only QP and their respective prices.	Similar to changes for QP.
Selling QP to gear-switchers	Any QP owned can be sold for any-gear	Non-gear switching participants: only a portion of their QS would be converted to any-gear and yield any-gear QP. Relative any-gear and trawl-only QP prices will affect size of impact.	Non-legacy participants: only a portion of their QP is issued as any-gear under QP Dist Opt 1 and 2. The same proportions of any-gear QP under QP Dist Opt 1 and 2, but increasing over time under Opt 2. Relative any-gear and trawl-only QP prices will affect size of impact.	Same as No Action.
Opportunity to adjust amount that can be sold to gear switchers.	Buy more QS.	Replace trawl-only QS with any-gear QS (market transactions). Price differences will impose a cost for such adjustments.	Buy more QS (QP Dist Opt 1 and 2)—but only a portion will be received as any-gear QP—likely not financially feasible.	Same as No Action.

7.8.2(b) QS Account Ties to Gear-Switching via QP Trading

Depending on the business arrangements of QS owners, their ties to gear switching operations, amounts of quota for each gear type received, and the prices for gear specific QP (trawl-only QP in particular), the impact of Alternatives 1 and 2 will vary. Utilizing a method developed by the Washington Department of Fish and Wildlife, Figure 20 shows the relationships between QS

accounts and gear switching operations from 2011-2022. For a description of the method, see Agenda Item E.2, Attachment 1 from the October 2019 SaMTAAC meeting. For each year, a QS account is given a "score" that is based on "the amount of QP transferred to [vessel accounts] VAs in the trading network for a particular QSA, crediting the QSA for a certain portion of the QP in each VA within that trading network." In other words, it shows how much of the QPs that were transferred from a QS account to a VA were used for gear switching (either directly by the initial VA or by other vessels through VA to VA transfer). QS accounts near the x-axis are those with a high degree of connectivity to gear switching operations (shown in purple). While some QS accounts appear to repeatedly have connections to gear switching operations (as indicated by the relative consistency of the color of the bars for each year), other QSAs might have variability in their ties (e.g., those in the middle of the graph). QSAs furthest from the x-axis are those with strong trawling connections and no or weak connections to gear-switching operations. There are some caveats to consider with this analysis that are described in Agenda Item E.2, NMFS Report 2 from the October 2019 meeting- including how a QS account's score may be "penalized" for unused QPs.[25]

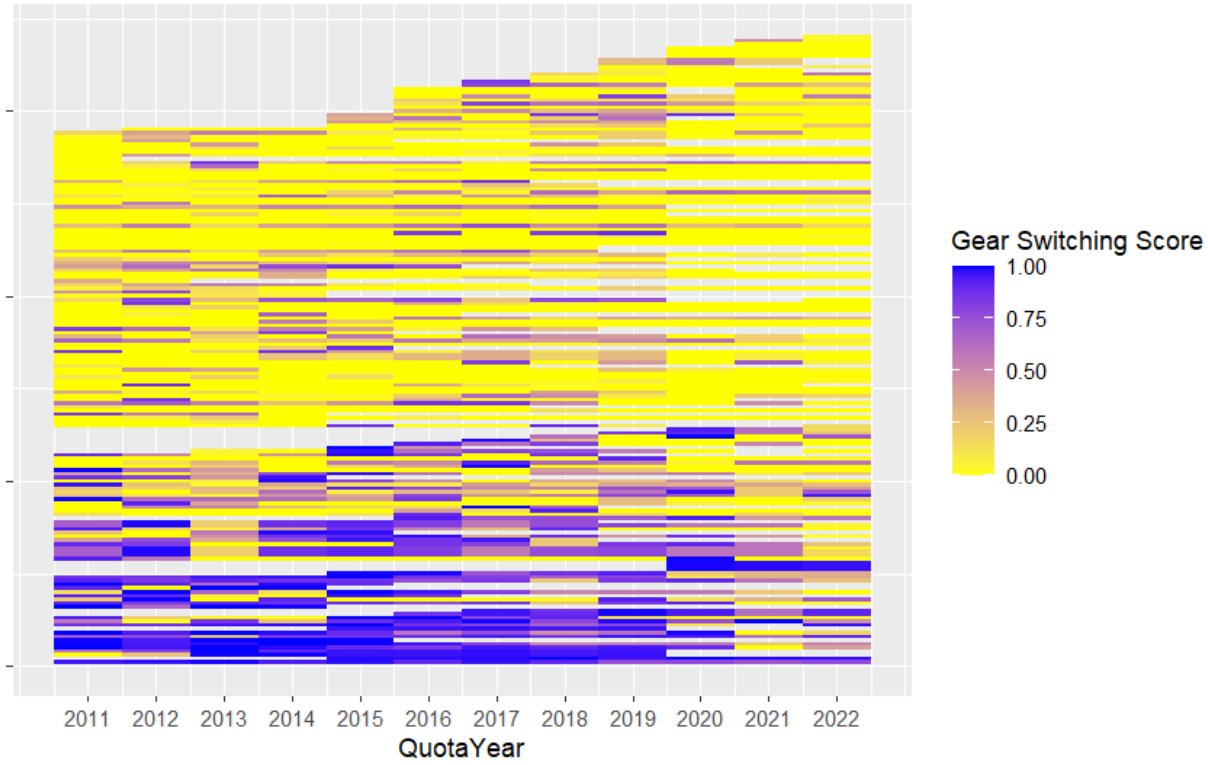


Figure 20. Gear switching "score" for the 170 QS accounts with sablefish north by year, 2011-2022.

All of the qualification requirements for Alternatives 1 and 2 require the individuals to currently (at the time of implementation) own QS. Given that Alternatives 1 and 2 would have direct implications on the usage of the QS and associated QPs by participants, the following two sections examine the relationship between QSAs and gear switching operations and the type of QS owners associated with qualifying and non-qualifying QS accounts.

[25] These ratios are calculated as QP traded to gear switchers divided by total QP including unused QP, which results in lower gear-switching scores than if the unused QP were not included in the calculation.

7.8.2(c) Scoring Analysis

In order to understand how Alternatives 1 and 2 may influence QS owners that do not qualify under a particular alternative, the following tables look at the number of QSAs not associated with a qualifying gear switcher by their QP trading-based[26] gear switching score in the most recent five years (2018-2022). Each alternative is presented at the same score breaks, except for the first non-zero bin (i.e. grey shaded column in each table) which was set as the percentage of QPs that would be issued to non-qualifiers as any-gear in each alternatives/participant option.[27] As an example of how to interpret the table, under Alternative 1, Gear Switching Participation Option 1, each non-gear switching participant would receive 10.95% of their QS (or 12.6% of their QPs) as any-gear. Therefore, 12.6 percent is the upper bound of the first non-zero bin (grey column). Of the QSAs not associated with gear switching participants under this alternative in 2018, 13 had no QP trading association with gear switched landings (gear switching score of 0) and 10 had a score less than 0.126. Therefore, those 10 accounts would receive a proportion of any-gear QPs to cover the historical QP trading to gear switchers in 2018. The 71 other non-qualifier owned QSAs with higher gear switching scores in 2018 would have not received enough QPs to cover their QP trading to gear-switchers.[28] Finally, for Alternative 1, only QP Split Option 1 (71 percent trawl only, 29 percent any gear) and Non-Gear Switching Participation Option 1 (all QS owners on control date) are used in the examples.

Under Alternative 1 and Alternative 2 the majority of QSAs appear to have little to no relationship with gear switching (less than 50%). Under Alternatives 1 Gear Switching Participation Option 2 and Alternative 2, the majority of QSAs might receive sufficient proportions of any-gear quota to cover historic gear switching activity (grey columns of Table 33 and Table 34). While more individuals and QSAs qualify under Alternative 1 Gear Switching Participation Option 1, leading to more any-gear QS issued to gear switching participants, the impact to non-gear switching participants is greater as the proportion of any-gear QPs issued to them would be smaller (12.6% compared to 29.3%). Impacts under Alternative 1, Conversion Option 2 would be somewhere between Table 32 and Table 33.

QSAs not associated with qualifiers and above the first non-zero bin (three columns to the right of the grey column) would be likely to be impacted by each of the action alternatives as the proportion of any-gear quota they would be issued is less than the proportion that they typically trade/sell to gear switchers. Of those accounts, between 2018-2020 and across both gear-specific quota alternatives (Table 32, Table 33, and Table 34), there were 14-23 QSAs that could be seen as highly dependent on gear switching activity (score of 0.76-1). Starting in 2021 however, there appears to have been a shift in the number of QSAs associated with a high gear switching score (shifting from an average of 18 in 2018-2020 to 9 in 2021-2022). Further investigation is needed to determine the cause of this shift.

[26] "QP trading" can mean a self-trade or trading/selling to another participant's QS or VA

[27] Note that the percentages used below are assuming that all participants within a QSA are the same type and the same split is given to each individual owner (i.e., non-gear-switching or non-legacy participants). QSAs with mixes of individuals would have different percentages of any gear QPs available.

[28] An exception to this would be mixed accounts, those owned by both qualified and non-qualified participants.

Table 32. Number of QSAs Associated with Non-Qualifiers by Gear Switching Score Under Alternative 1 Gear Switching Participation Option 1.

Year	Gear Switching Score				
	0	0-0.126	0.127-.5	.51-.75	.76-1
2018	13	10	47	8	16
2019	25	3	36	13	14
2020	48	2	14	7	15
2021	47	2	27	6	3
2022	36	6	34	6	5

Table 33. Number of QSAs Associated with Non-Qualifiers by Gear Switching Score Under Alternative 1 Gear Switching Participation Option 2.

Year	Gear Switching Score				
	0	0-0.293	0.294-.5	.51-.75	.76-1
2018	19	55	13	11	22
2019	37	32	15	16	17
2020	66	14	5	12	15
2021	65	20	11	13	3
2022	45	54	1	9	5

Table 34. Number of QSAs Associated with Non-Legacy Participants by Gear Switching Score Under Alternative 2.

Year	Gear Switching Score				
	0	0-.188	0.189-.5	.51-.75	.76-1
2018	19	43	25	9	23
2019	36	19	27	15	19
2020	65	11	7	11	17
2021	65	11	20	12	3
2022	44	46	9	7	7

7.8.2(d) Characterization of Fishery Roles for Qualifiers and Non-Qualifiers

There have also been discussions around who the QS owners are that would qualify and their roles in the fishery. In other words, are these active participants in the IFQ or other West Coast fisheries or are these owners not active in the fishery. Using the results of the 2021 EDC QS Ownership Survey, below characterizes each qualifying individual under Alternative 1 (both gear-switching participation options and including the first receiver sub-option) and Alternative 2 by the four main categories developed by the EDC program based on capital ownership and participation type. Based on responses to the Quota Share Owner Survey, QS owners that reported actively fishing or processing were considered "active" while those who do not were considered "inactive". Capital ownership was defined as owning a vessel or processors. For

those active capital owners, it also describes whether those individuals identify as a processor or a west coast vessel owner (any fishery). Trusts, not for profits, or governmental entities are not subject to the participation type component of the survey and are identified by those categories where applicable. For further details on the survey questions and the categorization of individuals, please see Connelly, et.al 2022.

For Alternative 1, Gear Switching Participation Option 2 and Alterative 2, which both require a landings requirement of 30,000 pounds per year in at least 3 years prior to the control date, approximately half of the qualified individuals are active, capital owners where the other half are inactive capital owners. For Alternative 1, Gear Switching Participation Option 1, which has a minimum landings requirement of only one gear switched landing, the number of inactive owners more than doubles compared to Gear Switching Participation Option 2. For all alternatives and options, the individuals that identify as a processor also own a vessel that fished on the West Coast in 2021.

Table 35. Classification of qualified gear switchers by QS ownership survey results (2021) by alternative and option.

Categories	**Alt 1**		**Alt 2**
	GS Opt 1 (incl. GS FR opt)	**GS Opt 2(incl. GS FR opt)**	
Active, Capital Owner	9	6	7
Processor	3	3	***
West Coast Vessel Owner	9	6	7
Inactive, Capital Owner	18	8	8
Inactive, No Capital	4	***	***
Trusts	7	***	3
Suppressed to protect confidentiality	0	2	2

Of those QSAs associated with the qualified gear switchers presented in Table 35, Table 36 describes each of those QSAs in a hierarchical fashion. In other words, all QSAs that are owned by at least one active, capital owner (any owner- qualified or not) are categorized first. Of the remaining QSAs, it looks at whether there is at least one inactive, capital owner and so forth down the table. The majority of accounts associated with qualified gear switchers have at least one active, capital owner.

Table 36. Classification of 2022 QSAs associated with qualified gear switchers (Table 34) by QS ownership groups by alternative and option.

QSAs with at least one	**Alt 1**		**Alt 2**
	GS Opt 1 (incl. GS FR opt)	**GS Opt 2(incl. GS FR opt)**	
Active, Capital Owner	13	8	7
Inactive, capital owner	26	5	6

Inactive, no capital	***		***
Remainder	***		***
Suppressed to protect confidentiality	3		1

Of the 2022 QSAs not associated with qualified gear switchers in each alternative and qualification option, the hierarchical categorization of QSAs is provided below in Table 37. The majority of QSAs not qualifying for elevated levels of gear switching opportunity are held by inactive capital owners.

Table 37. Classification of 2022 QSAs not associated with qualified gear switchers by QS ownership groups by alternative and option.

QSAs with at least one	Alt 1		Alt 2
	GS Opt 1 (incl. GS FR opt)	GS Opt 2(incl. GS FR opt)	
Active, Capital Owner	28	33	34
Active, No Capital	3	3	3
Inactive, Capital owner	30	51	50
Inactive, No Capital	13	15	15
Trusts	8	9	8
Not for Profit/Government	4	4	4

7.9 Crew

For gear switching vessels and their crews, the action alternatives would likely result in some loss of income and job opportunity relative to No Action. The losses would likely be least under Alternatives 1 and 3 because of the greater likelihood that the 29 percent maximums might be achieved. Under Alternative 2, because of the dispersion of any-gear QP among more accounts, less of it may be utilized and overall levels of gear switching might be lower. Both Alternative 1 and Alternative 2 include options for gear switching levels lower than 29 percent. Relative to historical levels of gear switching under the trawl program, the reduction for gear switching might be around 18 percent below the maximum (~35 percent in 2019). But if there would have been greater increases in gear-switching under No Action, then the adverse impacts of the action alternatives on gear-switcher crew jobs and income might be more substantial. See Section 7.7 on new entrants for discussion of how future opportunities for crew members seeking to become gear-switching vessel owners might be impacted.

Under Alternative 3, there might be other types of impacts. There are situations that might lead to an early closure of the opportunity for gear switchers to retain sablefish. For example, if trawl ACLs go down (such that a 29 percent cap is a much lower amount of QP) at a time when sablefish prices are high, there could be a more substantial shortening of the season. This could impact crew through shifts in the geographic areas and times of years of harvest, as well as reduced flexibility with respect to when harvest occurs.

For trawlers, if the actions are effective in their purpose to increase trawl attainment, there is the potential for increased income opportunity, particularly if catch of complexes can be expanded (as opposed to just increasing the proportion of sablefish in the catch). More substantial expansions could increase the number of positions available. Crew members that would like to become vessel owners might be benefited if there is an increase in trawl activity.

7.10 First Receivers and Processors

In order to purchase IFQ fish, a business must have an FR license. FRs include both businesses that purchase and process and also those that purchase and transfer fish to others for processing. Over the first eleven years of the IFQ Program (through 2022) there have been a total of 107 FR licenses issued to 65 different businesses with recent years averaging around 43 FRs and 33 businesses (Figure 21). Businesses that act as FRs often have multiple licenses when they have different fish receiving sites.

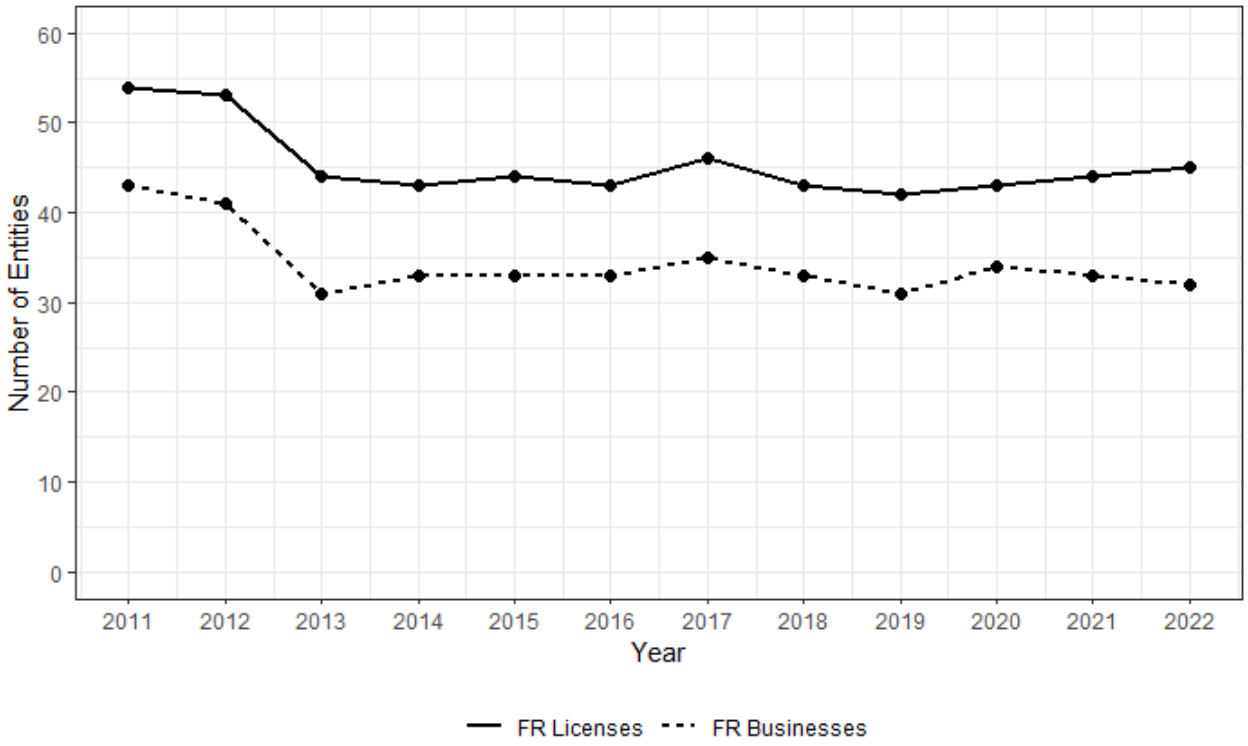


Figure 21. Number of FR licenses (solid line) and associated businesses (dashed line) by year, 2011-2022.

Under No Action, first receivers can secure access to fish by (1) negotiating with vessels and (2) owning QS or annually acquiring QP. On average, 40 percent of FR licenses that actively purchased IFQ fish in a given year received gear-switched sablefish landings annually from 2011-2018, with the percentage declining to 27 percent from 2019-2022. In terms of landings, approximately half of all gear-switched landings are purchased by FRs who also purchase midwater rockfish or whiting as well as bottom trawl species. The other half has varied between those FRs that purchase only gear-switched landings to those that purchase both gear-switched landings and non-whiting bottom trawl species. However, in recent years, there has been a shift to gear-switched landings being purchased by FRs who only buy gear-switched landings or those that buy all IFQ groundfish (Figure 22).

Ultimately, FRs will be affected differently by a change in gear-switching levels proposed under the action alternatives or No Action, depending on the degree to which they are reliant on trawl or gear-switched landings. With respect to the IFQ deliveries they receive, FRs that would be most affected by a restriction in gear switching would be those that purchased only gear-switched sablefish and no other IFQ landings. FR licenses receiving deliveries from both gear-switched and bottom trawl vessels would also be negatively impacted by a decrease in gear-switched landings but might also be positively affected if gear switching is constraining to trawlers and trawl landings increased as a result of a decrease in gear-switched landings. FRs that receive only bottom trawl landings, which increased in 2020 and 2021) (as seen by the light grey bars on left panel of Figure 22) would be positively impacted if gear switching is constraining trawlers and the action alternatives resulted in an increase in trawl landings. This might bring more consistency in deliveries and promote investment by these FRs specializing in bottom trawl groundfish. However, if gear switching is not constraining and gear switching is restricted, there would likely be little impact to these FRs.

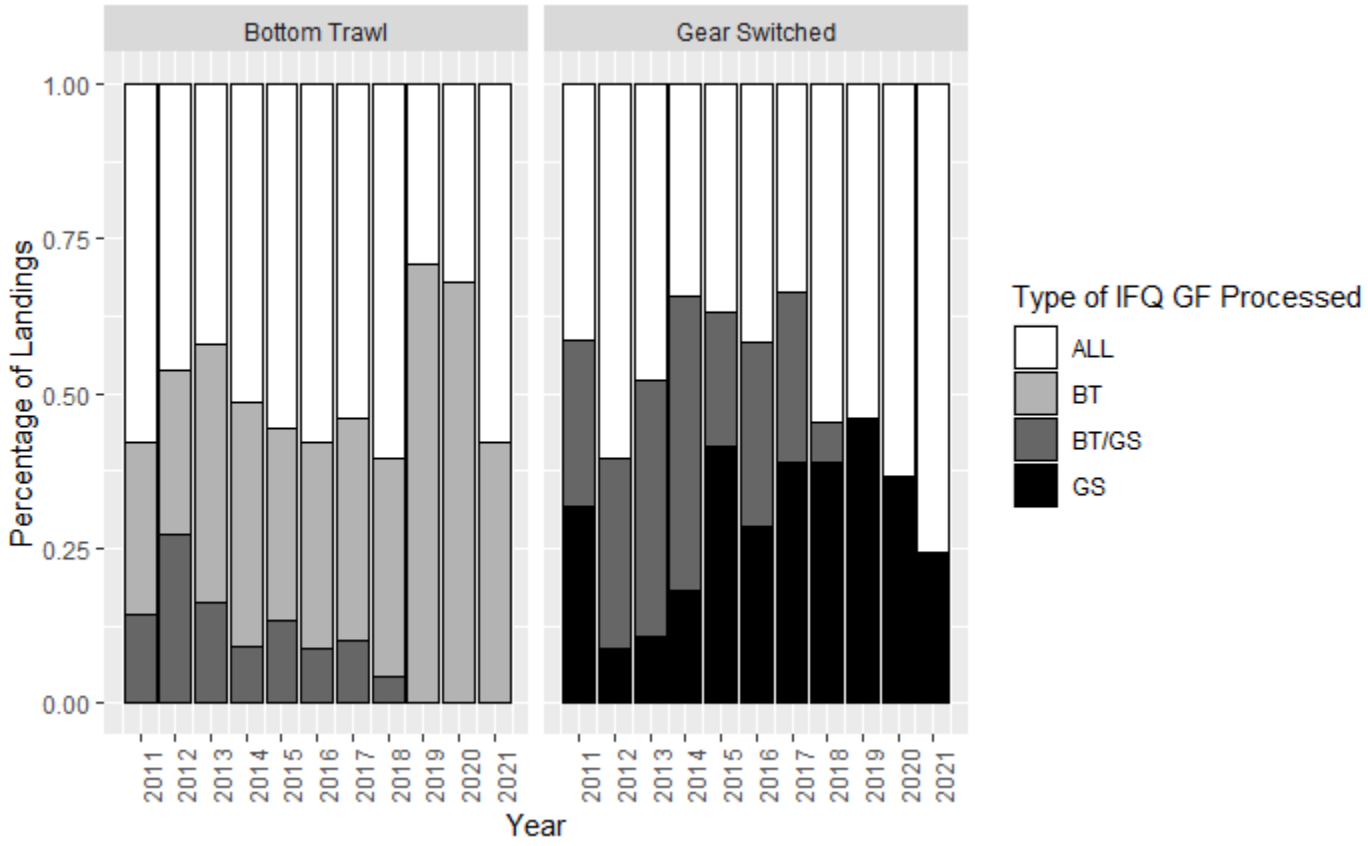


Figure 22. Percentage of IFQ bottom trawl and gear switched landings from 2011-2022 by type of IFQ GF purchased by FRs (All=midwater, bottom trawl, gear switched, BT=bottom trawl only, BT/GS=bottom trawl/gear switched, GS=gear switched only). Note that due to confidentiality, the "All" category in 2021 includes less than 3 FRs that purchased only bottom trawl and gear switched landings.

Not only will the change in actual deliveries impact FRs, but the most recent catch share review also emphasized the importance of the certainty of raw product supply to developing competitive

products and potential interaction with other constraining factors. Without a predictable supply, processors have a difficult time securing premium markets (fresh, for example) and, instead, may have to rely on less discriminating protein markets that offer lower prices. Increased flexibility for vessels and limited communication between vessels and processors about production plans can contribute to inconsistent supply to processors if vessels and processors are not coordinating optimally, making it difficult to employ a labor force ready to process groundfish year-round. Some processors impose trip limits on vessels that deliver to them to limit deliveries of species for which they lack processing or marketing capacity. Low demand and corresponding lower prices from processors, in turn, make fishing less profitable and result in fewer trips, lower landings, and ultimately, low utilization. It is difficult to quantify the effect of individual factors on utilization, as they are all related in an endogenous (cyclical) way (Figure 23). (PFMC and NMFS, 2017, page ES-22).

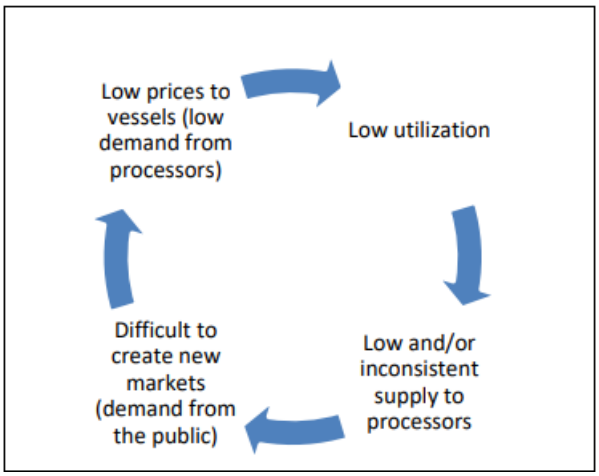


Figure 23. Illustration of cycle of low demand and low utilization

It is important to consider that a FR license is specific to IFQ landings, but a dealer (or business) may receive and process non-IFQ species. Some operations may be large enough to absorb any losses from reduced gear-switching deliveries via other processing opportunities, while others may be reliant on those deliveries. Of those businesses associated with FR licenses from 2016-2019, the average annual ex-vessel revenue (in active years) paid to all vessels ranged from just over $57,000 to tens of millions of dollars across all West Coast fisheries. Depending on the size of the business and reliance on gear switching, there could be significant impacts to a business if gear switching is reduced. Those businesses for which the average proportion of total IFQ fishery exvessel expenditures is more than half of what they paid to vessels in all fisheries, tend to be “smaller” businesses that range in ex-vessel paid values of 57,000 to 4.2 million on average from 2016-2019 (Table 38).

Table 38. Number of businesses that purchased IFQ deliveries from 2016-2019 by the average proportion of revenue paid to vessels in years actively purchased and the range of average ex-vessel revenue paid by those businesses (millions of 2021$)

Number of Businesses	Average Proportion of Revenue paid to IFQ Fisheries	Range of Average Exvessel Revenue Paid 2016-2019 (Millions of $2021)
11	0-25%	0.57-16.48
8	26-50%	0.15-Tens of Millions
4	51-100%	0.06-4.20

Each specific action alternative will impact FRs in different ways. Some FRs may qualify as gear-switching participants under Alternative 1 (based on history of vessel ownership) or under Alternative 2 (based on owning a permit with history). Those that qualify would receive 100 percent any-gear QS (Alternative 1) or 100 percent any-gear QP (Alternative 2) for their eligible QS. Alternative 1 provides FRs an alternative qualifying avenue that would allow them an opportunity to receive an initial allocation of any-gear QS either as a gear-switching participant or as a non-gear-switching participant based on their receipt of the appropriate landings types (i.e., gear switched or bottom trawl) and amounts of deliveries. Alternative 2 provides FRs with no alternative qualifying avenues to attain legacy participant status and thereby receive 100 percent any-gear QP for their QS. Under Alternative 1, FRs, or anyone else, that wants to secure their ability to receive or direct the disposition of gear-switched sablefish can do so to a degree after initial implementation by acquiring any-gear QS (or any-gear QP in season). Because of the limited amount of any-gear quota that would be available for gear switching, ownership of such quota will likely enhance their ability to negotiate with a gear-switching vessel. Under Alternative 2, such entities could acquire additional northern sablefish QS, but only a portion of the QP they receive would be distributed as any-gear QP—limiting their ability to secure gear-switched sablefish. Under Alternative 3, the situation would be similar to No Action, except total gear-switched landings may be more limited and the season could be shortened, both of which may increase uncertainty for FRs that receive gear-switched landings.

If gear switching is constraining trawl attainment, then each of the action alternatives would provide a degree of certainty that gear switching will not expand and undermine FRs dependent on trawlers and other's opportunities to benefit from investments in equipment and marketing for the trawl fishery. Further, Alternative 2, QP Distribution Option 2 would reduce gear switching the most, which might provide more certainty of trawl access and therefore encourage investments that support trawl gear harvest.

7.11 Communities

Gear-switching opportunities that are affected through an action alternative may impact communities through their effect on vessel-, permit-, and QS-owner income. Communities would also be impacted through changes in fish deliveries and vessel activities, as well as the income of those working for vessels, processors and supporting sectors. While a gear switching limitation might reduce gear switching activity in some or all gear-switching ports, it would also free up northern sablefish QP that might provide additional bottom trawl opportunities, thereby, increasing deliveries of those species in lieu of gear-switched sablefish. Those ports with recent trawl landings might benefit from that expansion. The distribution of those benefits would be

influenced by the geographic distribution of the trawl strategies that could potentially increase as a result of a reduction in gear switching and whether the ports have the infrastructure to process larger amounts of trawl caught groundfish.

Table 39 provides the recent distribution of exvessel revenue and associated community impacts, jobs, vessels, and dealers for the gear switching and bottom trawl fleets. Bottom trawl vessels were split into two categories- DTS and non-DTS (e.g., mixed shelf, flatfish). While DTS has been the focus of many discussions related to gear switching being constraining, the other strategies have seen increasing levels of sablefish utilization and are also likely to potentially benefit from the availability of additional sablefish, as shown in Table 6. The distribution of changes in trawl activity across ports will depend on which specific strategies are impacted. Looking at the distribution of revenue from DTS and non-DTS, ports from Fort Bragg south appear to have a higher dependency on non-DTS compared to DTS trawl strategies, from 2018-2022. On the other hand, Brookings-Coos Bay and Crescent City-Eureka are more closely tied to DTS operations.

Table 39. Average revenue (millions) by port group and sector (GS= Gear Switched, Non-DTS= Bottom Trawl Other than DTS) from 2018-2022. Distinct count of vessels and dealers by sector and port group from 2018-2022. "c" denotes a confidential strata.

IOPAC Port Group	Number of Vessels			Number of Dealers			Average Revenue (millions)			Income Impacts (millions)			Jobs		
	GS	DTS	Non-DTS	GS	DTS	Non-DTS	GS	DTS	Non-DTS	GS	DTS	Non-DTS	GS	DTS	Non-DTS
Washington a/	5	10	8	3	3	3	$0.40	$0.31	$0.42	$0.76	$0.66	$0.89	16.2	7.3	9.9
Astoria-Tillamook	7	26	25	4	5	c	$0.87	$2.93	c	$1.94	$7.16	c	26.1	76.0	c
Newport	9	15	14	4	c	c	$1.39	c	c	$2.20	c	c	38.1	c	c
Brookings-Coos Bay	c	17	13	c	4	4	c	$1.50	$0.64	c	$3.03	$1.30	c	58.4	20.2
Crescent City-Eureka	c	13	8	3	8	5	c	$2.29	$0.95	c	$3.51	$1.46	c	37.7	15.7
Fort Bragg	0	8	8	0	3	4	$ 0	$0.24	$1.50	0	$0.37	$2.30	0	4.0	24.8
San Francisco-Bodega Bay	3	c	3	c	c	4	c	c	$0.37	c	c	$0.96	c	c	9.6
Monterey	c	c	3	c	c	3	c	c	$0.07	c	c	$0.42	c	c	5.0
Morro Bay	c	0	c	4	0	c	c	$ 0	c	c	$0	c	5.7	0	c

a/Of the Washington vessels, 3 gear switchers, 3 DTS, and 4 non-DTS delivered into Puget Sound. Other values were combined into single Washington values to preserve confidentiality at the dealer level.

With respect to impacts occurring through the action alternatives' modification of gear-switching operations and related economic activity in the communities, all three action alternatives may constrain the total amount of gear switching to below what would have occurred under No Action. This constraint would be even greater if there would have been an expansion of gear switching under No Action (see Section 2.5 for discussion). The distribution of the reduction in gear switching among communities is difficult to predict under any alternative. How each community would be impacted by limitations in gear switching depends on if there is infrastructure in the port to process landings and if trawl vessels utilize the additional sablefish freed up from the limitation in gear switching to land fish in those ports. Impacts from gear switching limitations may be amplified if vessels in other fixed-gear fisheries also deliver into that port and the limitation affects the infrastructure or processing/fish receiving services for overall fixed-gear deliveries into the port. Most ports that have gear switching deliveries also have LEFG or OA groundfish activities (see Table). If a port's capacity to receive fixed gear deliveries is adversely affected then vessels might need to switch ports and there could be other adverse impacts to that port or port group because of the overall reduction in deliveries.

If gear-switching is constraining the total deliveries of trawl complexes or causing trawl vessels to avoid sablefish in order to conserve sablefish QP, trawl ports might benefit from a limitation on gear switching and an attendant increase in trawl activity. How each community would be impacted by limitations on gear switching that increase trawl deliveries depends on if there is infrastructure in the port to process landings. Moreover, other non-sablefish/non-groundfish sectors that operate in community ports could be impacted by changes resulting from the action alternatives, to the degree that sectors are co-reliant on one another to provide sufficient demand to maintain services in a community.

The alternatives vary somewhat in the degree to which they limit gear switching and, therefore, in how they might impact communities. Under all of the action alternatives, the catch of sablefish by gear switchers would be limited to no more than 29 percent of the trawl sablefish allocation. Furthermore, Alternatives 1 and 2 have options that would reduce gear switching somewhat below those levels (over time, Alternative 2 could reduce gear-switching to as low as 18.8 percent).

Gear-switchers would be impacted differently by the alternatives based on the initial distributions and the mechanisms used to limit gear switching. These differences would in turn have different impacts on communities. Under Alternatives 1 and 2 the impacts to gear-switching communities will depend on the ability of gear switchers to acquire any-gear QP either through receiving a direct allocation (of any-gear QS under Alternative 1 or an annual allocation of any-gear QP under Alternative 2), acquiring any-gear QS (Alternative 1 only) or acquiring any-gear QP from others each year. Alternative 1 allows gear switchers to consolidate any-gear QS and thereby secure stable access to the gear switching opportunity. Impacts on communities would partially depend on initial allocations and the degree to which gear-switchers in those communities were able to consolidate any-gear QS relative to other communities. Alternative 2 also provides an initial allocation of gear switching opportunity to historical gear-switching QS owners but there is little opportunity to further consolidate that opportunity. Initially, and increasingly over time, gear switchers would be reliant on acquiring any-gear QP each year. This would create more uncertainty about the distribution of opportunity among communities

each year and more potential for such redistributions, reducing security for community based planning and investments that might rely on gear-switching deliveries. In addition to community income from gear-switching related activities, QS owner income may be redistributed among communities depending on where those QS owners live. Ultimately it is difficult to predict.

Overall, communities that are gear switching dependent will likely see more negative impacts related to disruption of gear switching under Alternative 2 compared to Alternative 1. However, they may be able to counter those losses with trawling or other fishing opportunities. If gear switching is limiting trawl attainment, then assuming that trawl communities utilize the available sablefish, those communities that have both trawl and gear-switched deliveries will likely see benefits due to increased landings into ports. If gear switching is not limiting trawl attainment though, then gear-switching communities may see an overall net loss.

Under Alternative 3, the seasonal approach, the impacts to communities could be similar to No Action so long as gear-switching activities would have been below 29 percent under No Action. It is possible that even if gear-switching stayed below 29 percent, the limitation might change fishing behavior, in that gear switching vessels may shift their effort to earlier in the season if they wanted to ensure that they were able to gear switch before the cap is hit. The ability to shift effort earlier in the season would be dependent on weather conditions and other competing opportunities–both for the vessels and the processors. Under Alternative 3, if gear-switching would have been above 29 percent under No Action, there would likely be a closure to sablefish retention while gear switching before the end of the year . Under such circumstances, differences in weather conditions and competing fishing opportunities for different regions of the coast could result in changes in the geographic distribution of gear-switching activity, impacting ports in different regions differently. Section 9.3 provides an initial analysis on spatio-temporal patterns of gear switching and where shifts in activity may influence communities.

7.12 Governance: Fishery Management System

7.12.1 Management Costs

7.12.1(a) Implementation and Ongoing Costs

NMFS has stated that it will provide more specific cost estimates after the Council identifies a PPA. For each action alternative, there will be one-time implementation costs and ongoing costs. Council staff generated an initial list of one-time and on-going tasks related to each alternative (Table 40). NMFS might alter these lists as it works through the implementation and on-going tasks more fully.

The following overview of the costs of action alternatives are relative to a no action scenario in which there is no need to impose a constraint on gear switching in the future. If instead, the Council returns deliberate on gear-switching at some time in the future, then there would costs related to no action costs.

With respect to the one-time implementation costs, they would likely be the least for Alternative 3. Alternative 1, in its current form, includes some more substantial implementation tasks related to determining initial qualification for history-based gear-switching opportunity. At the

same time, the NMFS April 2023 report (Agenda Item G.5, NMFS Report 1) stated that the implementation costs for Alternative 1 would be relatively low (note: the Alternative 2 reference in that report is different from the current Alternative 2). The current Alternative 2 does not contain the number of different allocation criteria included in Alternative 1 but would require developing a more detailed database on permit ownership and more computer program and database modifications to reduce future costs related to ongoing tasks.

With respect to the ongoing tasks, NMFS characterized Alternative 1 as requiring "little additional new work to monitor, manage, and enforce." Alternative 2, appears to require some additional ongoing tasks, as reflected in Table 40. To a large degree, these tasks might be automated during the implementation phase, but there may be some need for non-programmable interventions. Alternative 3 would require some annual monitoring and/or modelling effort to determine if and when closure of the opportunity to retain sablefish while gear switching is needed, and the issuance of a notice when a closure is required. That modelling would need to take into account factors like the lag in mortality reporting for discarded sablefish and post closure sablefish discard mortality by vessels gear switching to target other species (currently, there is little to none of the latter, but this could change over time).

Table 40. Implementation and ongoing tasks related to costs for each alternative.

Alternative 1: Initial implementation costs— • Initial rule changes related to implementation and ongoing tasks. • Modify system to track transfers of a new type of QS and QP (splitting northern sablefish QS/QP into any-gear and trawl-only). • Identify individuals qualifying as gear-switching, non-gear-switching, and if needed, other participants, and the amount of QS each gear-switching and non-gear switching owned on the control date. • Convert northern sablefish QS in each account to trawl-only and any-gear QS. Ongoing Costs— • Transmit information on gear used on IFQ trips into the data system that monitors QP usage (landings tickets and observer data).
Alternative 2: Initial implementation costs— • Initial rule changes related to implementation and ongoing tasks. • Modify system to track transfers of a new type of QP (splitting northern sablefish QP into any-gear and trawl-only). • Identify individuals that qualify as legacy participants and the amount of QS they owned as of the control date. • Modify QS/QP tracking system to execute the ongoing QP allocation tasks. Ongoing Costs— • Transmit information on gear used on IFQ trips into the data system that monitors QP usage (landings tickets and observer data). • Execute any-gear and trawl-only QP allocations (might be automated to a large degree as part of initial implementation but may require non-programmable interventions[29]). o Track legacy participants and their QS holdings over time. o Calculate the ratio of any-gear and trawl-only QP to be issued for all other QS (not required for QP Distribution Option 2). o Calculate a ratio for each account owned at least in part by a legacy participant but for which not all QS is eligible to be issued 100 percent any-gear QP.[30] o If the QS attributable to the individual legacy participant is more than owned on the control date and the legacy participant takes part in the ownership of more than one account, request that the legacy participant identify that quota for which 100 percent any-gear QP will be issued (or come up with a default way to address this issue).
Alternative 3: Initial implementation costs— • Rule change to specify closure of non-trawl retention of northern sablefish after 29 percent of trawl allocation is projected to be gear switched. • Develop process and mechanism for inseason tracking and projection of gear-specific QP use Ongoing costs— • Modelling to project attainment of 29 percent (including projection for outstanding West Coast Groundfish Observer Program discard estimates and post-closure to sablefish discard mortality by vessel using non-trawl gear to target other species—20 percent discard mortality rate). • Announcement of closure dates.

[29] For example, a legacy participant divests of all QS but reenters the fishery at a later time. Revalidation of the legacy participants status might be required.

[30] I.e. legacy participant owned QS accounts where the legacy participant's QS is more than what they owned on the control date or the account is also owned by a non-legacy participant.

7.12.1(b)Costs of Future Changes and Manager Flexibility

Manager flexibility has to do with what it would take to modify a gear switching limitation policy in response to changing conditions or unanticipated outcomes. For example, the Council might adopt an action alternative and later discover either that a substantial amount of northern sablefish QP is going unused or that even at the gear switching cap (e.g. 29 percent) gear-switching is constraining the harvest of trawl complexes. Therefore, there is a need to consider under no action and each action alternative, how complicated and costly would it be to revise the policy and to what degree might the changes create controversy or disrupt those who are impacted? Consideration of future flexibility is important for the purpose of evaluating a management system's ability to respond to variations in outcomes and contingencies—including responses to unusual future conditions that might result from climate change.

Under No Action, to modify gear switching levels in the future, the Council would be facing a similar set of circumstances as it is today and would likely need to republish a control date at the start of such deliberations.

For Alternative 1, it is uncertain how a change in the amount of any-gear QP issued might be achieved. Thus far, two possible approaches to making temporary changes have been identified. NMFS input will be needed to determine their technical feasibility:

- Modification Approach 1: Issue QP of one gear type to QS of the opposite gear type. For example, decrease the any-gear QP issued by issuing any-gear QS holders a portion of their QP as trawl-only QP. This leaves the total amount of sablefish QP issued for each unit of QS the same.
- Modification Approach 2: Increase the amount of northern sablefish QP issued to one QS gear type and reduce the amount issued to the other. Recall that after the implementation related conversion adjustments are completed, the any-gear QS will total to 100 percent and the trawl-only QS will total to 100 percent. The trawl northern sablefish allocation is then distributed between these two types of QS, which determines the amount of QP of each type issued. This changes the total amount of sablefish QP issued for each unit of QS.

Neither of these approaches would change the amount of QS of each type that a person owns. Compared to Approach 2, Approach 1 might be less disruptive to participants but would create additional regulatory complexity and programming costs as two types of QP would be issued for one type of QS. Under Approach 1, the total amount of QP a person receives for a given amount of QS would not change, but the gear-type of QP received would not completely match with the gear type of the QS held. Facilitation of an increase in gear-switching would require providing any-gear QP to owners of trawl-only QP. This would not disrupt gear-switching or trawler activity, since any-gear QP could still be used for trawling. A decrease would require providing trawl-only QP to any-gear QS owners. While a QSA with any-gear QS might be unable to support as much gear-switching activity, they would still have trawl-only sablefish QP that could be sold to trawl gear vessels. Under Approach 2, the total amount of QP a person receives for a given amount of QS would change. Thus, there would be a greater reallocation of QP value and greater allocation and related issues, as compared to Approach 1. However, under Approach

2, all the QS and QP gear- type categories would be used consistent with their original designation as trawl-only and any-gear, resulting greater regulatory simplicity and lower implementation and ongoing costs, as compared to Approach 1.

Other approaches might be identified and explored, for example, changing the type of QS each person owns—converting QS of one type to QS of another type. Such changes could be done in a constant ratio across all QS holders or for the QS in certain accounts based on criteria that would have to be developed. A more permanent change might be more reallocative and disruptive and additional policy development efforts would be required to develop the approaches.

For Alternative 2, changes to the amount of any-gear and trawl-only QP could be made by changing the ratios of gear-specific QP issued to legacy participants, non-legacy participants, or both. For a change implemented through the legacy participants (Approach 1), a reduction in gear-switching opportunity could be achieved by issuing some trawl-only QP for legacy participants' eligible QS. Implementing a gear-switching increase only via legacy participants would not be possible. With respect to non-legacy participants, the Council might achieve an increase or decrease in the any-gear QP issued by modifying the proportion of QP issued as any-gear to non-legacy participants (Approach 2).

The public process, analytic, rule-making, and administrative burdens for changes might be similar for Approach 1 under both Alternative 1 and Alternative 2. Both would involve issuing QP of a particular gear-type for QS holdings that were not originally intended to receive that type (either gear-specific QS under Alternative 1 or generic QS under Alternative 2). Approach 2 under both Alternative 1 and Alternative 2 may also be similar to one another with respect to the public process, analytic, rule-making, and administrative burdens and may be less than Approach 1 under each alternative respectively. However, as discussed above, Alternative 1 Approach 2 would be more substantially reallocative in that it would change the total amount of QP an individual received for a given amount of QS—and therefore more controversial. The other Alternative 1 and 2 approaches described here would not be reallocative with respect to the total amount of QP issued for a given unit of QS.

For Alternative 3, the amount of northern sablefish QP used for gear-switching that triggers a season closure for retention of gear switched sablefish north could be changed to increase or decrease total gear-switching opportunity. Of the three, the gear-switching amounts allowed under Alternative 3 would be the simplest and least costly to change from analytical, rule-making, and administrative perspectives. It would also have the least direct impact on fishery participants (i.e., QS held and QP received would not change), though gear switching participants would be impacted indirectly by change in the amount of opportunity for which they compete. If it were determined that the amount of gear switching allowed should be substantially decreased, seasoning opening date choice may become an issue (due to geographic allocation effects, competing fishery opportunities, etc.); and there would be an increase in the likelihood of substantially shortened gear switching seasons—potentially leading to more competition for the opportunity to gear switch.

7.12.2 Regulatory Complexity

Regulatory complexity impacts the management system and fishery participants in several ways:

- Impacts may be limited or extend through time.
    - Complexity that affects only the initial allocation may eventually no longer be a point of reference and be removed from regulations (as has occurred for past initial allocation rules for limited entry systems).
    - Complexity that is related to ongoing provisions must be explained to new fishery participants and managers who are learning the system.
- Complexity is cumulative, increasing the work required to develop, analyze, and communicate new policy actions which modify already existing complex regulations.

A NWFSC 2017 survey of participants in West Coast fisheries found that regulations were "the biggest challenge or impediment in making a living as a fisherman" (39 percent) and that "ability to access fisheries or the cost of license or quotas" was the second (26 percent). This regulatory action is likely to affect both areas of fishermen's experiences.

Relative to No Action, all the action alternatives add some degree of complexity to the management system. A qualitative summary is provided in Table 41.

Table 41. Qualitative summary of relative complexity of the action alternatives (See Section 7.12.1(b) for additional discussion of complexity related to future modifications).

Alternative	Complexity of Initial Implementation	Complexity of On-Going Administration	Complexity of Modifying Future Gear Switching Levels
Alternative 1-- Gear Specific QS	Most Complex	Simplest	Possibly Some Complexity, Depending on Approach
Alternative 2-- Gear Specific QP	Less Complex than Alt 1	Somewhat More Complex	Potentially Simple
Alternative 3 – Seasonal Approach	Simplest	Simple	Simplest

With respect to initial implementation, while Alternative 1 and 2 require similar types of implementation tasks (see Table 40), Alternative 2 requires fewer such assessments. Depending on options selected, in addition to qualifying gear switchers based on personal history, Alternative 1 involves assessing qualification by non-gear-switchers, whether QS ownership groups or co-ops include a qualifying gear-switcher in their membership (potentially qualifying all members of such groups), qualification by first receivers, and QS transfer among family members after the control date. Alternative 2 primarily involves looking at the amounts of QS an individual owns on the control date and the gear-switching history for the LEPs they own at that time. One aspect of implementation complexity that would be somewhat greater for Alternative 2 compared to Alternative 1 is the distribution of the gear-switching opportunity. For Alternative 1, different types of QS are designated (any-gear and trawl-only), the specification and manipulation of which would fit with the functions of the existing system. For Alternative 2, a new function would have to be added to the system: any-gear/trawl-only QP ratios would have to be specified for each QS account. It would be the same ratio for most

accounts but might vary among accounts owned by legacy participants. Alternative 3 would close the fishery to sablefish retention while gear-switching on projected attainment of the gear-switching limit and be the simplest to explain and implement.

With respect to the complexity of ongoing administration, the simplest is likely Alternative 1 in that after initial issuance it makes use of the existing QS and QP tracking system and only requires the system be modified to pass the gear-used information from the landings tracking system to the QP tracking system. The new QS/QP categories would function similar to the new species categories that have been created in the past and require little Council or public attention thereafter (e.g. the north-south division of lingcod). For Alternative 2, the new gear-specific QP ratios and the variability of ratios among accounts would be an ongoing feature of the program that varies from the way other QS/QP are handled. While the variability among accounts would end after legacy participants divest, the difference in the way the QP are distributed would need to be explained and understood on an ongoing basis. While Alternative 3 is simple, on an ongoing basis it would require more public engagement than the Alternative 1 quota distributions and so add a bit more complexity to the system than Alternative 1.

7.13 General Public and Consumers

If the action alternatives result in the catch of more trawl caught complexes, domestic consumers would likely benefit. Much of the trawl caught fish competes with commodified whitefish for the shopping baskets of domestic consumers (see discussion in Section 2.4.2). Increased domestic trawl production could increase overall world seafood protein supply as well as either augment US imports (expanding US supply) or substituting for them, benefiting the trade balance.

Sablefish production also benefits domestic consumers as well as a global market. Almost all of the global supply of sablefish comes out of the US and Canada (Alaska Fisheries Science Center. 2019). Alaska contributed 63 percent and the West Coast 26 percent of the global supply from 2012 to 2016). Importers of sablefish include, in approximate order of importance, Japan, mainland China (lower price small fish), Hong Kong (higher value larger fish), the Netherlands and the United Arab Emirates. There has been increased domestic consumer interest in sablefish in recent years, particularly in high end markets and restaurants. Increased imports (from Canada) and reduced exports have caused the domestic sablefish market to expand in recent years (based on 2013- 2017 data) (Alaska Fisheries Science Center. 2019

Trawl caught sablefish tends to be smaller and receive a lower exvessel price. If an action alternative is implemented and trawlers increase catches of sablefish with concomitant decreases in catches by fixed gear vessels, the smaller lower priced trawl caught sablefish could also serve different domestic markets and thus benefit, a different set of consumers. Since the mainland China market also has a preference for lower price smaller fish, trawl caught sablefish could also potentially be of interest to their buyers. If trawlers were unable to utilize the sablefish made available by a gear-switching limit, there would be a reduction in supply for consumers.

7.14 Impact Summary

For summary, see Section 4.5.298. ***(The 4.6.2 summary will be provided as Supplemental Attachment 4 for the November 2023 briefing book).***

8.0 APPENDIX: ALTERNATIVE DESIGN -- OVERARCHING ISSUES

8.1 Control Date

When the Council identified that a limitation on gear switching might be one of the follow-on actions it would consider as a part of the trawl catch shares program review, it adopted a control date of September 15, 2017 to put participants on notice that a change in opportunities related to gear switching may occur.

> Federal Register summary: "This advance notice provides information on a request by the Pacific Fishery Management Council (Council) to establish a control date of September 15, 2017, for the Pacific Coast groundfish fishery. The Council may use the control date to limit the extent, location, or ability to use non-trawl gear types to harvest individual fishing quota (termed 'gear switching') in the Pacific Coast groundfish fishery. The Council may or may not provide credit for any gear switching related activities after the control date in any decision setting limits on gear switching. The control date would account for Pacific Coast groundfish fishery participants with historic investment to engage in gear switching should the Council set limits to future participants eligible to gear switch." Federal Register April 28, 2018

The purpose of announcing a control date in advance of developing a new limited entry policy is to discourage speculative entry into a fishery and increased harvest while the Council goes through the process of developing the program details. If the Council develops a pattern of announcing and abandoning control dates, then the veracity of control dates may be diminished and their announcement could become a signal to harvesters to intensify efforts to catch fish after the control date in order to increase their odds of qualifying for greater initial allocations because they presume the control date will not impact them. Such a response would be disruptive to fisheries and exacerbate the challenges of meeting conservation objectives. Additionally, abandoning the original control date would reduce the perceived fairness of the program by rewarding those who fished speculatively after the control date at the expense of those already in the fishery and those who heeded the control date. In other words, if control dates are not maintained then those who fished primarily on the chance that the control date would be abandoned could acquire more fishing privileges as a result of their post control date fishing, which is potentially unfair to other fishery participants.

8.2 Allocation of Gear Switching Opportunities to QS Owners, Permits and Vessels (section summary comment remaining)

Section Summary: This section focuses on the choice of the unit on which to base initial allocation of the gear switching privileges (which are currently available to all participants in the trawl IFQ program) and reviews the history of similar Council decisions.

Under its license limitation program, the Council chose to allocate limited entry permits based on vessel history rather than the history of individual fishermen. The owner of a qualifying vessel at the time of initial allocation received the permit. This helped both to limit the number of permits initially issued and provided a means for entry and exit while the program was under development (a means by which current participation was taken into account without expanding the qualifier pool with post control date entrants). For its sablefish endorsement, sablefish tier, and the Amendment 20 IFQ program, the Council allocated based on permit history. It was argued that, as with the vessel, permit transfers allowed entry and exit during development of the program and that the permit had become the primary asset associated with the fishing privilege (and had little value except to the extent that it conveys such a privilege). With the implementation of the IFQ program vessels require two permit-based assets to fish: a vessel permit (the LE Permit) and quota (another type of permit issued as QS and QP).

One of the key components affecting the distributional impacts of the alternatives that directly allocate is the choice of the basis for qualification. In the past, for the groundfish fishery, this Council has often used the vessel or permit history as the basis for allocation. In this action, alternatives also consider the use of personal history and history of QS ownership. Under the IFQ program, in order for a vessel to harvest fish, it must have an LE permit with a trawl endorsement and quota. There are different types of arrangements by which harvesters secure access to the assets they need to fish. Some own their vessels, permits, and quota shares. Some own a vessel but lease their permit and quota pounds. Others may lease all the assets they need to fish, and there are other possible combinations. Therefore, the choice of the basis for qualification will affect different participants in different ways.

The Amendment 6 license limitation system was fully implemented in 1994. During development of the program, the Council considered whether to allocate based on this history of the fisherman or the vessel. Amendment 6 limited entry permits were allocated to the persons that owned vessels with a qualifying history at the time of implementation. Using the vessel as the unit for which fishing history was assessed allowed the Council to develop a policy that accurately anticipated the number of qualifying limited entry permits and allowed fishermen to move in and out of the fishery during the period of program development, with a lesser risk to their investments. Thus, even though the vessels had to accrue their qualifying history prior to the 1988 control date, when the program was implemented in 1993, permits went to those who owned the vessels at that time. Between 1988 and 1993, fishermen were able to retire and new fishermen enter through the acquisition of a vessel that was likely to qualify. Additionally, once it became clear that vessels would likely be the basis of allocation, with increasing frequency

fishermen wishing to replace a vessel without leaving the fishery would write sales contracts that reserved the rights to any future permit issued for the replaced vessel based on activity during the time they owned it. By choosing to allocate permits to current vessel owners of vessels with qualifying catch history, the Council maintained the integrity of the control date and took into account recent and historic participation as well as investment in the fishery.

Another, advantage of allocating limited entry permits based on the history of the vessel rather than that of the fisherman was that it reduced the need to consider the various intricacies of ownership history. These intricacies include how to treat catch history when partnerships formed and separated or individuals joined together and left legal entities that might own a vessel accruing catch history. As will be seen, these issues needed to be worked through for the alternatives considered here.

For the sablefish fixed gear endorsement, sablefish tier, and IFQ program, the Council allocated based on the history of the Amendment 6 limited entry permits rather than the vessel. By allocating permits based on vessel history, Amendment 6 essentially associated the vessel history with the newly created permit asset. In doing so it established a precedent which the Council chose to follow as it created new groundfish limited access programs. As with Amendment 6, associating the privilege with a transferable asset allowed for entry and exit while the programs were under development, again taking into account recent participation (permit ownership), historic participation (history of the permit), and investment in the fishery (the amount paid for the permit). By allocating based on the permit, these programs put a greater weight on permit investment than the vessel investment. Part of the rationale was that while a vessel that did not receive an initial allocation would still have substantial value, limited entry permit that did not receive associated fixed gear sablefish harvest rights or trawl catch shares would be substantially diminished in value, substantially diminishing the permit owners asset value.

The trawl catch share program is the first limited entry program subsequent to Amendment 6 that allowed the separation of the main harvest privileges from the LE permit subsequent to initial allocation. Individuals holding trawl LE permits were issued QS accounts into which NMFS deposited the QS they were allocated. This separation and the divisibility of QS makes the allocation for a limitation on gear switching more challenging.

8.2.1 Alternative Specific Impacts

For the current action, Alternative 1 and 2 would directly reallocate the opportunity to gear switch among participants. Alternative 3 does not include a direct reallocation, but rather indirectly allocates to those who carry out their gear-switching activity prior to the fleet reaching its 29 percent cap on gear switching. Both Alternative 1 and 2 would restrict the opportunity to gear switch by converting some quota from the status quo quota (quota valid for use with any legal groundfish gear) to quota that is trawl-only. This means quota owners would be the ultimate recipient of gear switching opportunity.

Approaches were available which would not have allocated gear switching opportunity to QS owners. The Council considered gear-switching endorsement alternatives that would have assigned limited gear switching opportunity to certain LE permits based on a permit or vessel's

history of gear switching, leaving all QS and QP valid for use with any-gear (see Appendix 11.0 for the version based on permit history). Consistent with earlier limited entry actions described above, this could have allocated gear-switching limits to the permit owner, even if the permit was being leased to a vessel that was carrying out the gear switching activity. An approach based on vessel history would have provided vessels with a gear switching history the opportunity to assign an endorsement to the permit of their choosing, providing lessees more leverage in determining the distribution of the allocational benefits. Like the current gear-specific quota-based alternatives, most of the qualification options for the endorsement-based alternatives would have still required ownership of both a permit (or vessel) and QS as of the control date, however, one would not have required ownership of QS. For that option, ownership of the permit (or vessel) would not have been required until the time of implementation—providing the opportunity for entry and exit during Council deliberations, maintaining the integrity of the control date, and taking into account recent and historic participation as well as some investment in the fishery in a manner similar to past limited entry actions. However, in the final version of the alternative, the Council chose to require QS ownership as of and since the control date to place further emphasis on investment, which then required that the permit (or vessel) be owned as of and since the control date, eliminating the opportunity for entry and exit during deliberations.

Alternatives 1 and 2 would provide more gear switching opportunity (more any-gear quota) to a subset of QS owners with certain history of gear-switching vessel ownership (Alternative 1) or gear-switching permit ownership (Alternative 2), as laid out in Table 42.

Table 42. Basic elements of Alternative 1 and 2 qualification criteria and post implementation criteria.

	Alt 1 (Gear Specific QS)[a/]	Alt 2 (Gear Specific QP)
Allocate historic participation-based opportunity to QS owners who ….		
prior to the control date	owned a vessel[b/] while it engaged in gear switching;	(No requirement)
on the control date	owned QS;	owned QS and a permit with qualifying gear-switching history;
after the control date until the time of implementation	(no requirement)	continuously owned at least some QS and the permit;
at the time of initial implementation	own QS;	own QS and the permit;
After implementation provide history-based gear-switching opportunity to those who	own the any-gear QS (opportunity can be transferred between individuals) [c/]	originally qualified (history based opportunity cannot be transferred between individuals) [d/]

a/ Alternative 1 also includes provisions that would allow members of certain QS ownership groups or co-ops to qualify if one member of the group qualifies (see Section 8.2.3).
b/ A suboption would allow qualification through the ownership of a first receiver that received a qualifying level of gear-switched landings.
c/ Under Alternative 1, QS owners without a qualifying history will receive a lesser amount of any-gear QS than those with qualifying history.
d/ Under Alternative 2, all QS owners will receive some of the annually issued any-gear QP.

Note that for Alternative 1, the set of individuals that potentially qualify for a history-based allocation is restricted based on personal fishing activity prior to the control date, while for

Alternative 2, the group is restricted based on assets owned as of the control date. For Alternative 1, qualification for initial allocation requires vessel and quota ownership, while Alternative 2 requires permit and quota ownership. For Alternative 1, a QS owner does not need to maintain vessel ownership after the qualifying gear switching activity is accrued (the qualifying history goes with the person). Since permit ownership is not required, a vessel owner that leased a trawl LE permit in order to gear switch would be able to qualify. In contrast, for Alternative 2, the gear-switching history is associated with the permit and transfers with it, such that a QS owner who owns the permit on the control date qualifies, even if they did not themselves participate in the qualifying gear-switching activity. For Alternative 2, the LE permit owner that leased its permit to the gear-switching vessel would qualify.

The difference between these two approaches in terms of numbers of qualifiers and numbers that are benefited by one approach but not the other is shown in the following two tables. Table 43 shows, for those individuals that would qualify as gear-switching participants under Alternative 1 qualification options, the number that would qualify as legacy participants under Alternative 2. Those that qualify under both alternatives the individual would have to both have owned a vessel when it did gear switching and own a qualifying permit. Table 44 shows the inverse of Table 43, displaying, for those qualifying as legacy participants under Alternative 2, the number that would qualify as gear-switching participants under each of the Alternative 1 qualification options. As an example, Table 43 shows there are 16 individuals that would qualify under Alternative 1, Gear-Switching Participant Option 2 based on their personal history of vessel ownership. Of those 16 individuals, based on their ownership of a permit as of and since the control date, 13 would qualify as a legacy participant under Alternative 2. In each table, the far-right column shows the number of individuals that would only qualify under the alternative and option for that row. For example, three of the 16 qualifiers for Alternative 1, Gear-Switching Participant Option 2 would not qualify under either option for Alternative 2.

Table 43. Number of individuals qualifying under Alternative 1 and number qualifying and not qualifying under Alternative 2, by qualification option (qualification via group or co-op membership or qualified first receiver status not included).

Alternative 1 Qualification Options *Basic Qualifier: Own QS and Own a Vessel When It Made Gear Switched Landings*	Total Individuals Qualifying under Alt 1	*Number of Individuals that*	
		Also Qualify Under Alternative 2	*Do not Qualify Under Alt 2*
GS Participation Option 1 *Only One Landing Required*	32 [a/]	14	18[a/]
GS Participation Option 2 *30,000 lbs in each of 3 yrs Required*	16	13	3

a/An additional 3 individuals would qualify under the group QS ownership criteria for GS Participation Option 1 and are not included in this estimate.

Table 44. Number of individuals qualifying under Alternative 2 and number qualifying and not qualifying under Alternative 1, by qualification option (qualification via group or co-op membership or qualified first receiver status not included).

Alternative 2 Qualification Options	Total Individuals Qualifying under Alt 2	Number of Individuals Also Qualify Under **Alternative 1** *Basic Qualifier: Own QS and Owned a Vessel When It Made Gear Switched Landings*		*Individuals that Do not Qualify Under Alt 1*
		GS Participant Option 1 *Only One Landing Required*	**GS Participant Option 2** *30,000 lbs in each of 3 yrs Required*	
Own QS and Own Permit With History (30,000 lbs in each of 3 yrs)	19	14	13	5

These results show the degree of overlap and difference between the individuals that owned vessels when they made gear-switched landings and those that own the permits with gear switching history. These differences might arise for different reasons. For example, an individual that owned a vessel and permit when it made gear-switched landings might sell the permit (perhaps together with a vessel) to someone else and buy a new permit (and vessel). Under Alternative 1, that person would qualify because it is based on personal history, not history of the asset. Under Alternative 2, the person who bought the permit used for gear switching could qualify, if they acquired it by the time of the control date. Or, the owner of a gear switching vessel might lease the permit they use with the vessel, so that once again, under Alternative 1 the person with the history of being a vessel owner would qualify while under Alternative 2 the current owner of the permit would qualify. (See discussion in Section 7.8.1)

8.2.2 Recent Entrants

Transfer opportunities prior to initial allocation relate to entry/exit during deliberations and the consideration of current vs. historic participation as well as investments. Between the control date and initial allocation neither alternative allows the transfer of catch history and the attendant opportunity to receive a history-based allocation. Alternative 1 qualifying gear switching history is personal and cannot be transferred prior to initial allocation (including prior to the control date). After initial allocation, the long-term access to gear-switching opportunity can be transferred (i.e. the any-gear QS, last line of Table 42). In contrast, under Alternative 2, qualifying history can be transferred up to the control date via permit transfer, but after the control date the history-based status is associated with the person (legacy participants) and cannot be transferred to others. Even after implementation, the additional gear-switching opportunity given to the legacy participant cannot be transferred to others. See Section 4.2.4(b) for further discussion of the reasons for these differences in post implementation transferability.

Note that unlike previous limited entry actions by the Council, described above, neither of the quota-based alternatives provide an opportunity for those entering the fishery after the control date and before initial allocation to secure access to a history-based allocation of the new harvest privilege—i.e. during the time that the Council has been deliberating this policy. This restriction on entry/exit opportunity between the control date an implementation (as compared to previous limited entry action) is due to the divisible and fungible nature of the asset to which the gear-switching opportunity is applied (the gear-specific quota). The association of particular quota with gear-switching history is challenging and requires making certain assumptions. And, it

would likely be even more difficult for individuals entering and exiting the fishery to know the degree to which the quota they are buying is associated with gear-switching history. If those assignments could be made, then it would be possible to allocate based on the history of the quota and take into account quota transfers during deliberations. Because of the challenge, the alternatives assign history to more trackable entities, the person (Alternative 1) and the permit (Alternative 2). However, this leaves open the amount of quota for which a history-based allocation will be provided. To avoid a situation where people try to enhance their initial allocation by acquiring more quota prior to implementation, the requirement is included that the quota must be owned as of the control date, and, for Alternative 2, that the qualifying permit must also be owned (so that permits with qualifying history are not transferred to individuals that own large amounts of quota but had not previously gear-switched).

While the alternatives do not provide history-based allocations of gear-switching opportunity to those entering after the control date, some gear switching opportunity is provided. Generally, Alternative 1 and 2 would both provide some any-gear quota for individuals that own QS as of the control date but do not meet gear-switching qualification requirements—but in lower amounts than for those that meet qualification requirements.[31] With respect to individuals who acquire QS after the control date, Alternative 1 would provide those individuals with no any-gear quota while Alternative 2 would provide them with any-gear quota in the same standard ratio received by non-qualifiers that owned QS on the control date.

The qualification requirements and basis for allocation also interacts with the control date, impacting the time frame during which the fishery must be entered in order to qualify (consideration of historic participation). The alternatives differ on the latest date by which a person must have entered the fishery in order to qualify for a history-based allocation. Alternative 1, Gear-Switching Participant Option 2, requires that the person have three years of gear-switched landings as a vessel owner. Thus, a qualifying individual must have begun gear switching no later than 2015. In contrast Alternative 1, Gear-Switching Participant Option 1, requires only one landing (which could have been made as late as the control date); and Alternative 2 allows a person to qualifying by acquisition of a qualifying permit any time up to the control date (without themselves necessarily having engaged in gear switching).

8.2.3 Additional Opportunities for Qualification

In addition to qualifying based on individual history of owning a vessel while it made qualifying levels of gear switched landings, Alternative 1, also provides qualification based on group membership for individuals that:

> were part of a QS ownership group when at least one member of the group owned a vessel or vessels and met this landing criteria; OR

[31] One option in Alternative 1 would only provide that any-gear quota for individuals that meet a bottom trawl participation requirement.

were members of a registered cooperative that transferred their sablefish QP[32] to gear switching vessel(s) owned by members of the cooperative which met this landing criteria.[33]

While Alternative 1 includes some criteria relevant to qualification of all participants in certain organized groups, it does not allocate based on the vessel ownership history of legal entities. For example, if ABC Fish Inc. owned a vessel that gear switched prior to the control date, each individual owner of ABC Inc., would potentially qualify but not ABC Fish Inc. itself. If the ownership of ABC Fish Inc. decided to leave fishing and sold the business to another individual or group, the new owner(s) would not accrue credit for the gear-switching history of ABC Fish Inc. or its previous owners. For Alternative 2, if the transfer of ownership occurred prior to the control date and, as part of the transfer, the new entity also acquired the permit used by the gear-switching vessel, then ABC Fish Inc. would accrue credit for that gear switching history via the permit.

As described above, the qualification provisions for Alternative 1 and 2 have substantial differences in the ways that they take into account current and historic participation and investment. Note that the qualification provisions of the alternatives could be switched with each other while still maintaining the same basic difference between the alternatives (i.e., Alternative 1 provides gear specific QS while Alternative 2 provides gear specific QP).

8.3 Determination of Qualification Criteria

During the SaMTAAC deliberations, the question of who would receive the gear switching opportunity and the required landings need to qualify were discussed at length. In May 2019, staff produced an initial assessment of the number of vessels or permits that would qualify based on a given number of years with a minimum amount of landings prior to the control date (SaMTAAC Agenda Item F, Attachment 1, May 2019). Table 45 and Table 46 below provide an update of those initial analyses with more discrete minimum landing levels and number of years with the minimum landing requirement. For both Alternative 1 and 2, a minimum qualification limit of 30,000 pounds for at least three years prior to the control date was included- with Alternative 1 using vessels as the qualifier and Alternative 2 using permits. There appears to be a strong relationship in the shift from two to three years across almost all landing levels. For the landings level, there is not as clear of a pattern from one level to the next- particularly in the 25,000-35,000 lb range in the various year columns. The average annual revenue associated with the minimum landings amount is provided in the far right column of Table 36 as an indicator of the revenue difference between the levels.

[32] "Their sablefish QP" means the individual owns northern sablefish QS for which they received QP.

[33] The vessel receiving the QP must have been making gear-switched landings in the year of the QP transfer. This criteria does not require that the particular year in which such a transfer is made be one that counts toward meeting the requirement.

Table 45. Number of vessels that gear switched a given amount of sablefish north by the number of years (2011-CD)

Amount of Gear Switched Landings	Number of Years							Annual Average Revenue Associated with Minimum Landings Amount a/
	1	2	3	4	5	6	7	
5,000 lbs	33	21	15	13	10	6	3	14,150
10,000 lbs	32	21	15	12	10	6	2	28,300
15,000 lbs	29	21	15	12	9	5	2	42,450
20,000 lbs	28	19	13	10	9	5	1	56,600
25,000 lbs	27	19	13	10	8	5	1	70,750
30,000 lbs	27	18	11	10	7	5	1	84,900
35,000 lbs	25	17	10	8	7	5	1	99,050
40,000 lbs	23	15	10	8	6	5	1	113,200
45,000 lbs	23	15	10	8	7	5	1	127,350
50,000 lbs.	23	15	10	8	6	5	1	141,500
70,000 lbs	19	14	6	6	6	5	1	198,100
100,000 lbs	18	8	6	5	3	3	0	283,000

a/ assumes avg. price of $2.83 (2011-CD avg. price)

Table 46. Number of permits that gear switched a given amount of sablefish north by the number of years (2011-CD).

Amount	Number of Years					
	1	2	3	4	5	6
5,000 lbs	33	25	15	13	10	5
10,000 lbs	33	25	15	11	10	4
15,000 lbs	33	23	15	11	9	3
20,000 lbs	31	21	13	10	9	2
25,000 lbs	30	21	13	10	8	2
30,000 lbs	30	20	11	10	7	2
35,000 lbs	28	19	10	9	7	2
40,000 lbs	26	17	10	8	6	1
45,000 lbs	26	17	10	8	7	1
50,000 lbs	26	17	10	8	6	1
70,000 lbs	22	16	6	6	6	1
100,000 lbs	21	9	5	4	3	1

9.0 APPENDIX: ALTERNATIVE DESIGN -- SPECIFIC ELEMENTS

This section is intended to provide a more detailed examination of some of the unique elements of each action alternative. If the Council chooses to select elements from one alternative and

incorporate it into another alternative for the PPA, this analysis should be able to provide a preliminary understanding of the impacts of that addition.

9.1 Alternative 1—Gear Specific QS

In November 2022, Appendix 2.0 of Attachment 3 provided an in-depth analysis of how QS types would be issued across participant types under the QP Split Options, including both the individual and collective approaches. The following section provides a higher level assessment of the revised participation options and QP Split Options adopted by the Council in November 2022 and April 2023.

As in November 2022, "current" QS holders are specified as those that owned northern sablefish QS at the end of 2021. Changes in the amounts of QS in the accounts between the end of 2021 and the implementation date may alter the results of this analysis. Additionally, the QP Split Option chosen affects the amount of QS converted (issued as) to any-gear and trawl-only. QS Split Option 1 issues any-gear QS in amounts equivalent to 29 percent of the trawl QP allocation (26.1 percent allocated QS plus 2.9 percent of the AMP QS). QP Split Option 2 issues any-gear QS in amounts equivalent to the smaller of 29 percent of the trawl QP allocation and 1.8 million pounds with the remainder issued as trawl-only QS. Therefore, for QS Split Option 2, any allocation in excess of 6.2 million pounds would be restricted to 1.8 million pounds of any-gear QPs. In 2021, the sablefish north allocation was 6,921,611 pounds and 29 percent of that allocation would be over 2 million pounds. Therefore, under QP Split Option 2 for this analysis, the cap would be 1.8 million pounds any-gear QPs. This poundage equates to approximately 26.0 percent of the QPs in 2021–which would be 23.4 percent of the QS being issued as any-gear QS.

Table 47 below shows the number of individuals that would qualify as a gear-switching participant via the various pathways (as an individual with vessel history, being part of a QS ownership group, a co-op, or a FR) under each gear-switching participant and conversion option. Table 48 shows the distribution of any-gear QS among gear-switching and non-gear switching participants across the two conversion options, the gear-switching participant qualification options and for each QP split option. The first row only includes those individuals that would qualify based on individual vessel history or from being part of a QS ownership group (i.e., first two rows of Table 47). As noted in Table 19 above, participants involved in co-ops and the corresponding QS amounts would not be available until the time of implementation. As described in Attachment 1, Conversion Option 1 would issue 100 percent of eligible QS as any-gear to those qualifying under either gear-switching participant option where Conversion Option 2 would issue 100 percent of eligible QS as any-gear only to those qualifying under Gear-Switching Participant Option 2 and 50 percent to those under Gear Participant Option 1. For those qualifying only under Option 1, 50 percent of their eligible QS would be issued at the same ratio issued to non-gear switching participants.

For example, under Conversion Option 1 and Gear-Switching Participant Option 1, there would be 32 individuals that would qualify based on their personal gear switching history as a vessel owner and three that would qualify based on their history of being in a QS ownership group (Table 47). Those 35 participants would be issued a total of 19.8 percent QS (22 percent of the QPs) as any-gear QS (Table 48). There would be 6.3 percent QS (7 percent of the QPs) and 3.6 percent QS (4 percent of the QPs) that would be issued across all non-gear-switching participants

under QP Split Options 1 and 2, respectively (to be reduced by any amounts of QS owned by those that would qualify as gear-switching participants via co-op memberships). Under Conversion Option 2, where both gear-switching participant options are chosen, 15 percent QS (16.7 percent of the QPs) would be issued as any-gear to qualified gear-switching participants. With the selection of the FR Suboption, an additional three individuals would qualify (Table 47) with an associated 1.3 percent of the QS being issued as 100 percent any-gear. This would reduce the amount received by non-gear-switching participants, as can be seen by comparing values in the top of Table 48 with those on the bottom.

The amount of any-gear QS that could be issued to non-gear-switching participants is significantly affected by the conversion option, gear switching participation option, and the QP split option and will be impacted to a lesser degree by whether or not the FR Suboption is selected. Of note, under Gear-Switching Participant Option 1, which qualifies the most number of participants across either Alternative 1 or 2, there is relatively little any-gear QS that would end up in the accounts of non-gear switching participants. This is particularly true under QP Split Option 2, where, using 2021 as the example year, the total percentage of QS to be converted to any-gear is less than the 26.1 percent that would be converted under QP Split Option 1. Depending on the number of qualifiers resulting from co-op transfers, non-gear-switching participants could receive minimal, if any, any-gear QS. For some sets of options, a contingency policy might be needed in case the amount of QS owned by gear-switching participant qualifiers was in excess of the total amount of gear-switching to be allowed.

Table 47. Number of Individuals Qualified by Alternative 1 Conversion Options and Gear Switching Participation Option.

Conversion Option	**Conversion Option 1**		**Conversion Option 2**
GS Participant Option	**GS Participant Option 1**	**GS Participant Option 2**	**GS Participant Options 1 and 2**
Vessel History	32	13	32
QS Ownership Group	3	0	3
Co-Op	TBD	TBD	TBD
First Receiver	3	3	3

Table 48. Distributional Impacts of Alternative 1 Conversion Options, Gear Switching Participation Option, and QP Split Options across participant types.

	Conversion Option 1				Conversion Option 2	
	GS Participant Option 1		GS Participant Option 2		GS Participant Options 1 and 2	
Total Any-Gear QS issued to	QP Split Option 1	QP Split Option 2	QP Split Option 1	QP Split Option 2	QP Split Option 1	QP Split Option 2
GS Participants	19.8		7.8		15	
Non-GS Participants	6.3	3.6	18.3	15.6	11.1	8.4
Total	26.1	23.4	26.1	23.4	26.1	23.4
	With First Receiver Suboption (1.3% QS)					
GS Participants	21.1		9.1		16.3	
Non-GS Participants	5.0	2.3	17.0	14.3	9.8	7.1
Total	26.1	23.4	26.1	23.4	26.1	23.4

The decision on the non-gear switching participant option determines how the remaining any-gear QS (sixth row and second to last row of Table 48) is allocated. Under Non-Gear-Switching Participant Option 1, it would be spread across all QS owners that owned QS on the control date. For Option 2, it would be spread across a smaller subset of individuals that were associated with sablefish north bottom trawl landings in the two years prior to implementation. Table 49 shows the numbers of individuals that would qualify under each non-gear-switching participant option. As in November 2022, this analysis uses 2019-2020 data for the bottom trawl landings history to develop the estimate for Non-Gear-Switching Participant Option 2. If the Council selected Alternative 1 as the iPPA, then this analysis could be updated to more recent data. Regardless of the years selected, if there is opportunity between Council action and the year of implementation, under Option 2, additional vessels could find ways to log bottom trawl landings in order to receive some any-gear QS as a qualified non-gear-switching participant. The Council could also include the FR Suboption to Non-Gear Switching Participant Option 2 (these entities would already be included under Option 1, since all that is required under that option is ownership of QS on the control date).

Table 49. Number of individuals that would qualify under non-gear switching participation options based on each gear-switching participant option

GS Participant Option	Number of Individuals that Receive Any-Gear QS Under..		
	Non-GS Option 1	Non-GS Option 2	Non-GS Option 2 with FR Suboption
GS Option 1	160	45	52
GS Option 2	179	51	58

9.2 Alternative 2—Gear Specific QP

Under Alternative 2, any-gear and trawl-only QPs would be issued to QS accounts holders based on their history as a qualified gear switcher (i.e., legacy participant). Legacy participants would receive 100 percent any-gear QPs for their eligible QS. QS owned by non-legacy participants (as

well as any QS amounts owned by legacy participants in excess of their control date holdings) would be distributed in a ratio based on the QP Distribution Option selected.

Under QP Distribution Options 1 and 2, the initial ratio issued for non-legacy participants would be the same and would result in 29 percent maximum level of gear switching at the time of implementation (second to last column of Table 50). QP Distribution Options 1 and 2 differ in terms of how the ratios change as legacy participants divest themselves of QS. As that happens, QP Distribution Option 1 would maintain an overall any-gear QP level of 29 percent by increasing the any-gear QP portion of the ratio allocated to non-legacy participants until that portion is 29 percent any-gear QP. Under QP Distribution Option 2, the any-gear QP level would decline because the ratio would not be adjusted (last column of Table 50).

Table 50. Distribution of any-gear QPs to legacy and non-legacy participants, ratio of any-gear and trawl only QPs issued to non-legacy participants, and maximum amount of gear switching at implementation and over time by QP Distribution Option.

QP Distribution Option	Any-Gear QPs Issued to		QP Ratio Issued to Non-Legacy Participants (Initially)			Maximum Amount of Gear Switching	
	Legacy Participants	Non-Legacy Participants [a/]	Any-Gear	Trawl-Only	Changes Over Time?	At Implementation	Over Time
1	12.6	16.4	18.8	81.2	Yes [b/]	29	29
2		16.4	18.8	81.2	No	29	18.8

a/ Includes individuals that did not qualify as a legacy participant and the QP equivalent of the QS a legacy participant owns in excess of the control date holdings.
b/ Increases to a maximum of 29 percent.

9.3 Alternative 3—Seasonal Management

Under Alternative 3, retention of sablefish north via gear switching could continue until 29 percent of the allocation was attained or projected to be attained. This section attempts to provide a background on the historical trends of the seasonality of gear switching along with factors that could influence those trends in the future.

During the first seven years of the program, gear switched landings tended to be fairly flat through June (with the exception of 2012), with the landings amounts accumulating quickly after June (Figure 24). Starting in 2018 however, there appears to be more of an uptick in catch at the beginning of the year and having a more gradual slope throughout the year (until about September). This trend can also be seen in Figure 26, where the percentage of catch occurring in earlier months is higher in recent years.

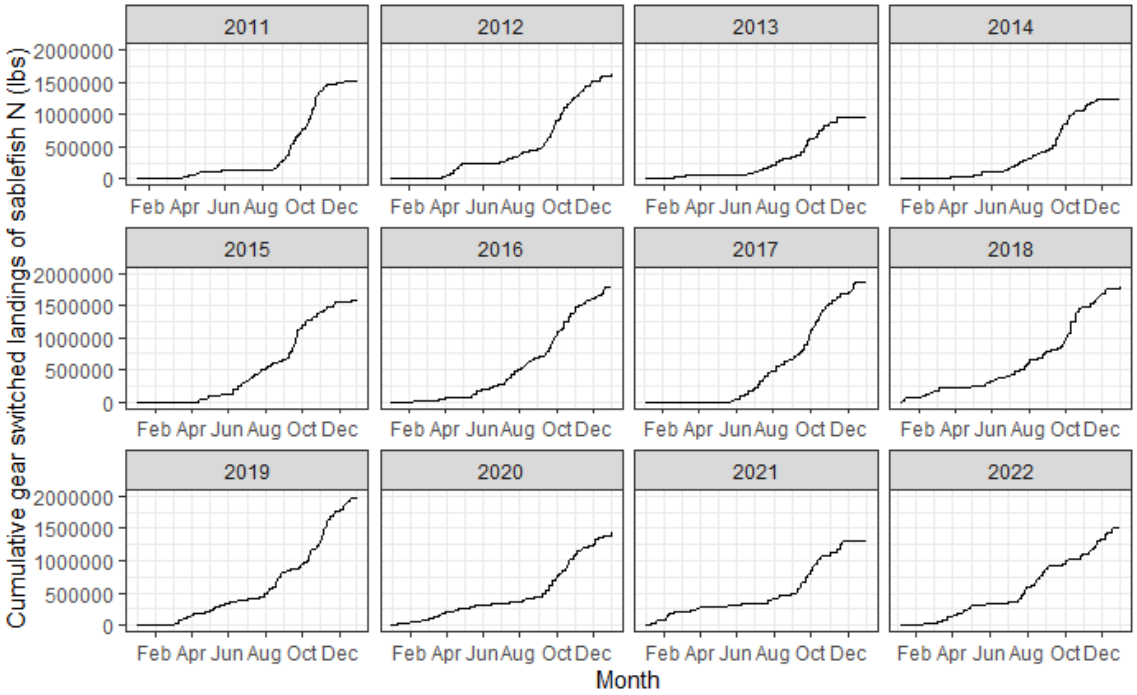


Figure 24. Cumulative gear switched landings by month and year, 2011-2022.

The majority of gear switched catch (both in terms of total catch and percent of allocation) has historically occurred in September and October with the exception of 2019 and 2022. The highest two months in those years were August and November. If under Alternative 3, the fleet was able and intended to harvest at least 29 percent or more of the allocation, it is likely that some of those vessels that typically operate in November and December (to the right of the black line in Figure 27) would have to adjust their fishing dates to fully harvest their intended amount. Ultimately, some vessels would have their desired fishing levels truncated. Historically, the majority of vessels in the gear-switching fleet have taken half of their total annual catches by September or October. Overtime, economic and fishery conditions that encourage vessels to gear switch at levels greater than 29 percent may lead to vessels fishing even more at the beginning of the year–potentially increasing the likelihood of reaching 29 percent and closing even earlier. If vessel behavior were to change and vessels fished more earlier in the year or if the fleet size were to expand (see discussion in Section 2.5 on factors that may influence future gear switching levels), it is possible that an early season closure could occur.

If the season shortens, not only could timing of gear switched landings be impacted temporally on a coastwide level, but also spatially. While the proportion of gear switching landings have been relatively stable over time (with Oregon taking the majority of landings each year), there have been shifts in the timing of those landings (Figure 25). Recently landings into California have shifted earlier in the year in the last four years where Oregon typically sees landings starting in June and Washington's pattern has been inconsistent. If Alternative 3 were to result vessels fishing earlier to ensure the ability to gear switch, regional differences in opportunity related to weather and other conditions may influence the geographic distribution of landings.

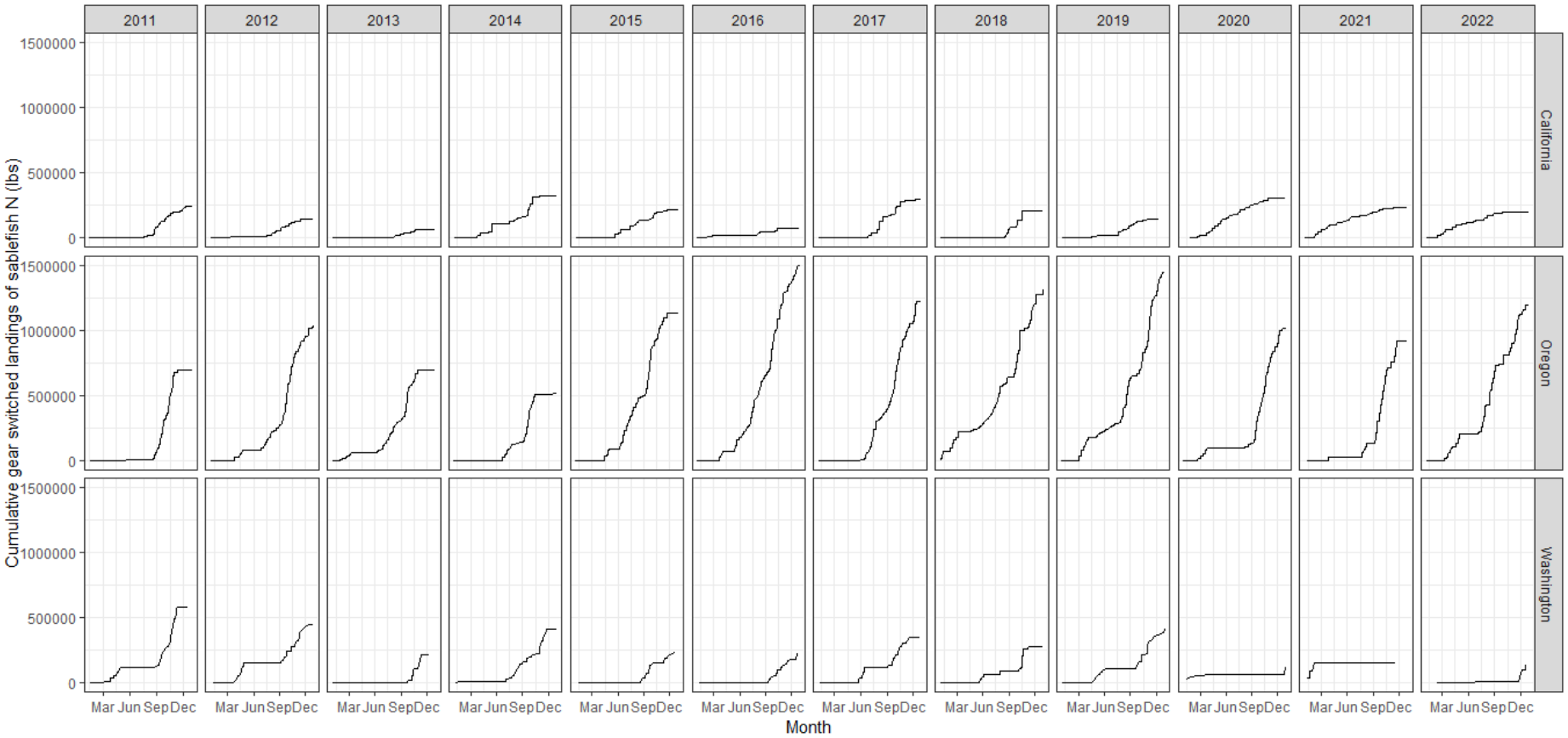


Figure 25. Cumulative distribution of gear switched landings of sablefish north annually by state and year, 2011-2022.

Competing opportunities (discussed in Section 2.5.4) may also influence the temporal distribution of gear switching. Vessels and processors may prioritize fisheries such as Dungeness crab or Alaska sablefish at the beginning of the year maintaining a similar start time as under No Action. The presence of these opportunities might inhibit the development of an early season emphasis on gear switching. On the other hand, given that tier sablefish could be taken later in the year starting in 2023, vessels that typically fished their tier quota and then IFQ may reverse the order to ensure access to the gear switching allocation in the IFQ sector.

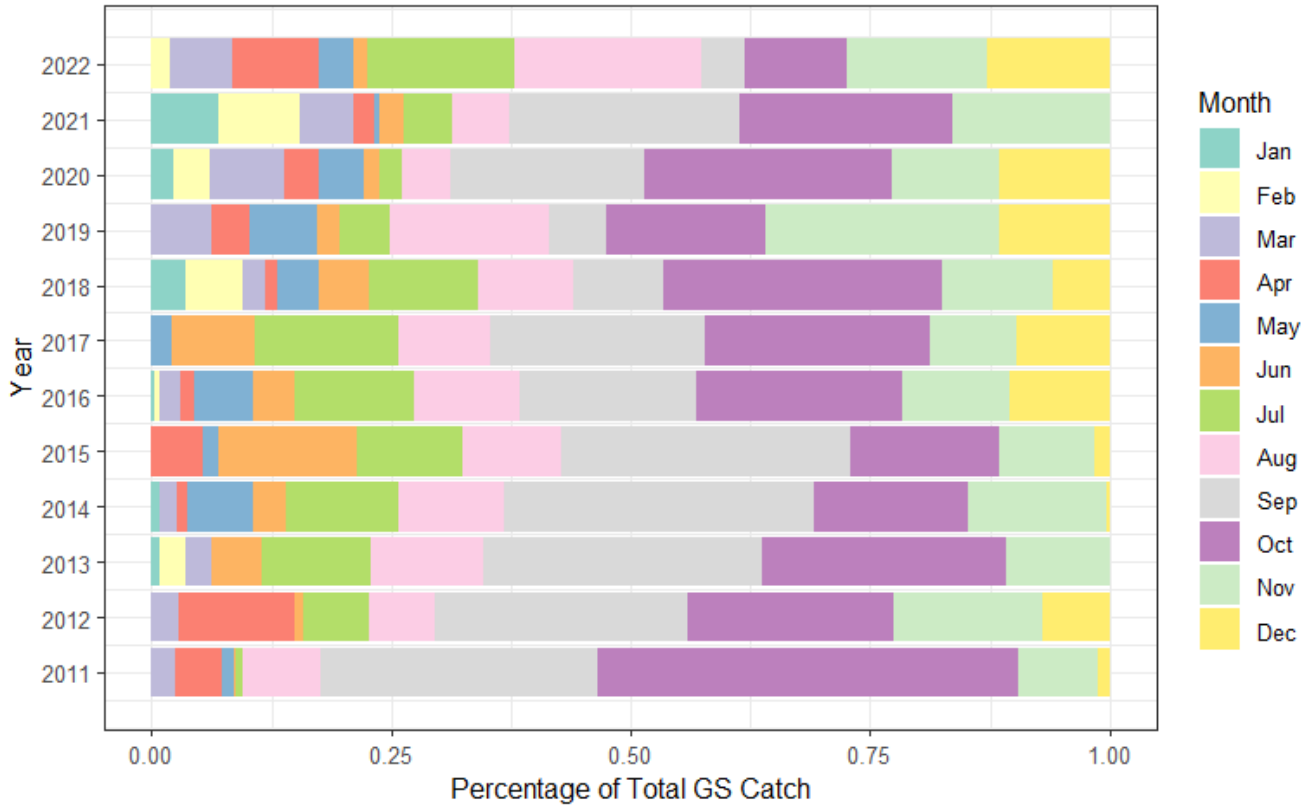


Figure 26. Percentage of total gear switched catch of sablefish north by month, 2011-2022

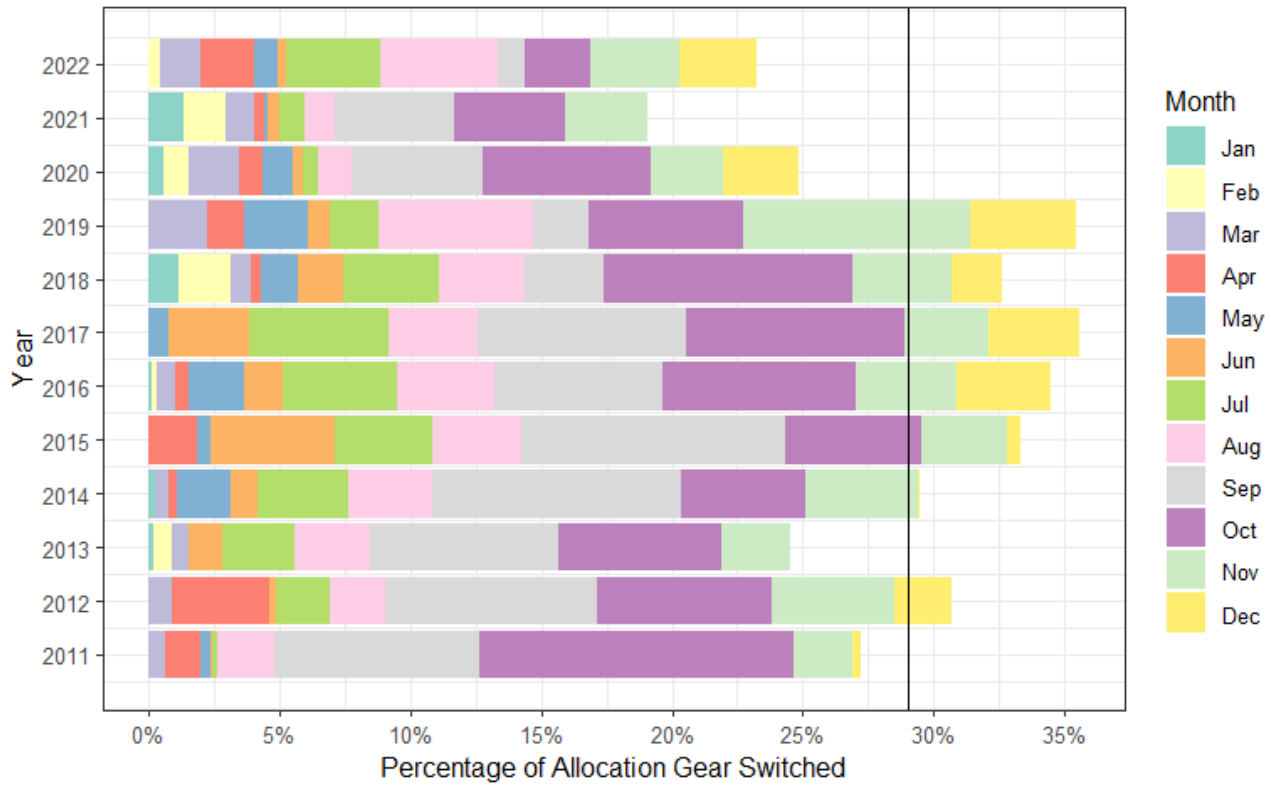


Figure 27. Percent of sablefish north IFQ allocation gear switched by month and year, 2011-2022. 29 percent shown as reference line in black.

While the 29 percent is a limit on gear switching, whether it reduces the season is ultimately dependent on whether or not gear switching vessels have the quota and capacity to catch the 29 percent. For example, if trawl vessels catch in excess of 71 percent of the allocation, it would further limit the amount that is available for gear switching. Looking at historical trawl catch of sablefish north by month (Figure 28), the trends over the 2011-2022 time series generally appears to be more stable compared to the gear switching trends (Figure 27). There have only been two years in which trawl catch of sablefish was greater than 71 percent–2013 and 2022 (Figure 29). These two years represent the lowest and the second highest allocations on record. In 2013, the year of the lowest sablefish allocation and level of gear switching (Table 3), the majority of catch was made by bottom trawl vessels (~76 percent) with whiting vessels taking 0.04 percent. In 2022 however, every fishery in the IFQ program utilized sablefish QPs and often at a higher rate–with shoreside whiting taking the most QPs over the time series (12.5 percent of the catch). If trawl vessels were able to utilize more than 71 percent of the allocation–whether through direct targeting of sablefish, increased bycatch, or lower allocations with similar vessel capacity—then the amount of gear switched landings would potentially decrease, reducing the chances that gear-switchers will exceed 29 percent and increasing the likelihood of year-round gear-switching.

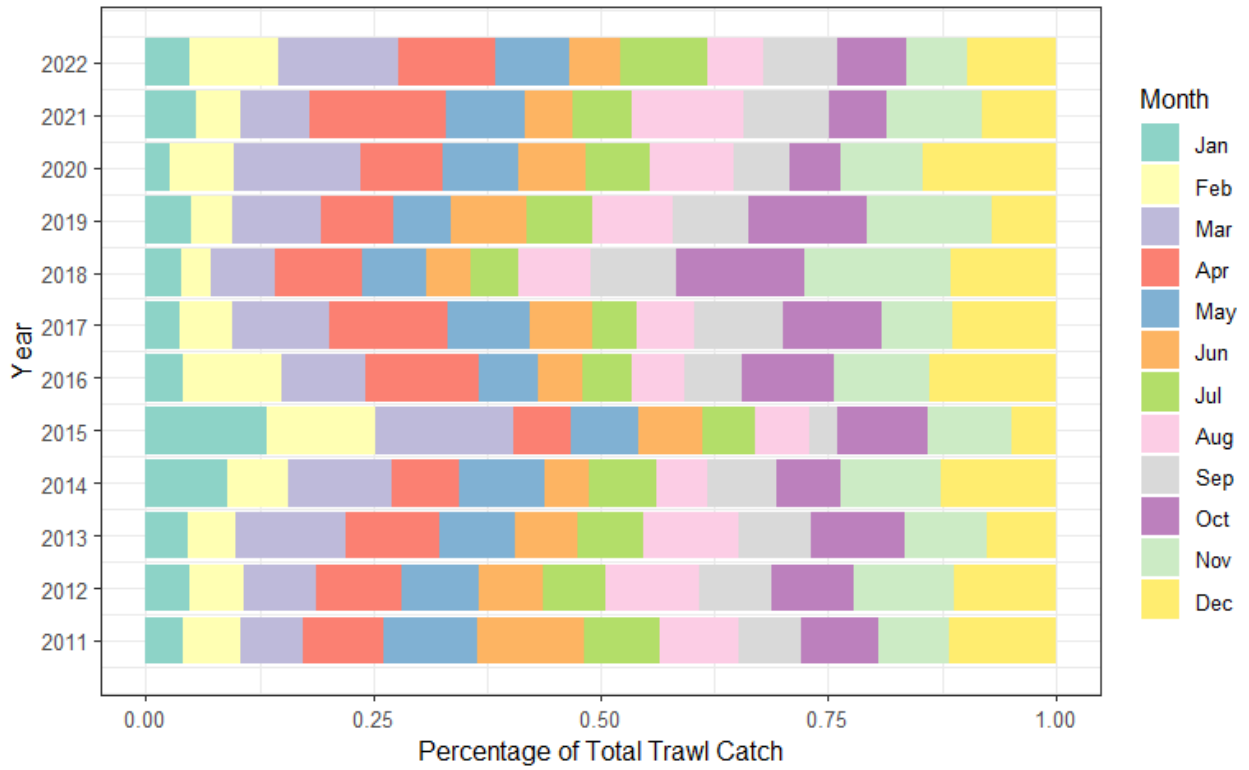


Figure 28. Percentage of total trawl catch of sablefish north by month, 2011-2022

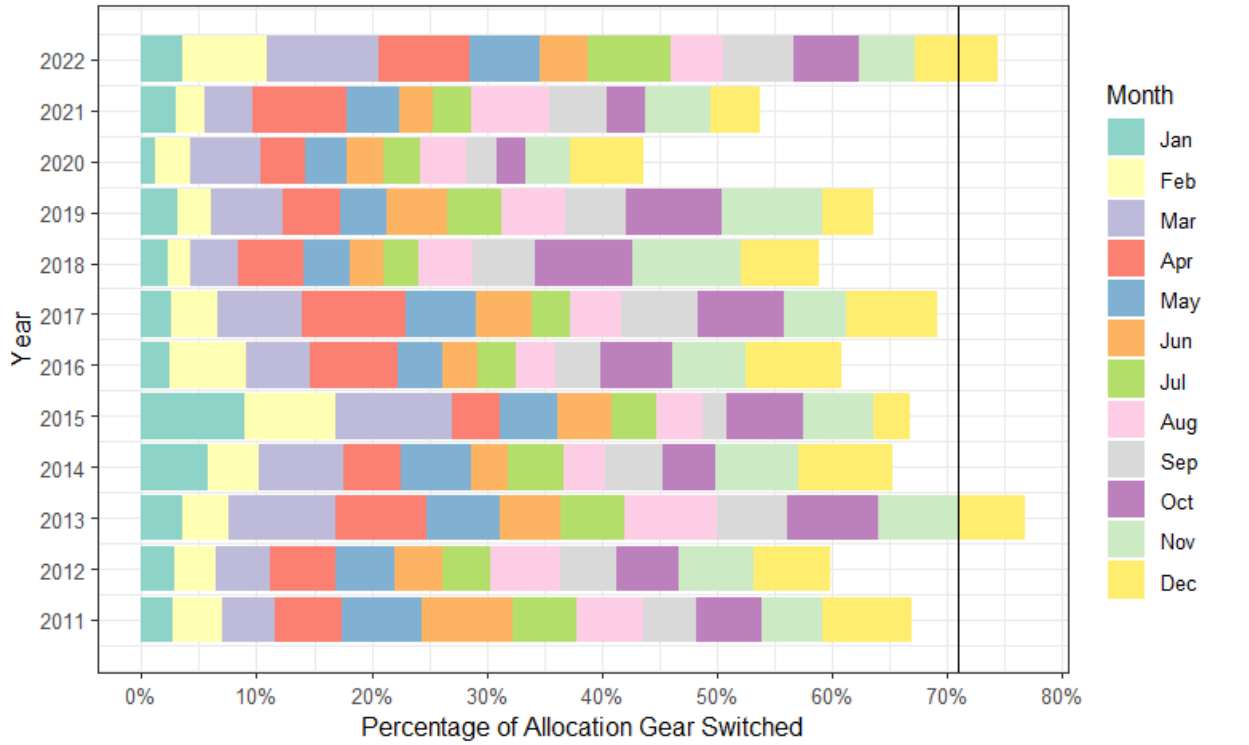


Figure 29. Percentage of sablefish north IFQ allocation caught by trawl gear 2011-2022. 71 percent shown by black line.

Overall, factors that might cause a shortening of the season include but are not limited to:

- How do gear switchers respond in the following year if they do not catch their intended amount of fish in a particular year because the fishery closes—do they
    - decide to fish a little earlier in the following year in order to utilize their QP or
    - buy less QP or plan to sell any QP they can't use.
- Number of pounds provided by the 29 percent limit (as ACLs decline 29 percent is a smaller total amount of QP).
    - If gear switchers buy and use the same amount of QP but the ACL has gone down, the 29 percent will be reached more quickly. (Then the bullet one question, in the following year do they arrange to hold less QP or fish earlier).
- Higher market prices for fixed gear caught sablefish and/or reduced profit opportunities in other fisheries.
- A Council decision to reduce gear switching by reducing the trigger that closes the season (see Section 4.1.2(e)).

Overall, factors that might result in maintaining a year-round gear switching season include:

- Gear-switcher response – see previous list first bullet, second sub-bullet.
- Trawl gear vessel use of more than 71 percent of the QP.
- Lower market prices for fixed gear caught sablefish and/or greater profit opportunities in other fisheries.

10.0 APPENDIX: BACKGROUND INFORMATION

10.1 Trawl Sector Fleet Descriptors

The shorebased IFQ fishery is comprised of fleet of vessels targeting a variety of different strategies using multiple gear types, many of which use sablefish north quota (as described in Section 2.4.5). On average, approximately 95 percent of all vessels with IFQ landings landed sablefish north. Table 51 below shows the number of vessels that harvested sablefish north in the IFQ program with fixed gear (gear switching), bottom trawl, and midwater trawl (rockfish and whiting) from 2011 to 2022. Over the time series, there were 106 distinct vessels and 110 permits that harvested sablefish north with trawl gear compared to 42 vessels and 42 permits associated with gear switching. Within these gear-switching totals are also a very small subset of vessels and permits that harvested sablefish north with fixed gear and trawl gear in the same year. Since 2011, there have been 10 distinct vessels and 12 permits that used both fixed gear and trawl gear in the same year to land sablefish north, with an average of just over one vessel and permit per year. Due to confidentiality, no yearly totals can be provided for those vessels or permits.

Table 51. Number of vessels with sablefish north landings by sector compared to total IFQ vessels coastwide, 2011-2022. Note- vessels can be included in multiple sectors each year.

Year	Gear Switching	Bottom Trawl	Midwater Trawl	Total IFQ Vessels
2011	17	70	24	108
2012	20	64	24	105
2013	11	66	19	103
2014	15	62	24	101
2015	14	58	22	93
2016	16	56	20	92
2017	16	62	26	95
2018	15	57	30	96
2019	15	54	28	93
2020	9	50	31	82
2021	7	47	27	78
2022	10	51	32	81

With the trawl fleet participants, there have been concerns about the impact of gear switching utilization of sablefish and the constraints to the DTS fleet. In particular, there have been concerns about the smaller operations that may be impacted more than larger operations if they were unable to target DTS due to sablefish constraints. Bottom trawl vessels could be thought of in two categories- those who only bottom trawl in the IFQ fishery and those who fish both midwater and bottom trawl. Approximately half of the bottom trawl fleet fit into each category in the last four years since the allowance of carrying multiple trawl gear types on a single trip in 2019. There are also a fairly consistent number of vessels that participate in only midwater trawl, however, as discussed in Section 2.4.5, these vessels are thought to be able to outcompete bottom trawl and gear-switching vessels for sablefish QPs and are therefore not discussed further.

Table 52. Number of trawl vessels by strategy, 2018-2022.

Year	Bottom Trawl Only	Midwater/Bottom Trawl	Midwater Trawl Only
2018	36	21	23
2019	28	32	19
2020	27	26	20
2021	28	24	18
2022	27	30	14

DTS contribution to each vessel groups' (bottom trawl only, midwater/bottom trawl) portfolio varies (based on total West Coast revenue in 2023$). In looking at the bottom trawl only group, across operational sizes, there does not appear to be large difference in the median proportion of DTS is contributing to the vessel revenue (Figure 30). While there are smaller vessels that rely more heavily on DTS in most years (shown by the extent of the boxes and tails to the upper bounds of the y-axis), there are also vessels that rely on DTS less than do the larger operations. For those vessels that participated in both bottom trawl and midwater trawl, the medium ($500,000 to $1 million) or larger (over $1 million) operations, tend to have a larger proportion coming from that DTS compared to smaller vessels- suggesting that those smaller vessels that do

both strategies may not be as impacted by limitations or changes to DTS opportunities. A count of the number of vessels in each group and revenue bin is provided Table 53.

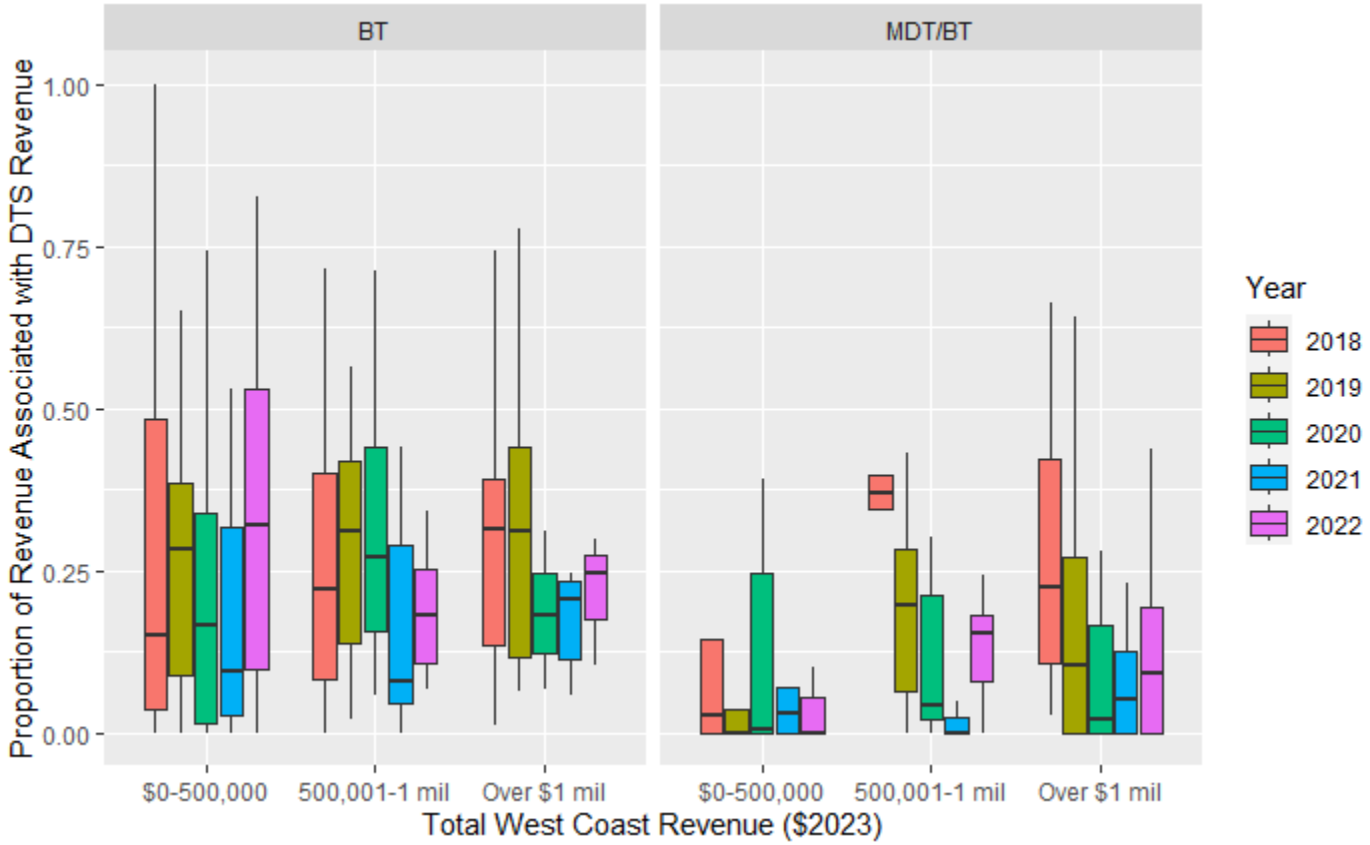


Figure 30. Boxplot showing the distribution of the proportion of total west coast revenue associated with DTS landings (y-axis) by vessel category (bottom trawl only- left panel, midwater trawl and bottom trawl- right panel) and by total west coast revenue (x-axis) for 2018-2022. Outliers removed to protect confidentiality.

Table 53. Number of vessels by vessel category (bottom trawl only, midwater trawl and bottom trawl) by total west coast revenue bin (2018-2022).

Year	Bottom Trawl			Midwater/Bottom Trawl		
	$0-500,000	$500,001-$1 million	Over $ 1 million	$0-500,000	$500,001-$1 million	Over $ 1 million
2018	8	16	12	4	5	12
2019	8	12	8	4	10	18
2020	10	14	3	6	11	9
2021	7	14	7	5	5	14
2022	16	8	3	7	9	14

Operational size could also be looked at in terms of vessel capacity- which can be inferred by vessel length. Each vessel participating in the trawl IFQ program must be registered to a trawl

endorsed permit with an endorsement length sufficient for the size of their vessel. These endorsement lengths were established during Amendment 6 with the implementation of the limited entry program as one of the primary objectives was to limit or reduce harvest capacity in the groundfish fishery. Length endorsements place an upper bound on the amount of capacity that can be used with a particular vessel.

Using the same vessel categories (bottom trawl only, midwater/bottom trawl) and revenue groupings as shown in Figure 30, Figure 31 shows the distribution of vessel lengths from 2018-2022. There does not appear to be a strong pattern present across the bottom trawl only category across the revenue bins; however, there does appear to be a relatively larger vessel size factor associated with higher revenue for vessels that do both midwater and bottom trawl which may be due to the larger capacity to harvest.

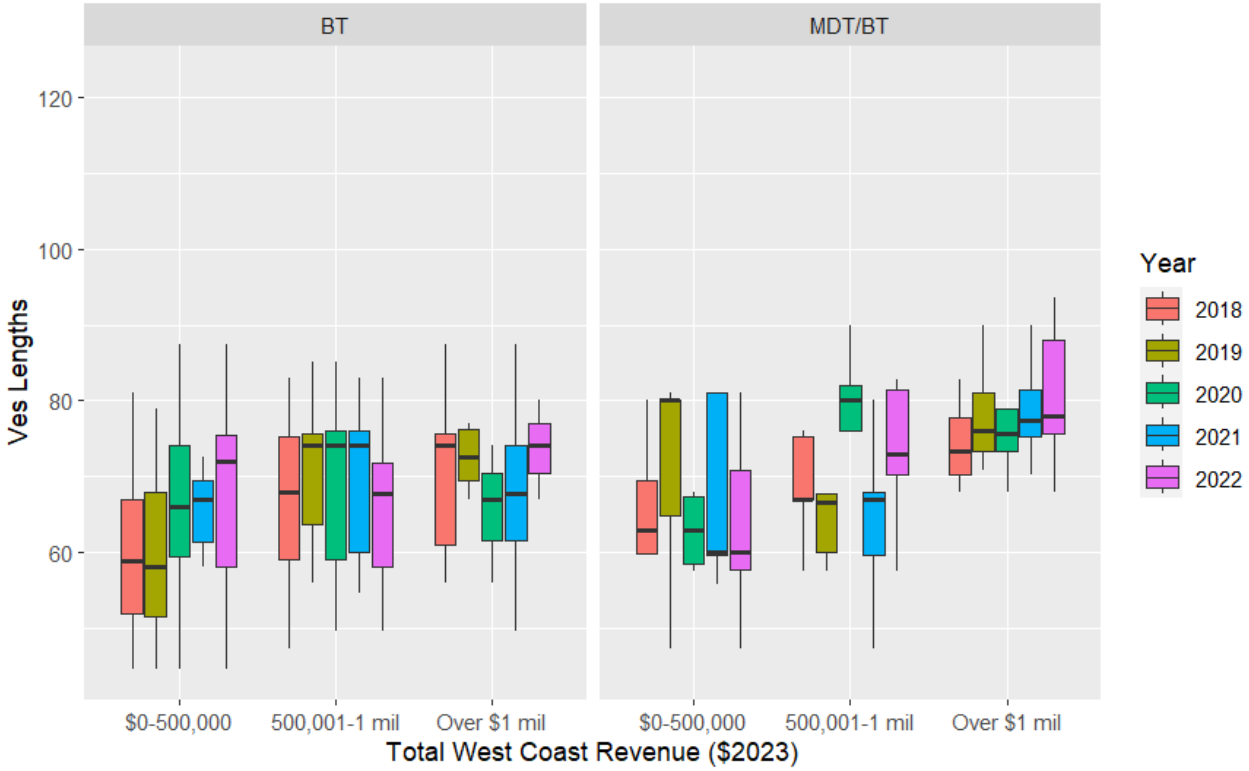


Figure 31. Boxplot showing the distribution of the vessel lengths (y-axis) by vessel category (bottom trawl only- left panel, midwater trawl and bottom trawl- right panel) and by total west coast revenue (x-axis) for 2018-2022. Outliers removed to protect confidentiality.

For gear switching vessels, the proportion of their total West Coast revenue varies annually- but smaller and medium sized operations tend to have a higher proportion of their revenue coming from gear switching (Figure 32). Note that this does not include any associated revenue from Alaska fisheries, of which some gear switching vessels participate in (see Section 2.5.4). The number of vessels by revenue category is provided in Table 54.

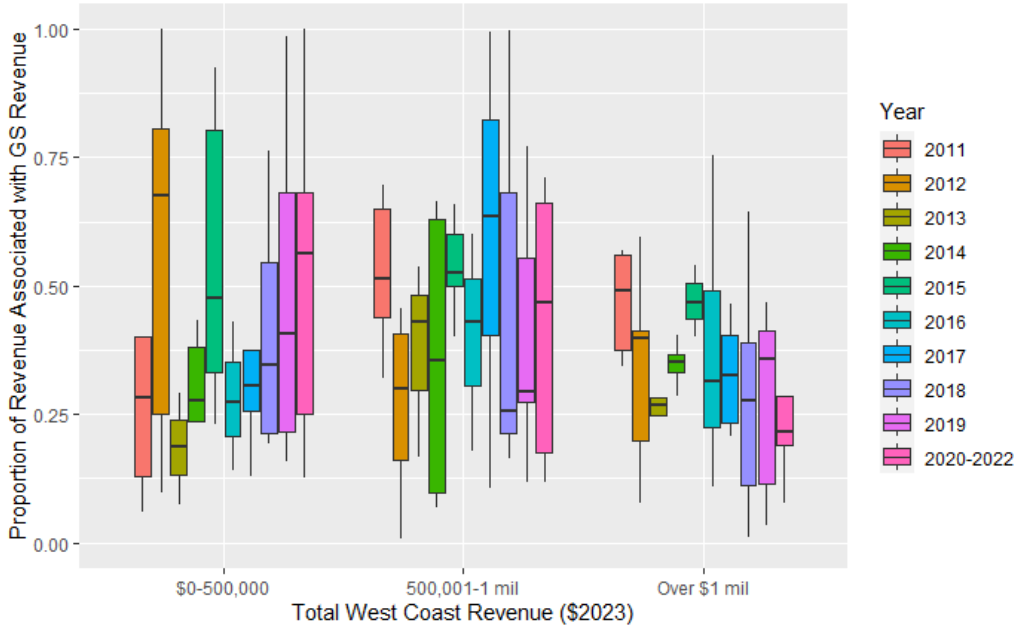


Figure 32. Boxplot showing the distribution of the proportion of total west coast revenue associated with gear switched landings (y-axis) by total west coast revenue (x-axis) for 2011-2022. Outliers removed to protect confidentiality.

Table 54. Number of gear switching vessels by total west coast revenue ($2022). 2020-2022 combined for confidentiality.

Year	Total West Coast Revenue ($2022)		
	$0-500,000	$500,000-$1 million	Over $ 1 million
2011	5	5	7
2012	8	7	5
2013	3	3	5
2014	5	6	4
2015	6	5	3
2016	3	3	10
2017	4	4	8
2018	4	5	6
2019	4	5	6
2020-2022	7	4	4

10.2 DTS Haul Characteristics

At the January 2020 SaMTAAC meeting, staff presented an analysis on the characteristics of bottom trawl hauls that caught Dover sole and sablefish north (SaMTAAC Agenda Item B.2, Attachment 1 (Revised), January 2020). In particular, there was interest by the Committee in understanding how the ratio of Dover sole to sablefish can vary by location, season, and depth. The following is an update of that analysis.

Figure below shows a gradient map of the average ratio of Dover sole to sablefish north seen in each 0.5 x 0.5-degree grid cell from 2002-2022. Cells without hauls from at least three vessels were removed for confidentiality. The left panel depicts a continuous gradient of the average ratio while the right panel has discrete categories of average ratios, making it easier to see differences for lower ratios. As shown, of those bottom trawl trips where sablefish north was caught, there is overall a higher ratio of Dover sole to sablefish north off the Washington/Oregon coasts as compared to California, with a significant peak in the ratio (shown by the brighter blue in the left panel) between approximately 46° N. lat. and 47° N. lat. The average ratio tends to decrease the further south the grid cell is located, so that catching the same amount of Dover sole requires more sablefish in the south. These data indicate that a shortage of sablefish QP could push more of the trawling for Dover to the north (assuming that sablefish QP is a limiting factor). Additionally, as depth increases, the ratio of Dover to sablefish generally decreases.

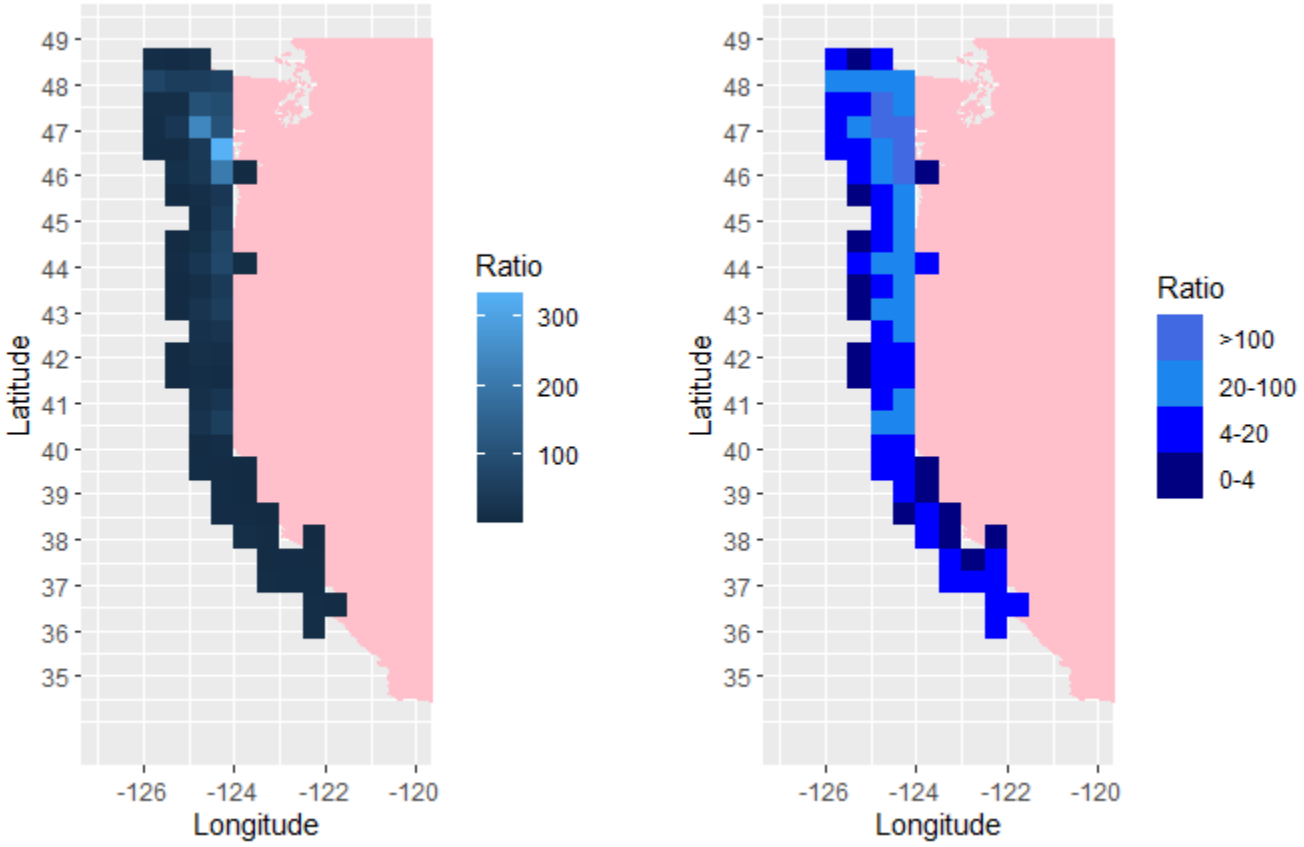


Figure 33. Left panel shows continuous gradient of the average ratio of Dover sole to sablefish north on positive bottom trawl hauls from 2002-2022 in 0.5x0.5-degree cells; right panel shows binned average ratio of Dover sole to sablefish north on positive bottom trawl hauls in 0.5x0.5-degree cells (Source: WCGOP; WGS84 Coordinate System)

With regards to seasonality, Figure below shows the average ratio of Dover sole to sablefish north by month on those positive sablefish hauls. Not only does the range of average ratio vary by year, but the months at which the peaks occur vary. In general, the ratio of sablefish in the catch is lower in the summer and fall during the IFQ program years (2011-2022). There is also a similar trend in the landings of Dover sole and sablefish north across all years in that the peaks of

landings tend to co-occur. In general, peak Dover/sablefish ratios occur when Dover sole landings are low but low Dover sole landings are not always related to a peak ratio. The high ratios might occur only when there are smaller production levels because only a few vessels are fishing and they are intentionally avoiding sablefish or simply because the number of trips is small and so there is more variability in the averages. The existence of high ratios only at low Dover sole landing levels likely indicates that there is little opportunity for consistently achieving them at production levels that would be significant enough to substantially expand attainment of the Dover allocations (and hence reduce the need for sablefish to cover bycatch). At the same time, other more moderate levels of Dover to sablefish ratios might be more achievable at higher production levels (above the average but lower than the peak levels).

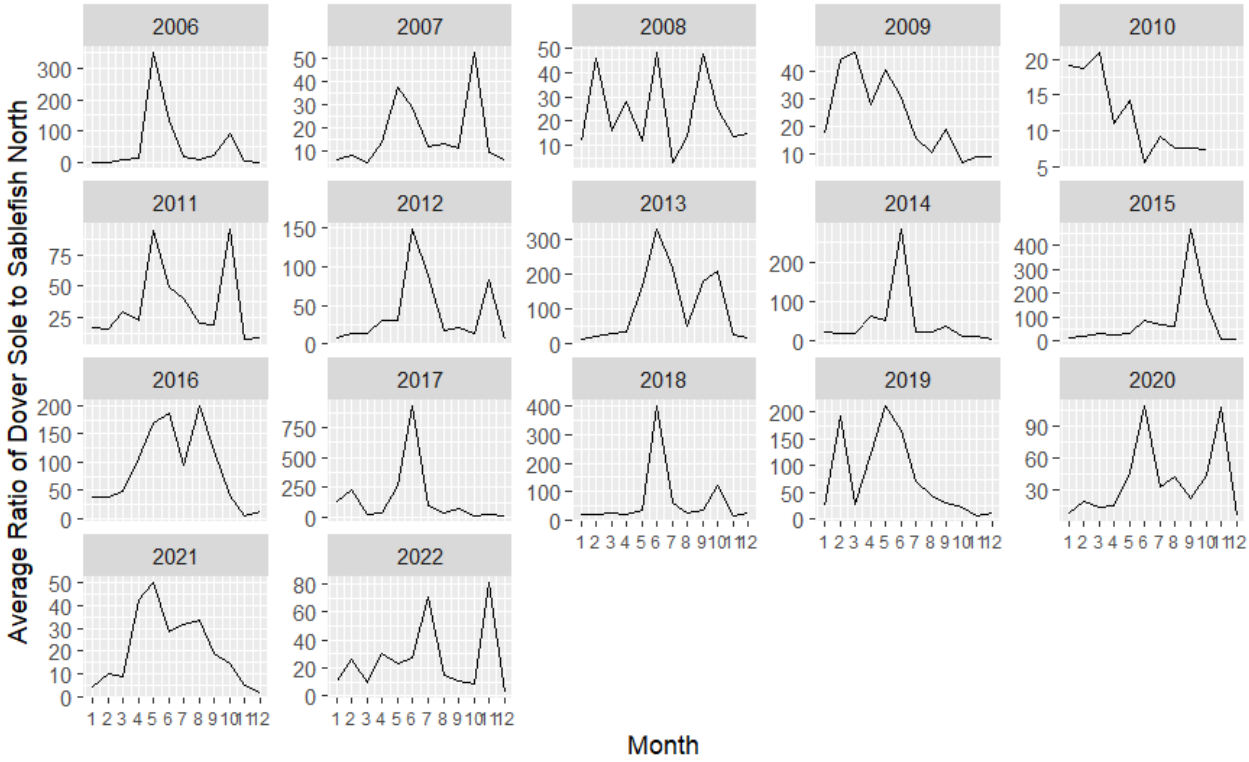


Figure 34. Average ratio of Dover sole to sablefish north on positive bottom trawl hauls, 2006-2022

10.3 Communities

Coastal communities along the West Coast are dependent on a portfolio of fisheries, including groundfish, Dungeness Crab, and salmon. 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. Dependence is 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. The most recent CCIEA report noted that of the fishing communities analyzed on the West Coast, Tokeland and Westport, Washington were the two

communities most socially vulnerable to downturns in commercial fishing given their relatively high social vulnerability (y-axis) and high reliance (x-axis) on commercial fisheries as shown in Figure below.

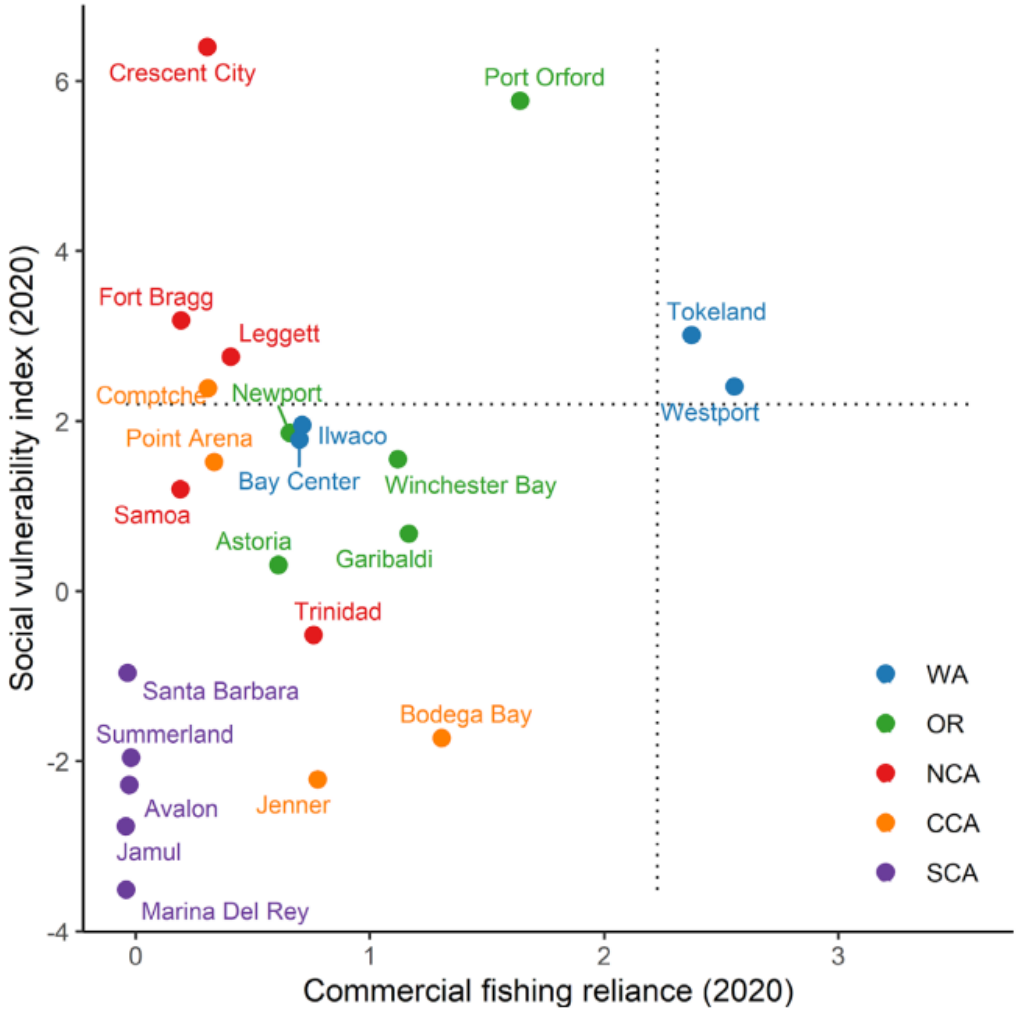


Figure 35. Commercial fishery reliance and social vulnerability scores in 2020 for communities in Washington, Oregon, and norther, central, and southern California. The five highest scoring communities for fishing reliance in each region are shown. Dotted lines equal 1 s.d. above the means for all communities. (2022-2023 California Current Ecosystem Status Report, p. 27)

Previous analyses have looked at the impact of IFQ fisheries on port communities (Agenda Item F.4., Attachment 1, April 2021). Looking at IFQ exvessel revenue relative to all other exvessel revenue, as an indicator of dependence, on average, most ports received less than 15 percent of the average ex-vessel revenue from IFQ fishery deliveries from 2016-2019 with the exception of Fort Bragg (20.2 percent), Newport (25.5 percent) and Astoria-Tillamook (47.3 percent). As you travel south, IFQ landings as a percent of total exvessel revenue have recently been much lower than in the north (with the possible exception of Morro Bay).

Looking at the level of exvessel revenue, while the Washington coast is one of the lower port areas with respect to percentage of port ex-vessel revenues from IFQ fisheries, it has the third

highest amount of revenue from IFQ fisheries (behind Astoria-Tillamook and Newport). In other words- Washington coastal ports are relatively not dependent on IFQ fisheries but are relatively important within the IFQ fishery itself. In contrast, the ports from San Francisco south have average IFQ landings in total less than any single port to the north. Similar trends are seen across the coastwide income impacts and jobs in that when revenue for non-IFQ fisheries are greater than IFQ fisheries, the same trend tends to hold for income impacts and jobs. The one exception to this is Astoria-Tillamook, where there is close to a 50/50 split between non-IFQ and IFQ revenue but income impacts are higher for IFQ fisheries even though revenue impacts are lower. Due to confidentiality restrictions, IFQ fishery data must be aggregated to large port areas, which loses information about smaller ports.

Changes in opportunity in one fishery, such as IFQ, may impact operations in other fisheries- particularly other groundfish fisheries that utilize the same infrastructure or markets. Given that IFQ fishery data must be aggregated to large port areas to maintain confidentiality, it is difficult to display the involvement or dependence on smaller port areas in the IFQ fisheries. Table provides an assessment about the presence or absence of activity in various groundfish sectors and the overall importance of groundfish in the port, as indicated by total fishing ex-vessel revenues in comparison to total groundfish ex-vessel revenues. The indication of whether vessels in a particular sector make deliveries to those small ports provides some indication of how the activities quantified for the aggregated port areas might be distributed among the ports within.

Table 55. Coastwide Ports by IOPAC Port Group with Groundfish Landings by Sector. (Whiting= Shoreside whiting, DTS= Dover sole-thornyhead-sablefish, Non-DTS=Non-whiting trawl other than DTS, IFQ-GS= gear switching, LEFG= Limited Entry Fixed Gear, OA= Open Access groundfish) Average Revenue from all species (millions) and average revenue from groundfish (millions), 2018-2022. "X" denotes a groundfish landing in that sector from 2018-2022. "c" represents strata with fewer than three vessels or dealers.

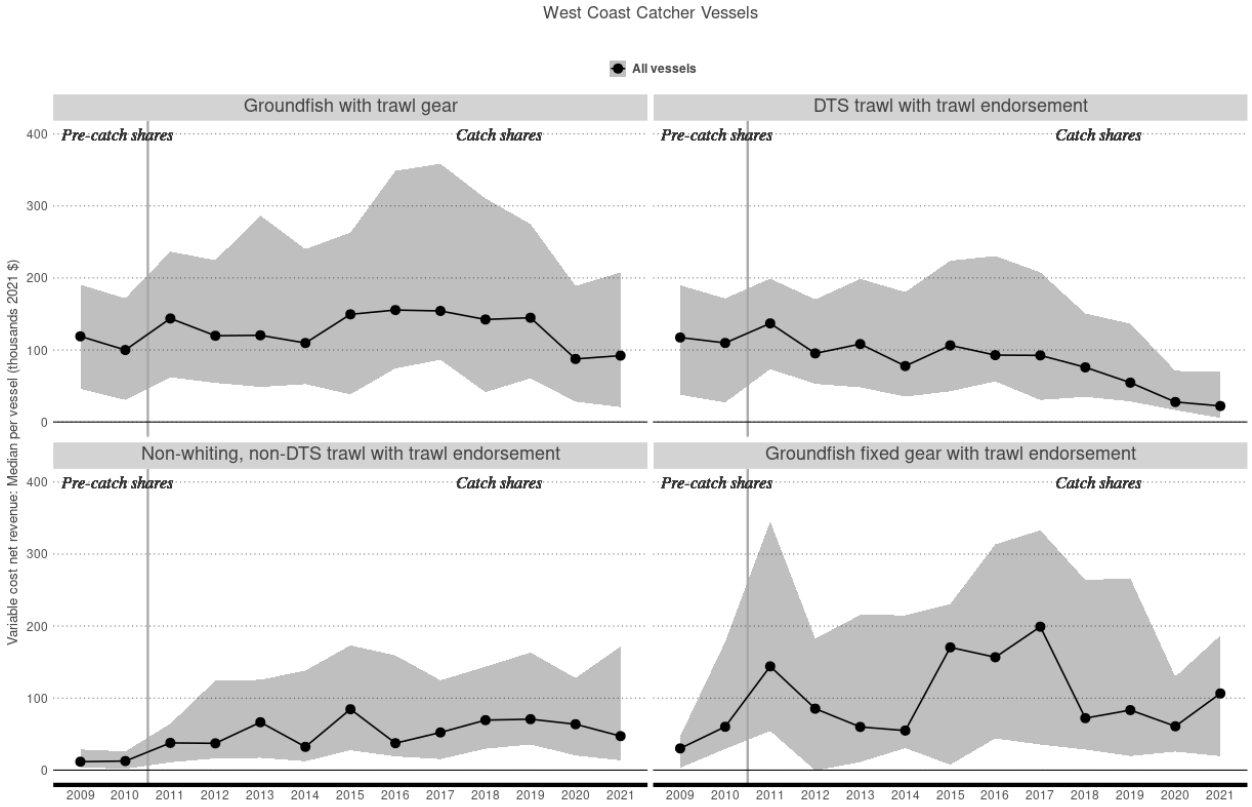
IOPAC Port Group	PacFIN Port Name	Presence of Landing in Groundfish Sector						Avg. Rev (millions)	Avg. GF Rev (millions)
		Whiting	DTS	Non-DTS	GS	LEFG	OA		
PUGET SOUND	BELLINGHAM		X	X	X	X	X	$ 3.39	$ 2.24
WA COAST	ILWCO/CHNK	X	X	X	X	X	X	$14.83	$0.80
	LA PUSH					X	X	$0.74	$0.23
	NEAH BAY		X			X	X	$0.43	$0.09
	O WA COAST						X	$0.02	c
	PT ANGELES					X	X	$0.09	c
	UNKN WASH					X	X	$0.00	$0.00
	WESTPORT	X	X	X		X	X	$56.36	$6.85
ASTORIA-TILLAMOOK	ASTORIA	X	X	X	X	X	X	$44.35	$22.68
	CANNON BCH						X	c	c
	GEARHART						X	$0.38	c
	NETARTS						X	$0.03	c
	PACIFIC						X	$0.15	$0.08
	TLMK/GRBLD						X	$ 6.56	$0.11
NEWPORT	DEPOE BAY					X	X	$ 0.12	$0.08
	NEWPORT	X	X	X	X	X	X	$ 60.53	$15.74
	SAMN RIVER						X	$ 0.01	$0.01
BROOKINGS-COOS_BAY	BANDON						X	$ 0.09	$0.05
	BROOKINGS		X	X		X	X	$ 10.63	$1.11
	COOS BAY		X	X	X	X	X	$ 26.37	$1.95
	FLORENCE						X	$ 0.06	c
	GOLD BEACH					X	X	$ 0.83	$0.19
	ORFORD					X	X	$ 4.50	$1.51
	WINCHESTER					X	X	$ 5.66	$0.65

CRESCENT CITY-EUREKA	CRESCENT		X			X	X	$ 17.38	$0.53
	EUREKA		X	X	X	X	X	$ 11.13	$4.09
	FIELDS LDG						X	$ 1.28	c
	O D NORTE						X	$ 0.03	c
	O HUMBOLDT						X	$ 0.63	$0.12
	TRINIDAD						X	$ 1.99	$0.00
FORT BRAGG	ALBION						X	$ 0.05	$0.01
	FORT BRAGG		X	X		X	X	$ 7.16	$2.97
	O MENDOCNO						X	$ 0.00	$0.00
	PNT ARENA					X	X	$ 0.56	$0.15
SAN FRANCISCO-BODEGA BAY	ALAMEDA						X	$ 0.09	c
	BERKELEY					X	X	$ 0.31	$0.03
	BODEGA BAY					X	X	$ 9.16	$0.24
	BOLINAS					X	X	$ 0.22	c
	O SF/SMTEO		X	X			X	$ 0.76	$0.03
	O SNMA/MRN						X	$ 0.04	$0.00
	OAKLAND						X	$ 0.02	c
	PRINCETON			X	X	X	X	$ 10.64	$0.66
	PT. REYES						X	c	c
	RICHMOND						X	$0.06	$0.00
	SAUSALITO						X	$0.09	$0.01
	SF			X	X	X	X	$9.66	$0.42
	TOMALES						X	$0.01	$0.00
MONTEREY	MONTEREY			X	X	X	X	$8.66	$0.21
	MOSS LNDG		X	X		X	X	$8.06	$1.25
	SANTA CRUZ					X	X	$2.51	$0.11
MORRO	AVILA					X	X	$1.57	$0.57
	MORRO BAY			X	X	X	X	$2.61	$1.38
SANTA BARBARA	O SB/VEN						X	$0.05	$0.01
	OXNARD					X	X	$4.82	$0.47
	S. BARBARA					X	X	$11.96	$1.98

	VENTURA					X	X	$16.92	$0.08
LOS ANGELES	DANA POINT					X	X	$1.85	$0.06
	LONG BEACH					X	X	$0.50	$0.00
	NEWPORT B.					X	X	$1.03	$0.26
	O LA/ORG					X	X	$2.13	$0.08
	SAN PEDRO					X	X	$3.46	$0.01
	TERMINAL I					X	X	$12.48	$0.03
	WILLMNGTN					X	X	$0.02	c
SAN DIEGO	O S DIEGO					X	X	$3.07	$0.06
	OCEANSIDE					X	X	$1.82	$0.33
	SAN DIEGO					X	X	$4.08	$0.11
Coastwide								$403.08	$70.66

10.4 VCNR for Trawl DTS and Other Strategies in Comparison to Fixed Gear

On an annual vessel basis, the median gear switching vessel (dots connected by lines) had greater annual profits than the median DTS trawl vessel in 2011 and 2015-2020 (right hand graphs in Figure). And a similar evaluation shows that gear-switching vessels were even more profitable in comparison to non-whiting/non-DTS vessel (lower left hand graph in Figure). Further, in all years of the IFQ Program, the more efficient gear-switching vessels (75th percentile, top of shaded area in each graph) had substantially greater annual vessel profits than vessels using trawl gear (Figure). At the same time, the median DTS trawl vessels were more profitable than many of the lower profit gear switching vessels (the profitability of the lower 25 percentile of which starts at the lower edge of the shaded area in each graph).

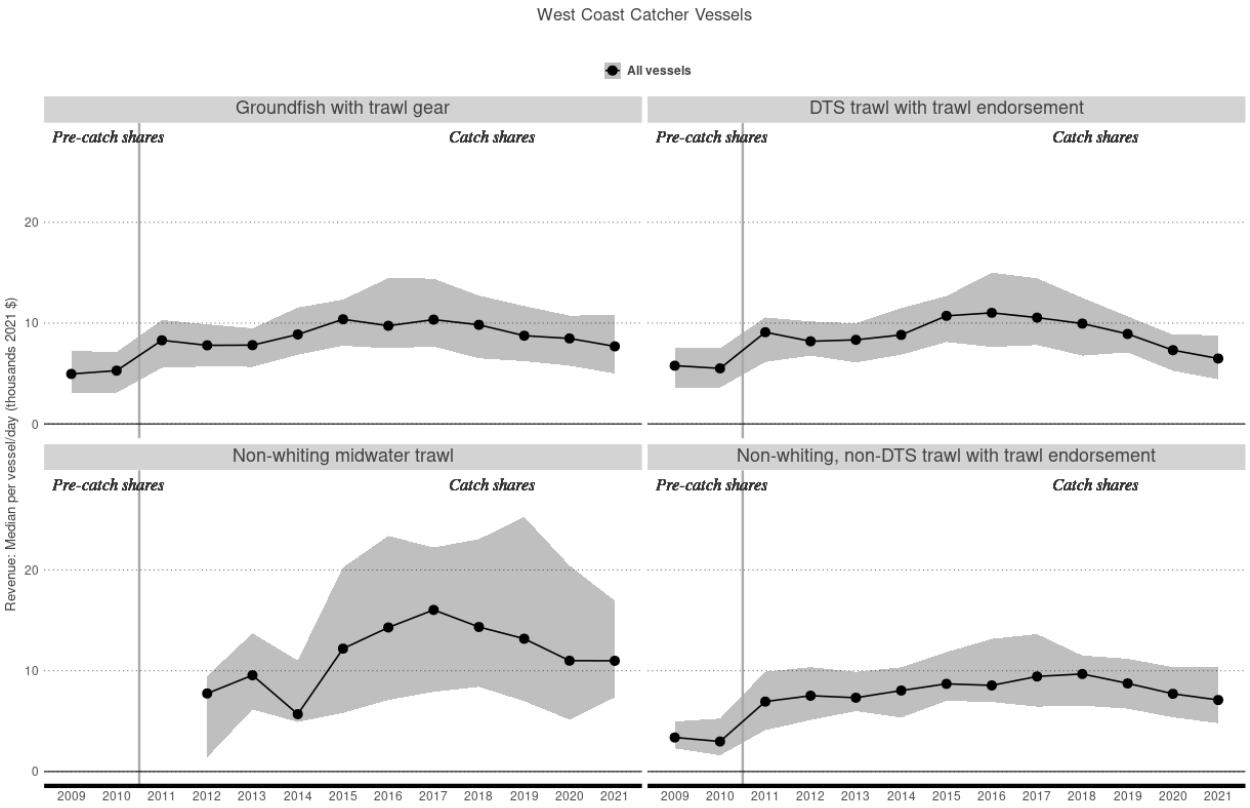


Note: Median vessel shown by the line, top of the gray area denotes the 75th percentile vessel, and the bottom the 25th percentile vessel.

Figure 36. Annual VCNR for **vessels** while fishing in non-whiting strategies or using non-trawl gear to gear switch, 2009 through 2021. Source: The FISHEyE application maintained by NOAA Fisheries, NWFSC on September 29, 2023.

VCNR per day indicates more about the choices vessels have each day and differences in opportunity between the strategy However, on any particular day, there are a large number of factors that play into the choice of strategies for a trip including: what the vessel is already geared up for, what the crew has been fishing in previous days (which includes knowledge of current best locations and fishing tactics), opportunities in other fisheries, market limits, current and expected sea and weather conditions, and a variety of other circumstantial conditions that shape the strategy selected and tactics used on a particular

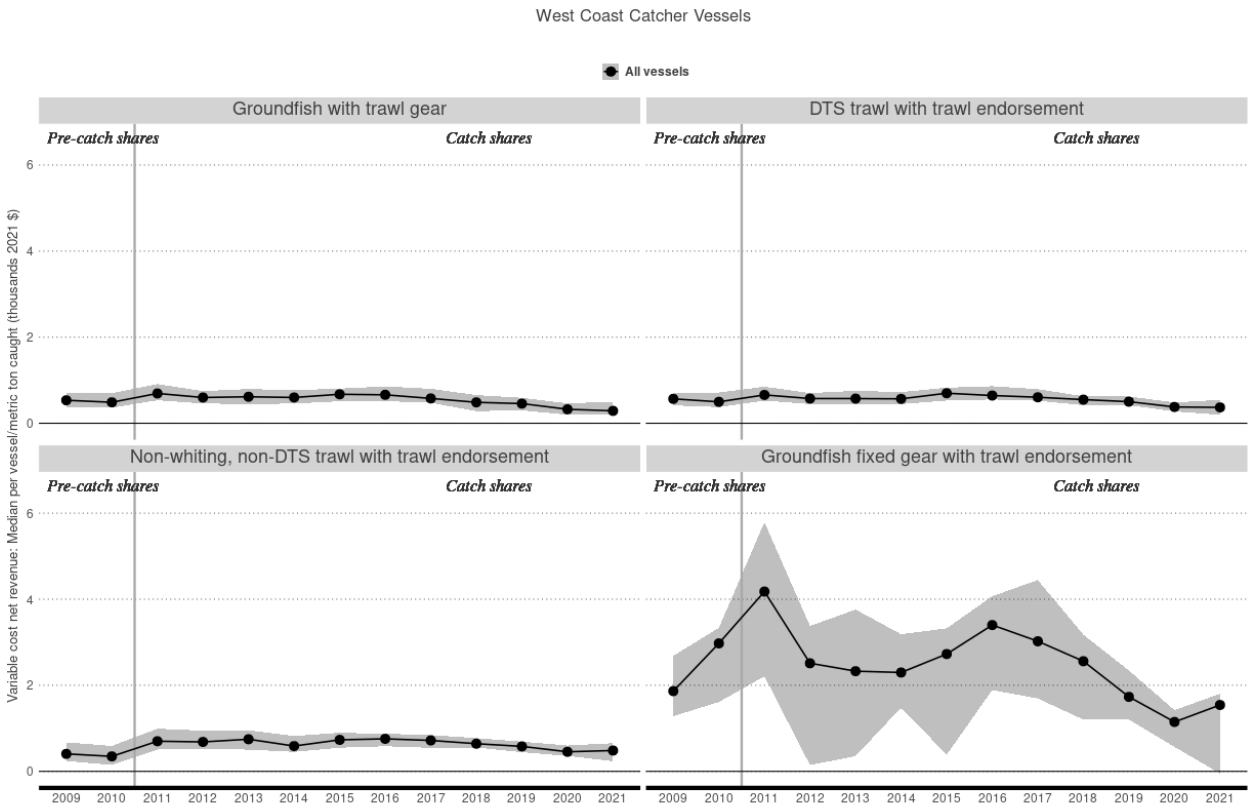
fishing day. As with the annual catches, there are overlapping distributions on a per fishing day basis (Figure).



Note: Median vessel shown by the line with markers, top of the gray area denotes the 75th percentile vessel, and the bottom the 25th percentile vessel.

Figure 37. VCNR **per day** for vessels while fishing in non-whiting strategies or using non-trawl gear to gear switch, 2009 through 2021. Source: The FISHEyE application maintained by NOAA Fisheries, NWFSC on September 29, 2023.

In contrast to the annual vessel and daily trip data, VCNR per mt of catch for gear-switching vessels is much higher than for trawl vessels (Figure). A mt of trawl catch includes species other than sablefish, most of which have a substantially lower exvessel prices than sablefish (one notable exception would be Petrale sole). In contrast, for gear switching vessels, most of the catch composition is the much higher valued sablefish (on average 97.1 percent of the weight and 99.3 percent of the value is from sablefish). Thus, when VCNR per mt of catch is evaluated the values for gear-switching vessels are much higher than for trawl vessels Figure . There are, however, some exceptions that can be seen for gear switching in particular years. For example, in 2012, 2013, 2015 and 2021 the 25th percentile gear switchers were lower than or in the area of the median for trawl vessels, again, indicating how the relative economic advantages/disadvantages for gear switching change by year. Comparison of the annual vessel data (Figure) to the per metric ton data indicates that volume of landings is important for the profitability of trawl vessels.



Note: Median vessel shown by the line, top of the gray area denotes the 75th percentile vessel, and the bottom the 25th percentile vessel.

Figure 38. Annual VCNR for **vessels per mt of catch** while fishing in non-whiting strategies or using non-trawl gear to gear switch, 2009 through 2021. Source: The FISHEyE application maintained by NOAA Fisheries, NWFSC on September 29, 2023.

10.4.1 Additional Information on Sablefish Price Effects on Relative Profitability

As discussed in Section 2.5.3, compared to the 2017-2021 average, in 2017 exvessel prices were higher and the difference between trawl and fixed gear exvessel prices were higher. The percentage of the trawl allocation and total pounds gear-switched in 2017 was second only to 2019 (Table 3). Because of confidentiality limitations, annual data for 2018-2021 cannot be displayed for decile intervals. Here comparison information is aggregated for quartiles and displayed for each year (except 2020 and 2021). In more recent years, when sablefish prices have been lower and the difference between trawl and gear-switched prices less, smaller proportions of the gear switched trips would have VCNR per pound of sablefish greater than the bottom 20 percent of the DTS trips (as reflected by the increasing values for the gear-switching percentiles in the middle column of Table).

Table 56. VCNR per pound of sablefish for 20th percentile DTS vessels and corresponding percentile for gear-switching vessels.

Year	VCNR per pound of sablfish for 20th Percentile DTS Vessel	Gear Switching Percentiles which Include the DTS 20th Percentile VCNR level	Corresponding VCNR per Pound of Sablefish
2017	1.78	≥40 and < 50	≥ 1.62 and < 1.86
2018	1.57	≥50 and < 60	≥ 1.56 and < 1.67
2019	1.15	≥60 and < 70	≥ 1.09 and < 1.17
2020-2021	0.93	≥80 and < 90	≥ 0.79 and < 0.95

10.4.2 Nature of DTS Trips Most Likely Constrained by Gear-Switching

DTS trips that have very high VCNR per pound of sablefish are unlikely to be limited by competition with gear switching for sablefish QP. One reason some of these trips have such high VCNR is that they often include Petrale sole. Table uses the DTS trip groupings from Table 8 but shows the amount of Petrale taken for each cell in the DTS row. For DTS, the higher VNCR cells have more Petrale sole (6.15 percent of all Petrale for the DTS cell with the highest VCNR). Other fishery conditions may result in lower DTS VCNR per trip level that make them more subject to competition with gear-switchers for sablefish QP. DTS VCNR may vary widely due to geographic and seasonal differences in dover/sablefish ratios (see Section 10.2), vessel operator knowledge and techniques, and sablefish encounter rates that are different than expected when the trip and tactics decisions were made.

Table 57. Percent of **petrale** landings by weight by decile defined by variable cost net revenue per pound of sablefish (2017-2021).

Target	[10-20%)	[20-30%)	[30-40%)	[40-50%)	[50-60%)	[60-70%)	[70-80%)	[80-90%)	[90-100%)	Total
DTS	1.74%	2.40%	3.13%	3.59%	4.17%	4.43%	5.36%	5.90%	6.15%	36.87%

The range of results for DTS vessel VCNRs may also be impacted by DTS vessel efforts to modify the proportion of sablefish in their catch. Some of these efforts may be in response to vessels finding themselves with "surpluses" of sablefish QP. There are a variety of reasons unrelated to processor limits on catch of a complex that DTS vessels may find themselves with surplus sablefish. Increasing ACLs (for those who own their own QS), the development of more lucrative opportunities in other fisheries (such that they spend less effort on DTS), lower incidental sablefish catch rates than expected when fishing for a complex, an unanticipated need to take part of the year off for maintenance are a few examples. On the one hand, when situations like this arise and the availability of additional vessel time on the water is limited, vessels may choose to try to increase their sablefish encounter rate rather than sell their QP, because of the administrative tasks and uncertainties about engaging in the QP markets. Uncertainties may be greater later in the year when vessels using other strategies might be dumping their sablefish QP (e.g. whiting). Also, there are usually a few percent of sablefish each year that go unused creating some uncertainty about whether QP could be sold late in the season. While there may be reasons not to engage in the market, there is also the incentive to sablefish QP to other trawlers or gear-switchers to generate more revenue for the year.

10.5 Additional Information on Markets for DTS Species

10.5.1 DTS Prices

Among DTS species, non-sablefish prices have been much more stable than sablefish prices (Figure).

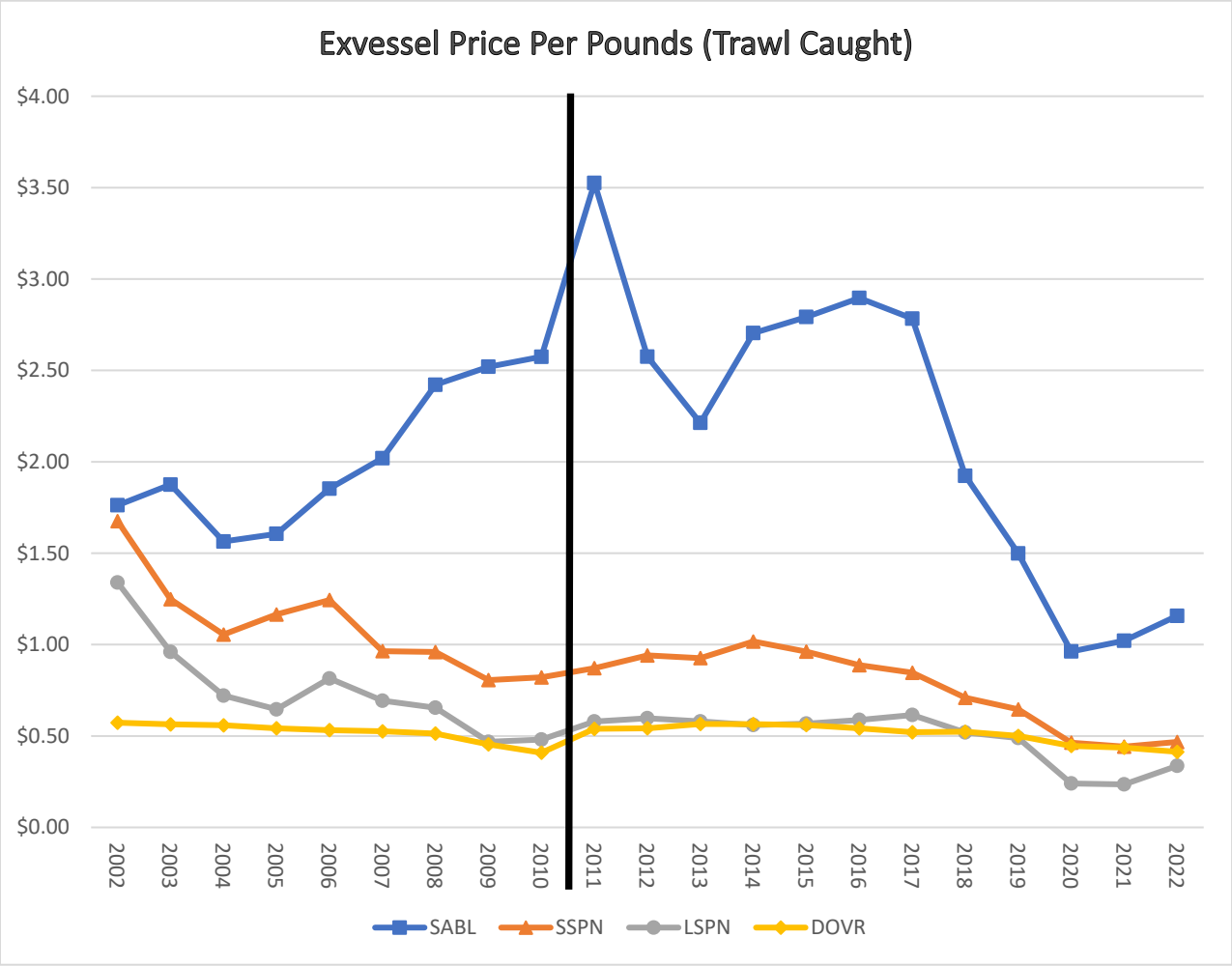


Figure 39. Inflation adjusted exvessel prices for DTS species, 2002-2022, vertical line marks start of trawl catch share program (PacFIN Data). Internal Reference General GF Prices - Annual-InclNominal (hidden filters)-NominalGrpd_SppGrps.xlsx

10.5.2 Sablefish Prices by Grade

The following tables provide historic prices by gear group and illustrate the importance of size of fish landed with respect to prices received.

Table 58. Evessel prices per pound of sablefish north by sector and grade, 2009-2022, PacFIN [a/] (internal reference: Dahl_All_Prices(SABL_N)_GearGroupComb_Grades_RndDr.xlsx)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Non-Whiting Trawl	2.51	2.56	3.24	2.26	1.98	2.44	2.46	2.47	2.42	1.56	1.18	0.70	0.80	0.92
Extra Small	1.98	1.93	2.16	1.43	1.26	1.74	1.73	1.73	1.72	0.85	0.57	0.38	0.42	0.58
Small	2.46	2.56	3.44	2.37	2.02	2.45	2.71	2.74	2.70	1.49	1.28	0.87	0.89	0.97
Medium	2.66	2.92	3.44	2.47	2.14	2.64	2.90	2.84	2.95	2.32	1.84	1.31	1.28	1.34
Large	3.09	3.39	4.60	3.62	2.95	3.10	3.27	3.63	3.64	3.60	3.18	2.23	2.01	2.15
Extra Large	3.01	0.60	-	-	-	-	-	-	-	-	3.97	-	2.16	3.55
Unspecified	2.68	2.49	3.34	2.32	2.08	2.42	2.26	2.31	2.27	1.47	1.12	0.67	0.92	0.99
Unknown	2.08	1.81	3.26	1.88	1.70	2.32	2.24	2.20	2.27	1.66	1.33	0.66	0.66	0.82
Fixed Gear Limited Entry	3.46	3.87	5.16	3.71	3.02	3.55	3.56	3.74	3.98	3.12	2.60	1.83	2.00	2.26
Extra Small	3.00	3.06	3.78	1.86	1.92	5.90	3.00	4.18	2.80	1.57	0.80	0.61	0.89	1.01
Small	3.23	3.67	4.91	3.25	2.89	3.63	3.80	3.57	4.09	3.08	2.50	1.50	1.86	2.07
Medium	3.49	3.74	5.04	3.69	3.11	3.48	3.67	3.64	3.53	3.66	2.95	1.78	2.04	2.29
Large	3.89	4.45	5.90	5.31	3.64	4.49	4.61	4.87	4.63	4.61	3.60	2.25	2.87	3.54
Extra Large	-	-	5.63	4.88	5.31	5.07	5.41	4.81	3.87	-	3.87	-	-	3.20
Unspecified	3.69	4.31	5.82	3.97	2.90	3.33	3.57	4.05	4.26	3.26	2.66	1.81	2.17	2.71
Unknown	3.10	3.83	4.47	3.21	3.13	2.85	2.09	2.39	3.16	2.26	2.19	2.09	1.87	1.67
Gear Switched	-	-	4.58	3.17	2.89	3.22	3.32	3.71	3.66	2.63	2.13	1.30	1.48	1.74
Extra Small	-	-	4.38	1.78	1.82	2.21	2.14	2.43	2.43	1.39	1.91			
Small	-	-		2.55	2.70	2.53	2.41	3.32	4.03	2.52				
Medium	-	-	4.64	2.46	2.65	2.02	2.54	3.93	2.81	3.20	1.94	1.45	1.66	2.08
Large	-	-	5.79	4.52	3.51	3.56	4.29	4.73	4.35	4.19	3.17			
Extra Large	-	-	-	-	-				-	-	-			
Unspecified	-	-	4.48	3.37	2.94	3.41	3.56	3.72	3.90	2.91	2.31	1.71	2.05	1.77
Unknown	-	-	3.89	1.78	2.11	3.09	1.27	2.51	0.94	0.45	0.53	0.42	0.28	0.31

a/ Some cells combined to preserve confidentiality.

Table 59. Millions of dollars of sablefish north by sector and grade, 2009-2022, PacFIN[a/] (internal reference: Dahl_All_Prices(SABL_N)_GearGroupComb_Grades_RndDr.xlsx).

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Non-Whiting Trawl	16.5	14.2	11.8	7.1	6.1	6.8	7.9	7.9	8.1	4.7	3.6	1.6	2.5	3.6
Extra Small	1.7	1.9	1.2	0.6	0.5	0.5	0.9	0.9	1.1	0.5	0.5	0.2	0.2	0.3
Small	5.0	4.0	2.1	0.8	0.7	0.9	1.2	1.4	1.6	0.9	0.6	0.3	0.5	0.7
Medium	4.7	4.4	2.8	1.8	1.5	1.9	2.3	2.3	1.8	0.7	0.3	0.1	0.1	0.2
Large	2.0	1.5	0.6	0.5	0.5	0.5	0.7	0.6	0.5	0.5	0.4	0.1	0.1	0.2
Extra Large	0.0	0.0	-	-	-	-	-	-	-	-	0.0	-	0.0	0.0
Unspecified	2.2	1.9	3.9	2.8	2.3	2.1	2.0	2.0	2.2	1.4	0.9	0.4	1.0	1.3
Unknown	1.0	0.5	1.2	0.5	0.6	0.8	0.9	0.7	0.9	0.8	0.9	0.5	0.5	0.9
Fixed Gear Limited Entry	17.1	19.3	21.4	12.2	7.8	9.3	11.5	12.9	14.4	11.1	8.7	5.6	6.9	9.0
Extra Small	0.3	0.4	0.7	0.2	0.1	0.5	0.2	0.3	0.1	0.0	0.0	0.0	0.0	0.0
Small	6.2	7.5	6.9	3.4	2.2	2.6	3.3	3.1	4.2	3.1	2.2	1.4	1.7	1.9
Medium	4.1	4.2	4.3	2.4	1.6	1.7	2.3	2.8	2.9	1.2	0.7	0.5	0.5	0.7
Large	4.5	3.5	4.2	2.4	1.0	1.0	1.8	2.2	2.4	1.6	1.3	0.8	0.6	1.1
Extra Large	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	-	-	0.0
Unspecified	1.0	2.3	3.6	2.5	1.8	2.2	2.9	3.5	3.7	3.2	2.6	1.3	1.9	3.2
Unknown	0.9	1.3	1.7	1.3	0.9	1.3	1.0	1.1	1.2	2.0	2.0	1.7	2.2	2.1
Gear Switched	-	-	6.9	5.1	2.8	3.6	5.2	6.6	6.7	4.7	4.2	1.8	1.9	2.6
Extra Small	-	-	1.5	0.1	0.1	0.0	0.1	0.1	0.1	0.1	1.1			
Small	-	-		0.3	0.3	0.1	0.4	0.7	1.4	1.0				
Medium	-	-	1.1	0.5	0.4	0.2	0.6	0.4	0.8	0.4	0.3	1.1	1.4	1.6
Large	-	-	0.8	0.7	0.5	0.2	1.2	0.6	0.4	0.6	0.7			
Extra Large	-	-	-	-	-				-	-	-			
Unspecified	-	-	3.3	3.4	1.6	2.8	3.0	4.6	4.0	2.5	2.0	0.6	0.4	1.0
Unknown	-	-	0.3	0.1	0.0	0.3	0.1	0.1	0.0	0.1	0.1	0.1	0.1	0.1

a/ Some cells combined to preserve confidentiality.

Table 60. Millions of pounds of sablefish north by sector and grade, 2009-2022, PacFIN [a/] (internal reference: Dahl_All_Prices(SABL_N)_GearGroupComb_Grades_RndDr.xlsx)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Non-Whiting Trawl	6.6	5.5	3.6	3.1	3.1	2.8	3.2	3.2	3.4	3.1	3.1	2.2	3.1	4.0
Extra Small	0.9	1.0	0.5	0.4	0.4	0.3	0.5	0.5	0.7	0.6	0.8	0.5	0.5	0.6
Small	2.0	1.5	0.6	0.3	0.4	0.4	0.5	0.5	0.6	0.6	0.5	0.3	0.5	0.7
Medium	1.8	1.5	0.8	0.7	0.7	0.7	0.8	0.8	0.6	0.3	0.2	0.1	0.1	0.2
Large	0.6	0.4	0.1	0.1	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1
Extra Large	0.0	0.0	-	-	-	-	-	-	-	-	0.0	-	0.0	0.0
Unspecified	0.8	0.7	1.2	1.2	1.1	0.9	0.9	0.9	1.0	0.9	0.8	0.5	1.1	1.3
Unknown	0.5	0.3	0.4	0.3	0.3	0.3	0.4	0.3	0.4	0.5	0.7	0.8	0.8	1.0
Fixed Gear Limited Entry	4.9	5.0	4.1	3.3	2.6	2.6	3.2	3.4	3.6	3.6	3.4	3.1	3.5	4.0
Extra Small	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Small	1.9	2.0	1.4	1.0	0.8	0.7	0.9	0.9	1.0	1.0	0.9	0.9	0.9	0.9
Medium	1.2	1.1	0.9	0.6	0.5	0.5	0.6	0.8	0.8	0.3	0.2	0.3	0.2	0.3
Large	1.2	0.8	0.7	0.4	0.3	0.2	0.4	0.4	0.5	0.4	0.4	0.3	0.2	0.3
Extra Large	-	-	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-	0.0	-	-	0.0
Unspecified	0.3	0.5	0.6	0.6	0.6	0.6	0.8	0.9	0.9	1.0	1.0	0.7	0.9	1.2
Unknown	0.3	0.3	0.4	0.4	0.3	0.4	0.5	0.4	0.4	0.9	0.9	0.8	1.2	1.3
Gear Switched	-	-	1.5	1.6	1.0	1.1	1.6	1.8	1.8	1.8	2.0	1.4	1.3	1.5
Extra Small	-	-	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.6			
Small	-	-		0.1	0.1	0.1	0.2	0.2	0.4	0.4				
Medium	-	-	0.2	0.2	0.1	0.1	0.2	0.1	0.3	0.1	0.2	0.77	0.86	0.76
Large	-	-	0.1	0.2	0.1	0.04	0.27	0.14	0.1	0.1	0.2			
Extra Large	-	-	-	-	-				-	-	-			
Unspecified	-	-	0.7	1.0	0.5	0.8	0.8	1.2	1.0	0.9	0.9	0.4	0.2	0.6
Unknown	-	-	0.1	0.1	0.0	0.1	0.1	0.0	0.0	0.2	0.1	0.3	0.2	0.2

a/ Some cells combined to preserve confidentiality.

10.5.3 2007-2010 Dover Market Expansion

As discussed in Section 2.4.2, price information indicates that the Dover market may have been deteriorating in 2010, though there were also other market dynamics in play at that time. Evidence that the volume of deliveries may have been exceeding market capacity includes decline in the predominant exvessel prices (the price at which the most poundage was delivered) and a substantial increase in the amount of fish being delivered at $0.20 and $0.30 per pound (prices that indicate the fish will be frozen or are otherwise in excess of processor determined limits). Starting in 2000 and continuing through 2006, the typical price for Dover settled into the >$0.36 to $0.38 per pound range (unadjusted for inflation, see the Section 2.4.2 for more detailed information related to this summary). In 2007, as ACLs and landings increased so did the typical price (from the >$0.36 to $0.38 range to the >$0.38 to $0.39 range). In 2008, landings continued to increase, and the typical price remained the same as in 2007 (Figure). In 2009, the peak of Dover landings, there were two changes of note to the price structure. First was a substantial increase in amounts delivered at the $0.20 and $0.30 price points (over 4 million pounds total, representing 17 percent of the production). Second was a deterioration of the tendency for most of the fish to be delivered at a relatively few discrete prices. For prices at which more than 10,000 pounds were delivered for the entire year, the number of different price points paid increased from ten in 2006 to 13 in 2007 to 60 in 2008 and 140 in 2009 (Figure). Most of the additional categories were at levels below the predominate price and could be a real change in price structures or an artifact. For example, price dispersion would increase if an average price paid is listed on fish tickets but there was an increase in the occurrence of deliveries for which a frozen price was paid for a portion of the delivery.

In 2010, harvest declined and there were at least two indicators of possible market stress. First, there was a substantial reduction in the highest prices predominantly paid (from the $0.38 to $0.39 category to the $0.33 to $0.35 category; noted in Figure). Second, there was a significant increase in the amounts delivered at a $0.30 per pound price (i.e. the frozen product or over process limit price point, such that the volume delivered in this category slightly edges out the amounts delivered at the highest prices). The total amounts delivered at the lower $0.20 and $0.30 price points increased from 17 percent combined in 2009 to 43 percent in 2010. Another potential indicator of market stress in 2010 is a continuation of the above normal number of different prices paid (Figure), which could be another indicator related to deliveries of fish destined for the frozen market along with fish destined for fresh markets.

Finally, in 2011, the highest and predominant prices paid rebounded and exceeded those paid before and during the 2007-2010 landings bubble, with $0.41-$0.42 being the predominant price paid (Figure 8). An examination of the total amounts delivered at prices higher than $0.30 per pound (fish more likely to be going to a fresh market) shows that those deliveries peaked in 2008; declined in 2009 and more substantially in 2010; and recovered in 2011 (to a level below but comparable to the amounts delivered in the 2009 peak Dover year). Additionally, the amount of deliveries made at the $0.20 and $0.30 per pound price declined to near pre-bubble levels (Figure). This price level and structure held in 2012 and subsequent years through 2019, though from 2016 through 2019 the amounts delivered at the $0.20 and $0.30 price points began a small upward trend.

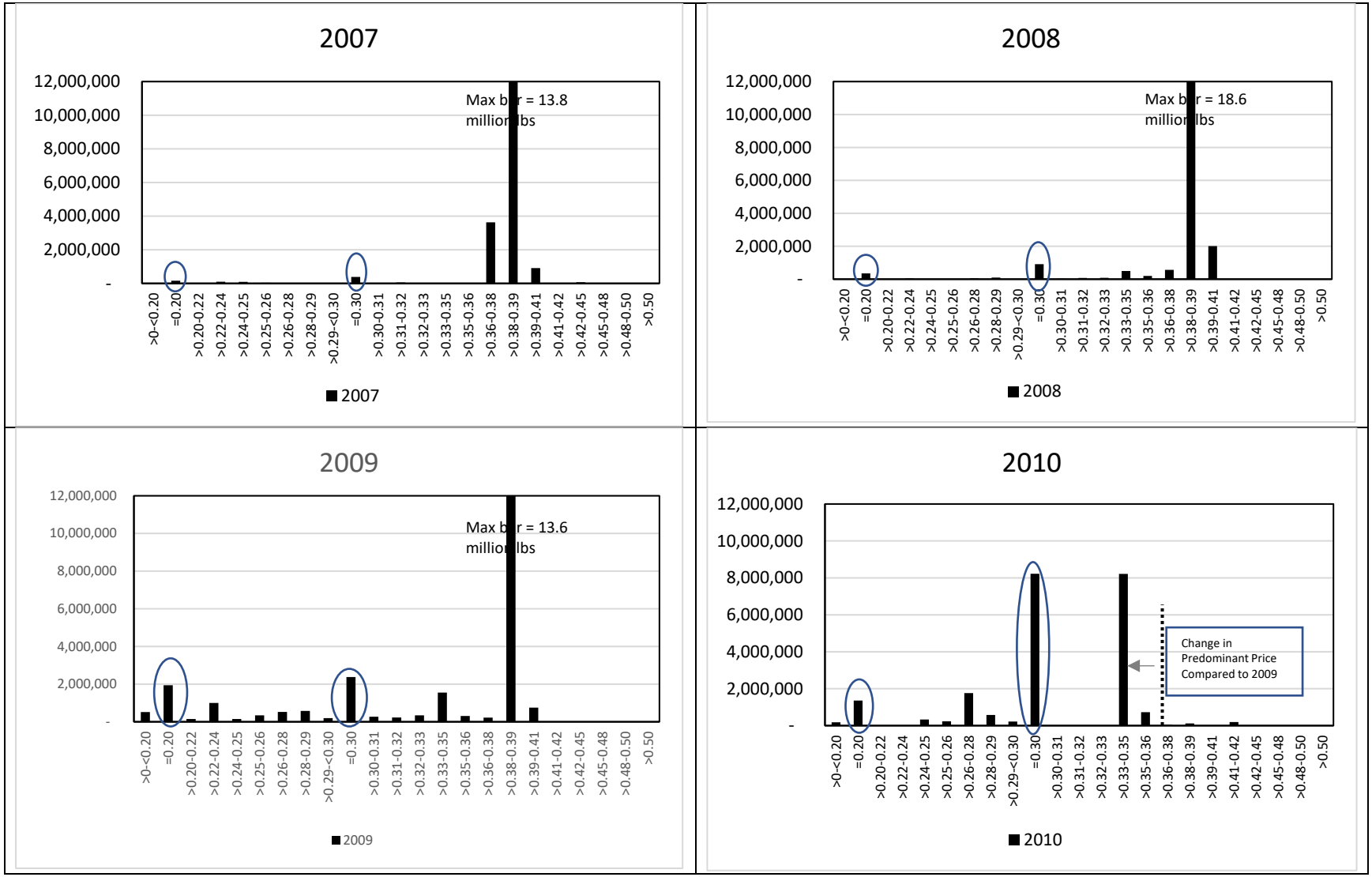


Figure 40. Pounds of Dover sole landed by price category (2007, 2008, 2009, 2010). (Source: PacFIN Comprehensive Fish Ticket Database).
Internal reference: LE TW SF&DVR-PriceStudy_1994-2020_Jan 3 2021.xlsx; Dover_Prices (non-confid).

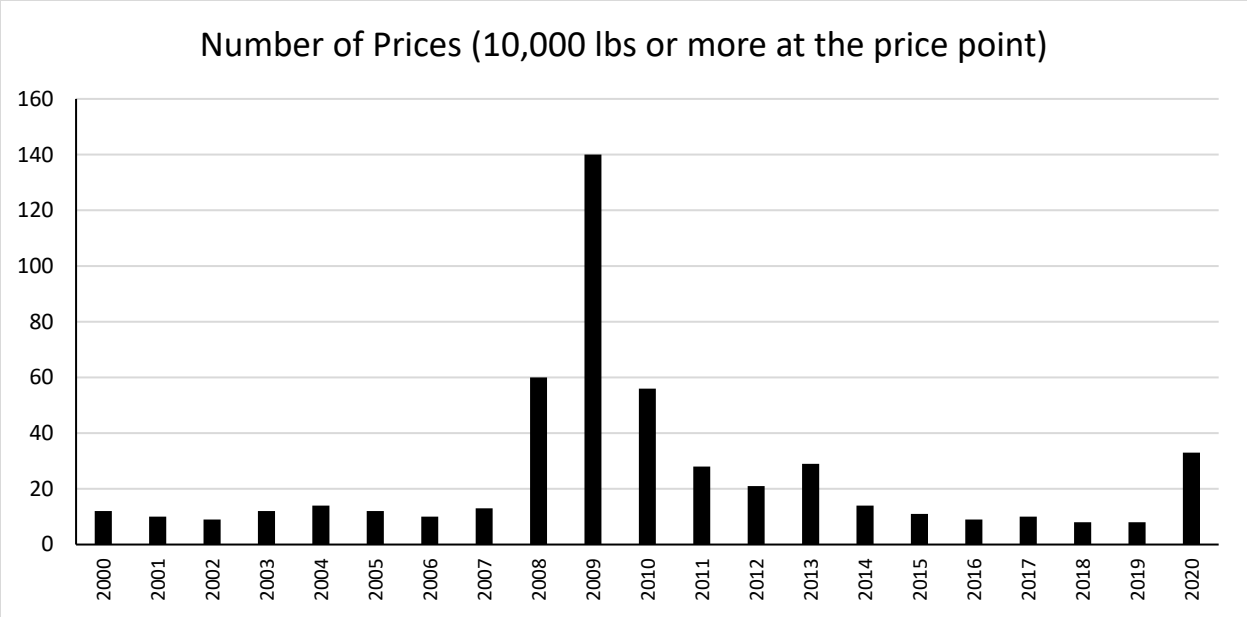


Figure 41. Number of different prices paid for Dover sole (as reported on fish tickets), where more than 10,000 pounds was delivered at the price point (counts are for distinct prices rather than price categories). (Source: PacFIN Comprehensive Fish Ticket Database). Internal reference: LE TW SF&DVR-PriceStudy_1994-2020_Jan 3 2021.xlsx;Dover_Prices (non-confid).

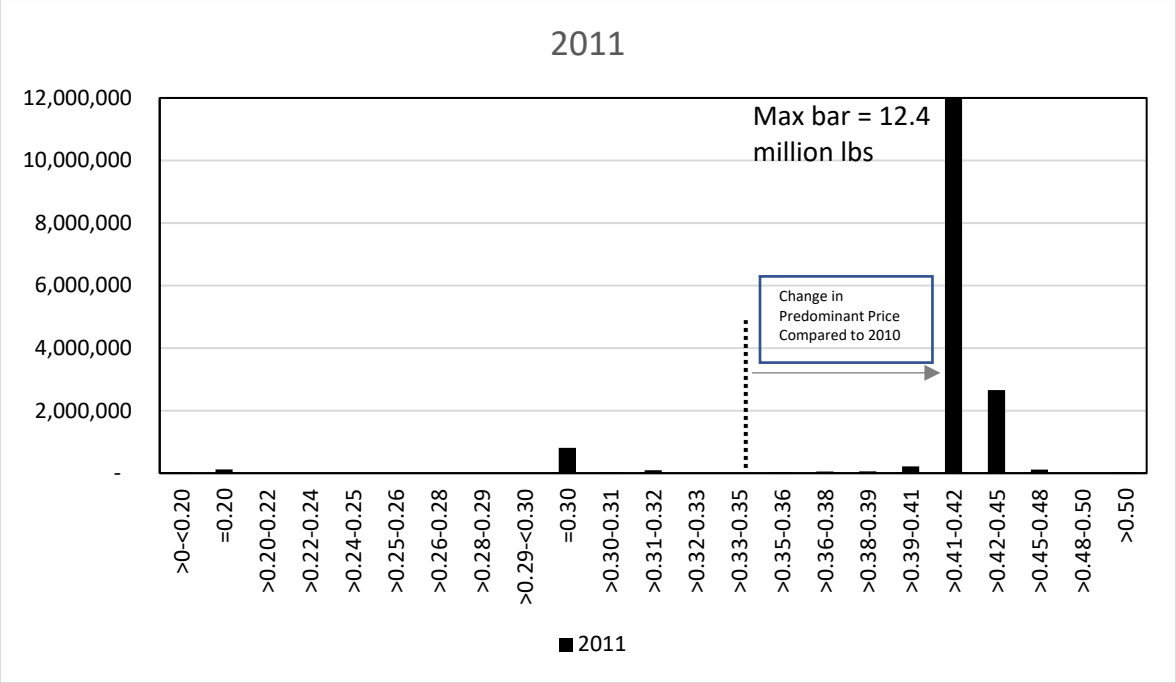


Figure 42. Pounds of Dover sole landed by price category (2011). (Source: PacFIN Comprehensive Fish Ticket Database). Internal reference: LE TW SF&DVR-PriceStudy_1994-2020_Jan 3 2021.xlsx; Dover_Prices (non-confid).

10.6 Petrale and Pink Shrimp Interaction With DTS

Petrale is one of the highest value species to the trawl fishery and a decline in allocation in 2009 coincided with the peak of the Dover sole harvest bubble which then started to decline the following year (see Figure 7)—potentially due to reduced profitability of groundfish trawl trips declining. When the 2009 Petrale sole assessment was produced, it showed that if the 2009-2010 OYs were harvested, the stock would be overfished in 2011 under any scenario. Therefore, the Council took action to implement management measures in 2009 to reduce catch (74 FR 57117) and implemented a phase down OY in 2010- which cut the previously adopted OY by half (2393 mt to 1200 mt; 74 FR 65480). Even with the sablefish peak in 2009/10 (Figure 3) that could have provided opportunity to harvest Dover at the peak levels, it is possible that this decline in Dover harvest was due to regulatory constraints on Petrale, trawlers choosing to not fish DTS because of the reduce opportunity to also earn income from Petrale, or choosing to fish in another fishery--such as pink shrimp. Starting in 2009, pink shrimp CPUE began to increase-offering a viable opportunity for vessels (Figure). This increase in CPUE was followed by an increase in harvests and pink shrimp revenue began to increase rapidly starting in 2010 (the same year as the decline in Dover and Petrale; Figure).

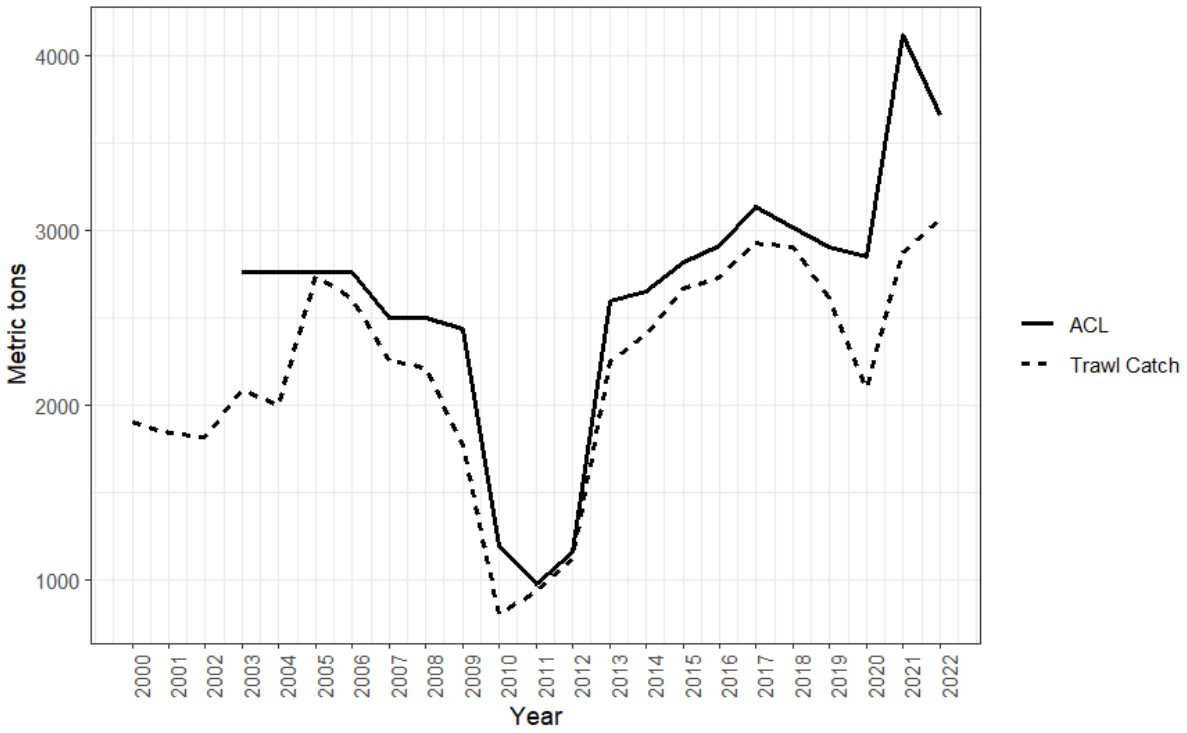


Figure 43. Petrale sole ACL (solid line;mt) and trawl catch (dashed line; mt) from 2000-2022.

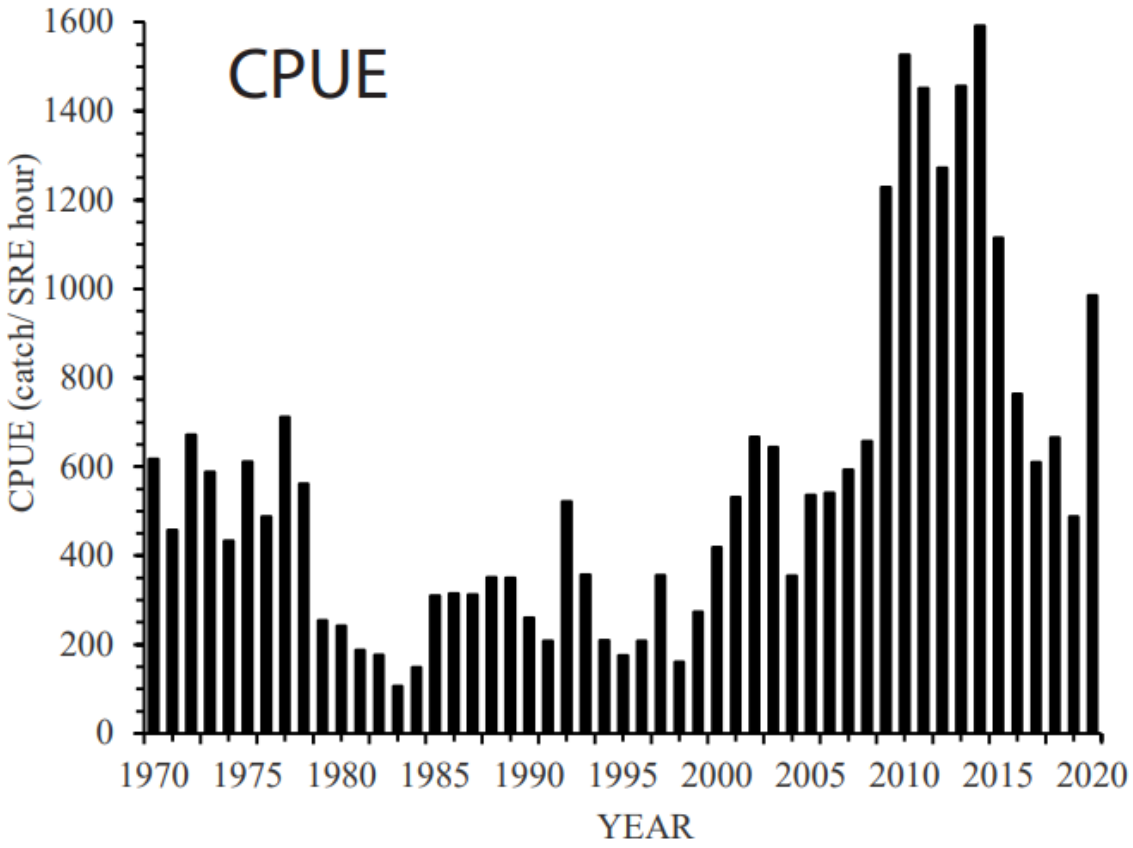


Figure 44. Oregon data on shrimp fishery CPUE from ODFWs 32nd Annual Pink Shrimp Review.

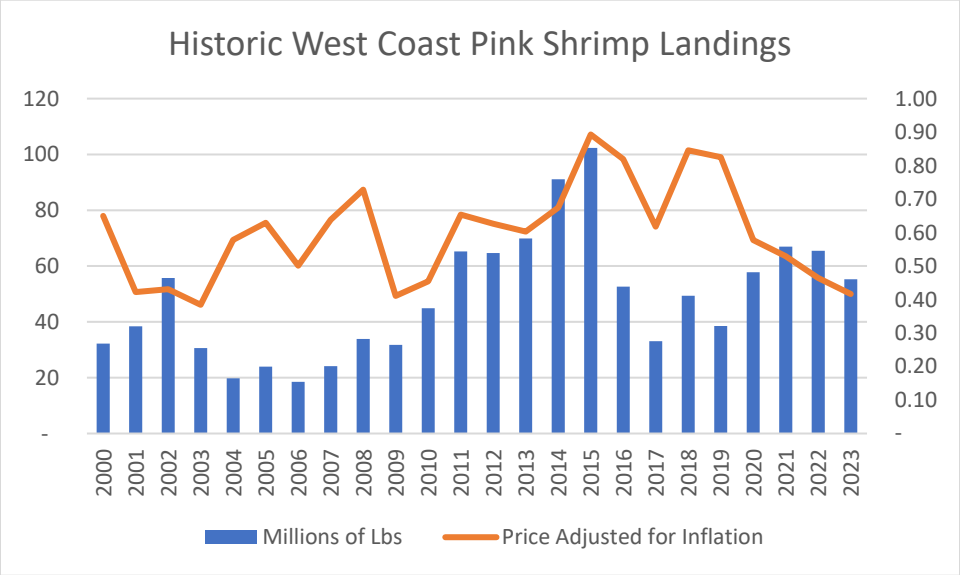


Figure 45. Pink shrimp landings in millions of lbs, 2000-2023

11.0 APPENDIX: GEAR-SWITCHING ENDORSEMENT ALTERNATIVE

At it April 2023 meeting, Council directed that analytical work on this alternative stop, but did not remove the alternative from the ROA. (Motion language was: "Suspend further analytical work on Alternative 3 and remove Alternative 2 from the range of alternatives".) At its November 2023 meeting the Council removed from the range of alternatives a similar alternative that would have allocated based on vessel history rather than permit history.

Overview. North of 36º N. lat., no retention of sablefish will be allowed while gear switching, except by vessels registered to a gear-switching endorsed trawl permit. Vessels fishing under endorsed trawl LEPs will have gear switching sablefish limits individualized for each permit based on gear-switching history of the permit, QS ownership, or a mix of the two. Gear-switching endorsements will be attached to trawl LEPs. For all options, qualification for a gear-switching endorsement requires that permit owners own a qualifying permit and northern sablefish QS as of and since the control date, and for one option, possibly a gear switching vessel. A qualifying permit is one that has the required history of gear switching prior to September 15, 2017. The endorsement might or might not expire when the permit to which it is attached is transferred to a different owner. If endorsements expire with permit transfer, the higher gear-switching limits associated with endorsed permits would eventually phase out.

11.1.1 Full Description

11.1.1(a) Gear-Switching Endorsement and Qualification

A gear-switching endorsement will be required for a vessel to gear switch and retain northern sablefish. Gear-switching endorsements will be attached to trawl LEPs and will not be severable from the permit.

To qualify for a gear-switching endorsement, between January 1, 2011 and September 15, 2017 (the control date): [34]

Endorsement Qualification Option 1: a permit must have landed northern sablefish QPs with non-trawl gear totaling at least 30,000 pounds per year in at least 3 years, and, as of and since the control date, the current permit owner must have owned the qualifying permit and must have had some ownership interest in northern sablefish quota shares (any amount).

Endorsement Qualification Option 2: same as Option 2 plus, as of and since the control date, the current permit owner also had some

[34] For situations where groups of individuals own a permit together, a collective approach will be used for assessing qualification and amounts of QS owned such that for qualification only a subset of the permit owners need to have owned QS (qualification Option 1 and 2) or a trawl permitted vessel with gear switching history (qualification Option 2) as of and since the control date.

ownership interest in a trawl permitted vessel that had some history of gear switching prior to the control date.

11.1.1(b)Sablefish Gear-Switching Limits

Trawl permits with gear-switching endorsements. The gear switching limits apply to the QP used with the endorsed permit while gear switching.[35] The annual sablefish north gear-switching limit for a trawl LEP that receives a gear-switching endorsement is:

Endorsement Limit Option 1: the average percentage of the sablefish north trawl QP allocation caught by the qualifying permit with fixed gear for years fished through either December 31, 2016 or September 15, 2017 (the control date), whichever results in the larger average for the qualifier.

Endorsement Limit Option 2: a percentage equivalent to the share of QP issued[36] for the sablefish north QS owned by the qualifying permit owner as of and since the control date,[37] **plus** an additional amount which will be determined in two steps. First, calculate the difference between the aggregate gear switching limit that would be issued to all recipients based on QS ownership and 29 percent. Second, allocate that difference among all qualifying permits proportionally to each permit's limit under the Option 1 provisions.[34]

Endorsement Limit Option 3: a percentage equivalent to the share of QP issued[36] for the sablefish north QS owned by the qualifying permit owner as of and since the control date. [34,37]

Under no circumstances will an endorsement limit be set above the annual vessel QP limit.

For Endorsement Limit Options 2 and 3, under no circumstances may the same QS be counted toward more than one limit. Under circumstances where QS owners own more than one qualifying permit, the QS owners may designate how credit for the QS owned should be divided among the gear switching endorsements to be issued for those qualifying permits.

QS Account Expiration Exception. Before program implementation, if a QS account that was owned as of the control date expires and the owners of the qualifying permit replace the QS account, then the common ownership linkage to the new QS account will be considered to meet the requirement for having been in place as of the control date (both the expiring and new QS account must have contained northern sablefish QS). Replacement is defined as the immediate acquisition of another QS account and transfer of sablefish QS to the new account,

[35] Sablefish gear-switching limits are evaluated after applying credits for discard survival. Therefore, they are limits on total QP used for gear switching (sablefish discard mortality and landings) rather than of gear switching catch.
[36] The share of QP issued would be equivalent to the percentage of QS owned plus a share of the AMP quota pounds which has been passed through to QS owners since the start of the program.
[37] For situations where groups of individuals own a permit together, a collective approach will be used for assessing amounts of QS owned such that all of the QS in any account jointly owned with the permit owner will count toward the endorsement limit (limit Options 2 and 3).

while maintaining ownership in the qualifying permit—or, for Qualification Option 2, while maintaining ownership of the qualifying permit and a gear switching vessel.[38]

Vessel Replacement Exception (Applies to Endorsement Qualification Option 2). If before implementation, the owners of a qualifying permit replaced a vessel that they owned as of the control date, then the common ownership linkage to the new vessel will be considered to meet the requirement for having been in place as of and since the control date. Replacement is defined as the divestment or loss of the previous vessel, prior to or immediately following acquisition of a new vessel while maintaining ownership of the qualifying permit and QS account.

Trawl Permits Without a Gear-Switching Endorsement. When not fishing under a permit endorsed for gear switching any sablefish caught using non-trawl gear may not be retained.

Annual Vessel QP Limit. Regardless of these gear-switching limits, trawl permitted vessels are not allowed to catch amounts that cause it to exceed the northern sablefish vessel QP limit (taking into account both the vessel's trawl and gear switched QP usage).

11.1.1(c) Other Species Gear-Switching Limit

For all trawl permitted vessels, there will not be any gear-switching limits for other IFQ species.

11.1.1(d) Gear-Switching Limits and Permit Transfers.

For gear-switching endorsed trawl LEPs, the gear-switching limits are associated with the permit. A vessel may sequentially fish under multiple gear-switching endorsed permits, catching all or a portion of the limit allowed under each permit (sequential registration). [39] If a permit is transferred midyear, fish caught using the permit and prior to the transfer still count against the permit's limit for the year.

Gear-Switching Limit Overages

When a vessel reaches the gear-switching limit (as determined by the trawl LEP registered to the vessel), it may not deploy non-trawl gear on any trawl IFQ sector trips taken during the remainder of the year,

Discard/Retention Option 1: but may retain and sell any sablefish caught in excess of the limit on its final gear-switching trip.

Discard/Retention Option 2: and must discard any sablefish caught in excess of its permit gear switching limit (*added by staff for Council consideration—see discussion*).

For each of the following allowance options, vessels would still be required to cover any catch with QP (including discards).

[38] A vessel with at least one gear switched landing of northern sablefish prior to the control date.

[39] Permit Stacking and Joint Registration: As under status quo, this alternative does not allow trawl permit stacking (the registration of more than one trawl permit with a vessel at the same time). Similarly, as with status quo, joint registration of trawl and fixed gear permits continues to be permissible.

Allowance Option 1: A vessel may exceed the gear switching limit on its permit by up to **500 pounds without incurring a violation** (the exceedance is measured as the amount of QP used to cover the overage).[40]

Allowance Option 2: A vessel may exceed the gear-switching limit on its permit by up to **10 percent** of the amount of its gear switching limit remaining when it started the trip **without incurring a violation** (the exceedance is measured as the amount of QP used to cover the overage).

Allowance Option 3: There is no limit on the amount by which a vessel may exceed the gear switching limit on its permit **without incurring a violation** *(should probably be combined with Discard/Retention Option 2)*.[41] (*added by staff for Council consideration—see discussion*).

If a permit's gear switching limit is exceeded in a given year, then

Overage Payback Option 1: any QP a vessel uses for gear switching in excess of its gear-switching limit will reduce the permit's gear-switching limit in the following year by the amount of the excess QP used. This applies to the permit being used by the vessel at the time of the overage.

Overage Payback Option 2: any QP a vessel uses for gear switching in excess of its gear-switching limit will not reduce the permit's gear-switching limit in the following year.

11.1.1(e) Combination of Trawl Permits

Current management measures allow vessels to combine two permits to create a single permit with a larger vessel length endorsement. If trawl LEPs are combined and there is a gear-switching endorsement on either permit, the permit resulting from the combination will receive the gear-switching endorsement and associated limit. If both of the combined permits have a gear-switching endorsement, then the larger of the two limits will be applied for the gear-switching endorsement on the resulting permit.

[40] Vessels receive discard survival credits for sablefish. These credits reduce the amount of QP that must be used to cover a given amount of catch. The current discard survival credit for fixed gear is 50 percent. Thus, for example, if a vessel catches 1,000 pounds in excess of its limit but discards all of the excess it would receive a 500-pound discard survival credit for a total overage of 500 pounds (i.e., it would be able to catch and discard up to 1,000 pounds in excess of its limit without incurring a violation). Similarly, for the second allowance option, a vessel's catch could go over its limit by 20 percent if it discarded its entire overage.

[41] This could allow a vessel with an endorsed permit to gear-switch for non-sablefish in common with other trawl permitted vessels fishing without a gear-switching endorsed permit if the prohibition on further deployment of non-trawl gear is also removed.

11.1.1(f) Endorsement Expiration

Expiration Option 1: Gear-switching endorsements will expire[42] when the permit is transferred to a different owner or a new owner is added to the existing permit ownership[43, 44] (ownership-based phase-down of gear switching).

Expiration Option 2: Gear-switching endorsements do not expire when the permit is transferred.

Limit on the Number of Gear-Switching Endorsed Permits Owned. *The Council will be considering a limit on the number of gear-switching endorsed permits any one individual may own. Options for those limits have yet to be developed. Some factors the Council might take into account in developing those options are described below in the Alternative 3 discussion section.*

[42] Expire means the endorsement will be removed from the permit.

[43] For purpose of this provision, a change in ownership will be considered to occur when a new entity is added to the permit ownership but not when an entity leaves the permit ownership, e.g. partners may leave but new partners may not be added (using rules similar to those which apply to expiration of the owner-on-board exemption for the fixed gear permit system).

[44] A change in the name or organizational structure (e.g. from partnership to LLC) of the permit will not be considered a change in ownership for the purposes of these provision unless the change also involves the addition of a new entity or individual to the underlying permit ownership.