Preliminary Assessment of Trawl Under-Attainment Issues and SaMTAAC Alternative Qualification Criteria

(UPDATED)

August 2020

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List of Contributors

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LIST OF UPDATES

This is an updated and expanded version of Information Report 2 from the June 2020 Council meeting (dated May 2020). In the text new or substantially modified information is identified using yellow shading. Other edits have been made to improve readability. These edits do not affect the substance of the previous content and are not marked out with highlighting. Additionally, there are no highlights where the change was an update using 2019 data.

Section 7.0 has been substantially reorganized to improve the clarity of the information provided but the substance of the results has not changed.

In addition to the new information, due to fish ticket corrections, the number of vessels and permits associated with gear switching has dropped by one between 2011-2018, making the total gear-switching entities from 2011-2019 to 40, and not 41 (38 between 2011-2018). This change is not highlighted throughout the document but is noted here.

The word "UPDATED" has been added to the titles of tables and figures indicate whether they have been changes since the May 2020 version of this document. In some cases, updated tables have been reorganized or combined to better convey the information. Totally new tables and figures have yellow highlighting. The notes and highlighting indicating updated and new tables and figures can be spotted in the lists of tables and figures as well as in the body of the document.

1.0 Introduction

1.1 Purpose and Organization of Document

Summary: This document is intended to complement the Sablefish Management and Trawl Allocation Attainment Committee's (SaMTAAC) final report, provided to the Council at its June 2020 meeting. It is a partial digest and summary of analysis that was provided to the SaMTAAC but also expands on some information and analysis requests. The document focuses primarily on issues related to the need for action and providing an initial look at the qualification criteria included in the alternatives developed by the SaMTAAC.

The Council charged the SaMTAAC with addressing certain issues related to under attainment of trawl sector allocations and the SaMTAAC worked on that task from June 2018 through April 2020. A number of analyses were produced to support the SaMTAAC deliberations, and can be found posted on the SaMTAAC webpage[1] under the meeting at which they were originally presented. If the Council decides to move ahead with consideration of a range of alternatives, as useful, those analyses will be updated and consolidated for presentation to the Council. This document includes some initial updates, intended to support a Council decision on whether or not

[1] SaMTAAC Webpage: https://www.pcouncil.org/actions/groundfish-fmp-amendment-gear-switching-and-sablefish-area-management/

to move ahead with consideration of this issue and, if so, provide some preliminary analysis that the Council might use to provide initial guidance on further refinement of the alternatives. It covers: the possible causes of under attainment; the gear-switching[2] concern, description of the fishery, buyers, and communities; and a preliminary analysis of qualification criteria included in the alternatives the SaMTAAC has recommended to the Council for consideration. The alternatives referenced in this analysis and the rationale for design of the alternatives are included in the SaMTAAC's final report, provided to the Council at its June 2020 meeting. The focus of the action alternatives developed by the SaMTAAC is a limitation on gear switching. No action also remains an alternative.

After presentation of some background information in Section 1.2 (including a summary of the degree of trawl allocation under attainment), this document starts by providing information on the potential causes of under attainment, including those identified in the purpose and need statement that the SaMTAAC recommends for adoption by the Council (Section 2.0). The SaMTAAC alternatives focus primarily on resolving possible constraints by limiting gear switching. With that context, this report provides some general information on the harvesters that may be affected by the alternatives (Section 3.0), the buyers that receive that fish (Section 4.0), and communities (Section 5.0). Section 6.0 focuses on prospects for changing conditions that may affect trawl sector need for northern sablefish quota pounds (QP) and the amount of gear switching. Finally, with respect to the SaMTAAC recommended alternatives to limit gear switching, Section 7.0 provides information on harvest operations that might and might not qualify for higher levels of gear switching opportunity and their historical levels of gear switching.

1.2 Background

Brief History of the FMP and Catch Share Program

Section Summary: The groundfish fishery management plan (FMP) was established in 1982 and has been amended numerous times. In 1994, a license limitation program was established for qualified trawl, longline, and fishpot vessels while all other vessels were allowed to continue to fish in an open access fishery. In the late 1990s and early 2000s, the Council undertook a series of management actions for the longline and fishpot segment of the limited entry fishery (limited entry fixed gear, LEFG), the culmination of which was transition to a tiered system of stackable, permit-specific, sablefish landing limits—essentially a catch share system for that sector. The shorebased trawl individual fishing quota (IFQ) program (a component of the trawl catch share program) was implemented in 2011 under the Amendment 20 catch share program. The subject of the current policy deliberations is the attainment of allocations for the shorebased trawl IFQ program, and in particular, the possible role that IFQ sablefish north of 36° N. lat. ("sablefish north") quota used for gear switching may play in contributing to under attainment of non-whiting allocations.

[2] "Gear switching" is the use of non-trawl gear by trawl permitted vessels to catch trawl IFQ.

The Pacific groundfish FMP was first approved in 1982, establishing management measures for over 100 species caught off the West Coast from California to Washington. Since its inception in 1982, the FMP has been amended 33 times (as of the completion of this review), moving from a fishery characterized by high discards and expanding catches and capacity, through various initiatives aimed at reducing fishing capacity, and, finally, to catch shares for the LEFG (longline and fish pot tiered permit stacking) and trawl sector.

To address overcapacity, improve efficiency, and meet other economic and biological goals of the FMP, the Council approved a license limitation plan through FMP Amendment 6. This program was implemented for the start of the 1994 fishery. Under the limited entry program, the vast majority of the fish was allocated to the limited entry sector for vessels that qualified for groundfish trawl, longline, or pot gear endorsed permits. The remainder of the fish was allocated to an "open access" component for vessels without permits using any gear except groundfish trawl.

While the license limitation program joined the trawl, longline, and fishpot permitted vessels under a single program, it also preserved the trawl/fixed gear allocations of northern sablefish that were first established in the 1980s. As part of this limited entry (LE) program, a separate open access allocation (OA) of sablefish was created and then the LE portion was split between the trawl and fixed gear (FG) sectors. In the late 1990s, sablefish endorsements and tier levels (cumulative limits for a primary directed sablefish fishery) were allocated to qualifying vessels fixed gear vessels. In 2001, the season for the primary fishery was lengthened from about a week to several months and then to seven months in 2002, effectively converting the sablefish tier program to a catch share program for the fixed gear segment of the LE fishery.

In 2003, the Council began work on a limited access program for the trawl fishery. That program was implemented in 2011 as Amendment 20 to the groundfish FMP. It created an IFQ program for the shorebased trawl fishery and co-op programs for the at-sea fisheries (mothership and catcher/processor). Separate trawl allocations were established for each of these trawl sectors, as needed. The shorebased IFQ fishery and concerns regarding attainment of its allocations are the focus of the policy considerations addressed by this analysis, and in particular, the possible role of gear switching in contributing to under attainment.

History of Council Deliberation on Gear Switching

> *Section Summary: Gear-switching opportunities were embedded in the structure of the original Amendment 6 license limitation program. The gear-switching provisions of Amendment 20 were developed at a time when many perceived that conservation associated with trawl gear warranted substantial reduction in its use. The path the Council followed to address gear switching in the catch share program was expected to help trawl fishermen access their quota but also was anticipated to allow fixed gear participants to acquire trawl permits and quota. The Council stopped short of adopting a provision facilitating permanent conversion of gear switchers from trawl to fixed gear, when a motion that would have selected that option was withdrawn in favor of a "go slow" approach.*

The management structures for gear switching within the context of the LE program pre-date the implementation of Amendment 20 IFQ program, going back to the structure of the Amendment 6 license limitation program. Under the license limitation program (implemented in 1994), qualifying vessels received LE permits endorsed for trawl, longline and/or fishpot gear (LE gears). A vessel with an LE permit was allowed to fish the gear for which it was endorsed within the context of the LE fishery. Within the LE fishery, allocations were larger and regulations more liberal than those of the OA fishery. A vessel without a permit was allowed to fish any legal groundfish gear (including LE gears except trawl) within the context of the more restrictive OA fishery. A vessel with an LE permit could also fish gears for which its permit was not endorsed (gear switch). Such vessels were governed by OA management regulations, but their harvest was counted against the LE allocation. So, under the Amendment 6 LE program, a vessel with an LE permit endorsed for trawl gear could use fixed gear or other OA gears, fishing under OA trip limits, but its harvest would be counted against the LE allocation.

Implementation of an IFQ program requires that an amount of fish be identified for management with IFQs. For the trawl IFQ program, this meant that the LE allocations had to be split between the trawl sector and others. This brought to the forefront the question of whether a trawl permitted vessel would continue to have the opportunity to use a non-trawl gear (gear switch), and if so, whether its catch would count against the trawl allocation (require IFQ) or some other allocation. The IFQ program identifies that the scope of the program:

> . . . allows a limited entry trawl vessel to switch between trawl and nontrawl groundfish gears, including fixed gear, for the purpose of catching their QP ("gear switching"). It also allows a nontrawl vessel to acquire a trawl permit, and thereby use trawl QP to catch the LE trawl allocation using nontrawl gear. (Section A-1.1 of the IFQ Program)

One of the opportunities envisioned for gear switching was that it might allow trawl vessels to utilize quota that they would not otherwise be able to access in a mixed stock trawl fishery. Additionally, at that time, there was a perception by some that transitioning the fishery away from trawling would have a number of conservation benefits. During development of the program, Council discussions about gear switching included the consideration of a permanent gear conversion provision. At its November 2008 meeting, the Council discussed a motion that would have adopted a program option requiring a permit holder that wished to gear switch for more than two years to permanently commit to gear switching (gear conversion). At that time, given the uncertainty over details about how the provisions would be implemented, the motion was withdrawn in favor of a "go slow" approach that allowed gear switching, did not require it to be permanent, and would consider the gear-switching issue again as part of the program review.

Under Attainment of Trawl Allocations

> *Section Summary: 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 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), other fisheries, such as the midwater rockfish, have seen growth meeting or exceeding pre-IFQ levels as stocks have rebuilt.

The SaMTAAC was appointed to address a number of concerns about total attainment of the trawl sector allocations. These concerns relate to goals and objectives of the FMP as well as Amendment 20, which created the trawl catch share program. Maximum utilization[3] may contribute to a number of goals and objectives of the FMP, including the following (which are those most directly related).

Groundfish Fishery Management Plan:

> 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.
>
> Objective 9: 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.

Amendment 20 (emphasis added):

> Goal: Create and implement a capacity rationalization plan that increases net economic benefits, creates individual economic stability, *provides for full utilization of the trawl sector allocation*, considers environmental impacts, and achieves individual accountability of catch and bycatch.
>
> Objective 6: Promote measurable economic and employment benefits through the seafood catching, processing, distribution elements, and support sectors of the industry.
>
> Objective 7: Provide quality product for the consumer.

Prior to the implementation of the IFQ program in 2011, the trawl fishery non-whiting harvest was managed with cumulative trip limits and gear and area restrictions and whiting harvest was managed primarily with season limits. Species such as Dover sole, thornyheads, and Pacific whiting had specific shoreside allocations, but this was not true for all 30 species which are now managed with IFQ. While this makes it difficult to directly compare attainments prior to catch shares and during the IFQ era, examinations of catch amounts and attainment of ACLs of trawl dominant species such as Dover sole do show a decline in catch in the early years of the program. Other species however, such as widow and yellowtail rockfish, have seen catch grow to levels at

[3] Goals and objectives on full utilization are explicitly or implicitly subject to other constraints. For example, FMP Goal 3 on utilization is a third priority goal, below the FMP's conservation and economic goals.

or above those pre-catch shares, average non-whiting trawl sector landings have increased from 7,421 mt from 2006-2010 to 8,836 mt during 2011-2019. For a more in depth look at the pre-catch share and IFQ fishery catch trends and attainments of trawl dominant species along with sablefish, please see SaMTAAC Agenda Item B.3, Supplemental Attachment 2 from the January 2020 SaMTAAC meeting. Further detail on catch amounts by non-whiting trawl vessels prior to catch shares and during the IFQ era can be found here in Section 2.1 (page 12). This section focuses on the IFQ era (2011-2019) and the attainment of IFQ, particularly non-whiting, allocations.

Figure 1 below shows the percent utilization of all non-whiting IFQ allocations from 2011 to 2019 and the overall amount of allocation pounds caught versus those unharvested. Note that surplus carryover issued in a year are included in the QP available to catch in that year, such that QP available may be slightly more than the actual allocation. While Pacific whiting is an IFQ species, it is removed from this figure as it is on a different scale—about three times larger allocations than next highest species (Dover sole) in the same year—and the policy solutions considered here are focused on the non-whiting fishery. Pacific whiting attainment has ranged from 47 percent in 2015 to 99 percent in 2013 with recent attainment in 2017-2019 averaging 83 percent. Average attainment of non-whiting species in the first four years of the program (2011-2014) ranged from about 24 percent to 35 percent although the quota available during that time was also the lowest across the time series. 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, the overall attainment decreased to about 21 percent as landings for Dover sole did not increase to the same degree as the allocation. In 2016, there was a small increase in percentage utilization and usage. Then, in 2017, the re-emergence of the non-whiting midwater trawl fishery with the rebuilding of canary rockfish (leading to 16 times greater ACLs compared to 2016) along with increases in the ACL for widow rockfish (over 6 times greater compared to 2016), in addition to other changes, resulted in over 50 million additional QPs allocated to the IFQ fishery. 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 closer 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 (EFP) that allowed development of the nonwhiting midwater trawl fishery prior to the start of the whiting season along with marketing initiatives by industry (further discussion in Section 2.2).

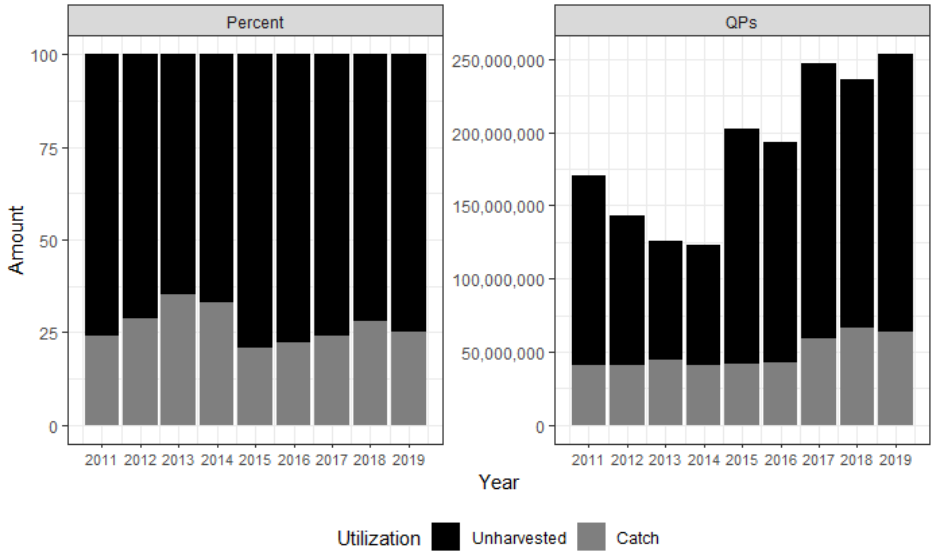


Figure 1. Shorebased IFQ utilization of non-whiting species, 2011-2019. Left panel: Percent of total allocations for all species caught and left unharvested. Right panel: Total amount of allocation QPs caught and unharvested.

While overall IFQ attainment has varied, there are a select number of IFQ species that consistently see high percent attainment (Table 1 below). Petrale sole and sablefish north of 36° N. lat. ("sablefish north") had greater than 90 percent allocation attainment in each year. Other species with greater than 90 percent attainment include Pacific whiting (2011-2013) and widow rockfish (2018-2019). Additionally, in 2015, canary rockfish exceeded the IFQ allocation by almost four percent[4]; however, this was at a time when canary was overfished (ACL of 122 mt) and a single vessel took most of the sector allocation in a "lightning strike" tow[5]. The vast majority of IFQ species see less than 50 percent attainment, with most years seeing more than half of the 30 IFQ species[6] with less than 25 percent attainment. Overall, the revenue generated in the non-whiting trawl fishery (including gear-switched landings) has averaged $31.7 million from 2011 to 2019. Species with more than 50 percent attainment in a year account for about $18.7 million in exvessel revenue, or 58.7 percent of the non-whiting fishery revenue, on average.

[4] The sector took 94.8 percent of the total available pounds in 2015, and the ACL was estimated at 92 percent attainment (Somers, et. Al. 2016)

[5] The tow was over 47,000 lbs (~21.3 mt), which was close to the total amount of QPs debited by all trawl sector vessels in 2016 (47,338 lbs).

[6] In 2013, lingcod began being managed north and south of 40° 10 N. lat.

Table 1. Number of IFQ species by percent attainment of the allocation, 2011-2019

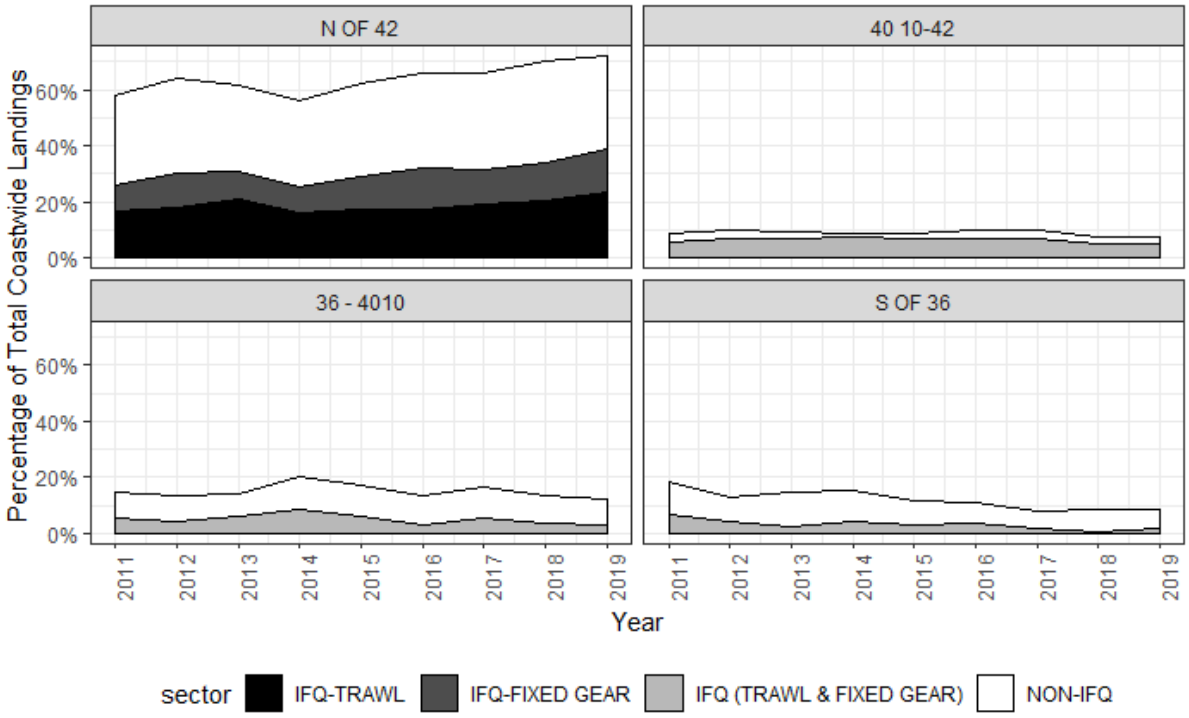
Attainment	2011	2012	2013	2014	2015	2016	2017	2018	2019
0-25%	18	12	13	14	15	16	16	17	17
25-50%	7	13	11	11	10	9	9	6	7
50-90%	1	1	3	3	2	3	3	4	3
90+ %	3	3	3	2	3	2	2	3	3

Sablefish Harvest

Section Summary: Sablefish north is highly attained across all sectors while sablefish south of 36° N. lat. ("sablefish south") has averaged 44 percent ACL attainment since 2011. Approximately 50 percent of sablefish north is taken by non-IFQ fisheries (LEFG, OA, and tribal fisheries) while the other 50 percent is caught by the IFQ sector. Gear-switched catch has averaged around 30 percent of the total available pounds in the IFQ fishery from 2011 to 2019. South of 36° N. lat., catch of sablefish is dominated by fixed gear, with less than three trawlers participating in recent years.

As described in the SaMTAAC final report, over the last years, there have been a number of meetings at which concern has been expressed that the availability of northern sablefish QP may be constraining harvest of the trawl allocations and the alternatives developed by the SaMTAAC focus on this issue.

Sablefish is a coastwide stock that is managed north and south of 36° N. lat. While sablefish in the north is highly attained across all sectors, sablefish south attainment has averaged 44 percent since 2011, with 2017 and 2018 both seeing less than 25 percent attainment (Figure 2). For landings in the areas off Washington and Oregon (i.e., north of 42° N. lat.), non-IFQ landings, including at-sea whiting sector bycatch and tribal landings, have typically accounted for approximately 33 percent of the total coastwide landings (between 1,300 and 2,000 rd. wt. mt) and 50 percent of the total landings north of 42° N. lat. Northern California has historically seen more IFQ landings compared to non-IFQ landings, which is the opposite of the area from 36° to 40° 10' N. lat. south of 36° N. lat., non-IFQ landings are dominant, with 2018 seeing the lowest proportion of IFQ landings since the start of the program at 0.8 percent of the coastwide landings (or 9.5 percent of the total sablefish landings south of 36° N. lat.).



Notes: 68.6 mt of sablefish from 2011-2019 had no area identified and therefore is not included. For all areas south of 42° N. lat., due to confidentiality, values could only be reported at the IFQ sector level, not at the IFQ and gear level.

Figure 2. Percentage of coastwide landings by area and sector (including tribal and nontribal fisheries). Source: Shoreside landings queried from PacFIN 02/20/2020, At-Sea catch queried from NPAC 03/25/2020.

The scope of the SaMTAAC's work was limited to solutions within the trawl sector (as opposed to considering modification of intersector allocations). In the IFQ sector specifically, northern sablefish might be effectively considered fully attained, given that some under attainment is generally likely. For example, the primary tier fishery has averaged 94.2 percent attainment, which has not generated concern about under attainment for that sector (more details below in Section 6.4). The IFQ sector has averaged 93.4 percent attainment of total available pounds (allocation plus surplus carryover) or 96.6 percent of the allocation from 2011-2019 with around 30 percent of the total available pounds being caught by gear switchers from 2011-2019 (Figure 3;Table 2). For the trawl fishery, once surplus and deficit carryovers are taken into account the amount of QP left on the table each year averages 2.8 percent (Table 3). Southern sablefish harvest is dominated by gear-switching vessels in the IFQ sector, with fewer than three trawling vessels participating in the last two years. Attainment south of 36° N. lat. for sablefish has averaged less than 10 percent in the last three years.

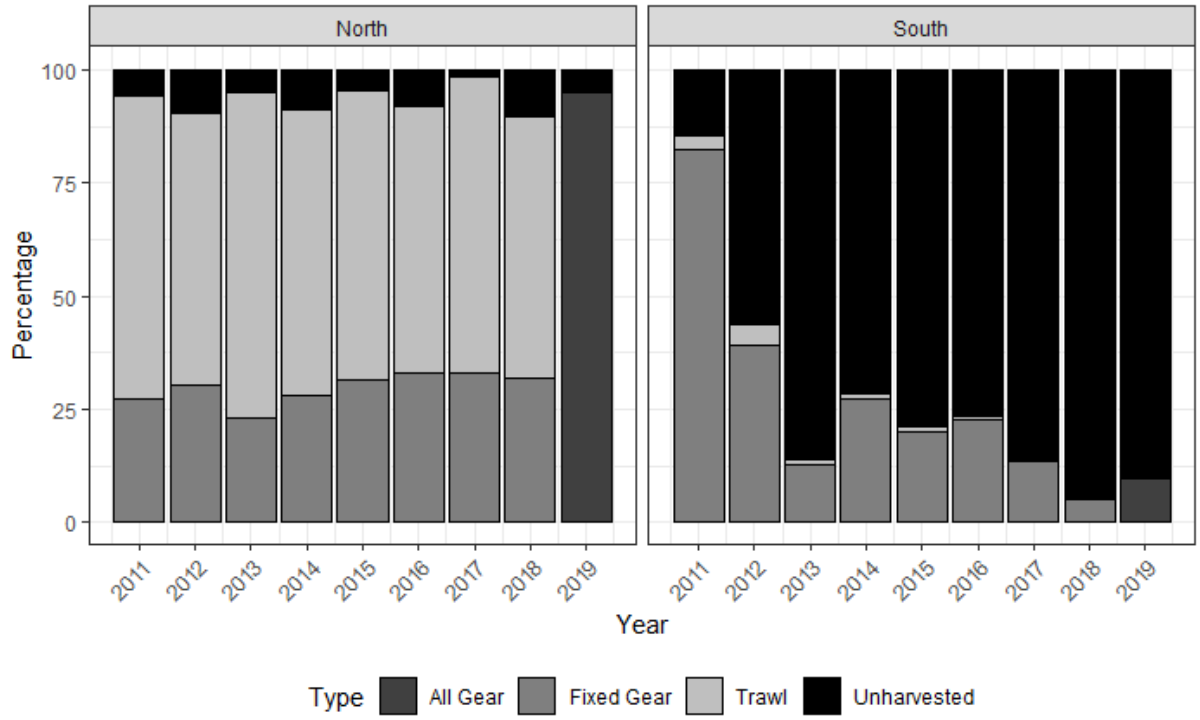


Figure 3. Percent utilization of the total available pounds of sablefish by management area, gear, and year. Source: 2011-2018 based on WCGOP GEMM; 2019 total harvest based on IFQ vessel account system.

Table 2. 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), 2011-2019. Source: 2011-2018 GEMM, 2019 Pacific Coast Groundfish IFQ Database Viewer.

Landing Year		**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2011-2019 Avg**
Total Catch		5.29	4.92	4.07	4.13	4.82	5.02	5.56	5.08	5.64	4.95
Catch by Gear	**Trawl**	3.75	3.26	3.09	2.86	3.24	3.22	3.69	3.27	3.62	3.33
	Fixed Gear	1.54	1.66	0.98	1.27	1.58	1.80	1.87	1.81	2.02	1.61
Allocation Lbs		5.61	5.44	4.03	4.38	4.85	5.32	5.33	5.56	5.69	5.13
Percentage by Utilization	**Trawl**	66.8%	59.9%	76.7%	65.3%	66.8%	60.5%	69.2%	58.8%	63.6%	65.3%
	FG	27.4%	30.5%	24.3%	28.9%	32.6%	33.9%	35.1%	32.5%	35.5%	31.2%[a/]
	Unharvested	5.8%	9.6%	-1.1%	5.7%	0.6%	5.6%	-4.4%	8.7%	0.9%	3.5%
Available Lbs		5.61	5.44	4.29	4.52	5.05	5.46	5.64	5.67	5.94	5.29
Percentage by Utilization	**Trawl**	66.8%	59.9%	72.1%	63.3%	64.2%	58.9%	65.4%	57.7%	60.9%	63.2%
	FG	27.4%	30.5%	22.9%	28.0%	31.3%	33.0%	33.2%	31.9%	34.0%	30.2% [b/]
	Unharvested	5.8%	9.6%	5.0%	8.7%	4.5%	8.1%	2.4%	10.4%	5.1%	6.6%

a/ 2016-2019 average is 34.2%
b/ 2016-2019 average is 33.0%

Table 3. Percent of QP unused after taking into account each year's surplus and deficit carryovers.

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	Average
Unused QP	6.0%	4.6%	1.5%	3.8%	1.0%	1.4%	0.3%	4.8%	1.9%	2.8%

Fixed gear harvest of IFQ sablefish (gear switching) is concentrated north of 42º N. lat. and has increased in that area during the course of the program, while decreasing off of California (Figure 4). At the same time, the harvest of trawl caught sablefish has been shifting northward. Figure 4 shows the average landings by catch area and gear in the four areas presented above in Figure 2 during 2011-2015 and 2016-2019. Note that during both time periods, fewer than three vessels used fixed gear to catch sablefish between 40° 10' N. lat. and 42° N. lat. and therefore fixed gear landings for that area were combined with landings from the area between 36° N. lat. and 40° 10' N. lat.

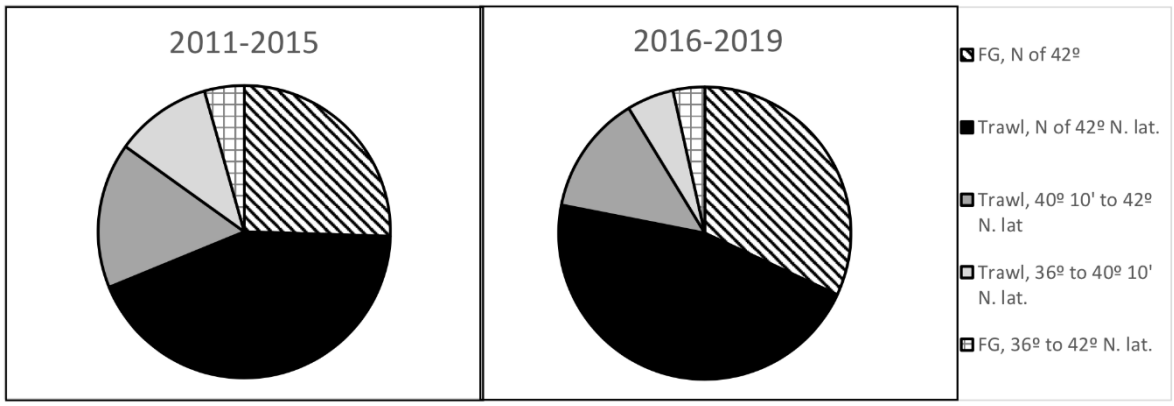


Figure 4. Average percentage of IFQ landings of sablefish north of 36° N. lat. taken by gear and area of catch.

2.0 Some Potential Causes of Under Attainment

2.1 Trawl Vessel Participation as a Limit on Attainment

Section 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. This section evaluates the relationship between number of non-whiting vessels using trawl gear, average vessel harvest for those vessels, and total non-whiting trawl harvest. In general, it finds:

- *Participation by 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 profitability to support expansion of 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.*

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 67 in the first five years of the program and 65 in the last four years (Figure 5). There were 44 vessels that had non-whiting groundfish trawl history prior to the IFQ program and then had zero trawl landings history after that. An additional 22 vessels appear to have exited the fishery by 2015 (Figure 6). Twenty-five vessels entered (or re-entered the fishery) from 2011 to 2019. Note that some of the vessels transitioned into other fisheries—including whiting, crab, shrimp, and even gear switching.

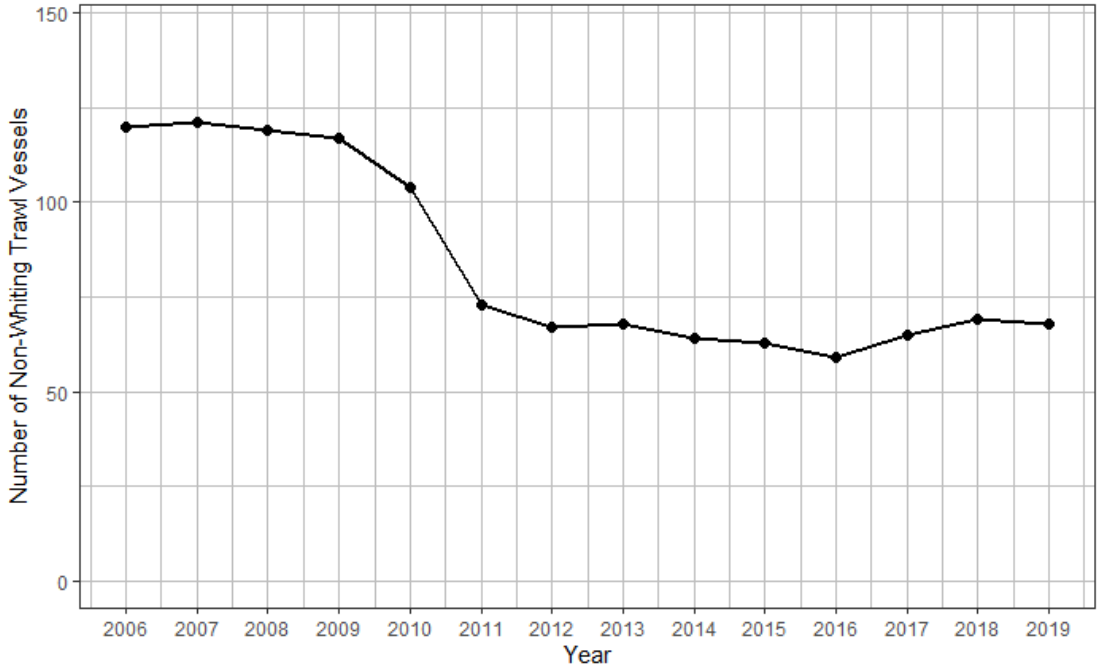


Figure 5. Number of non-whiting trawl vessels using trawl gear, 2006-2019.

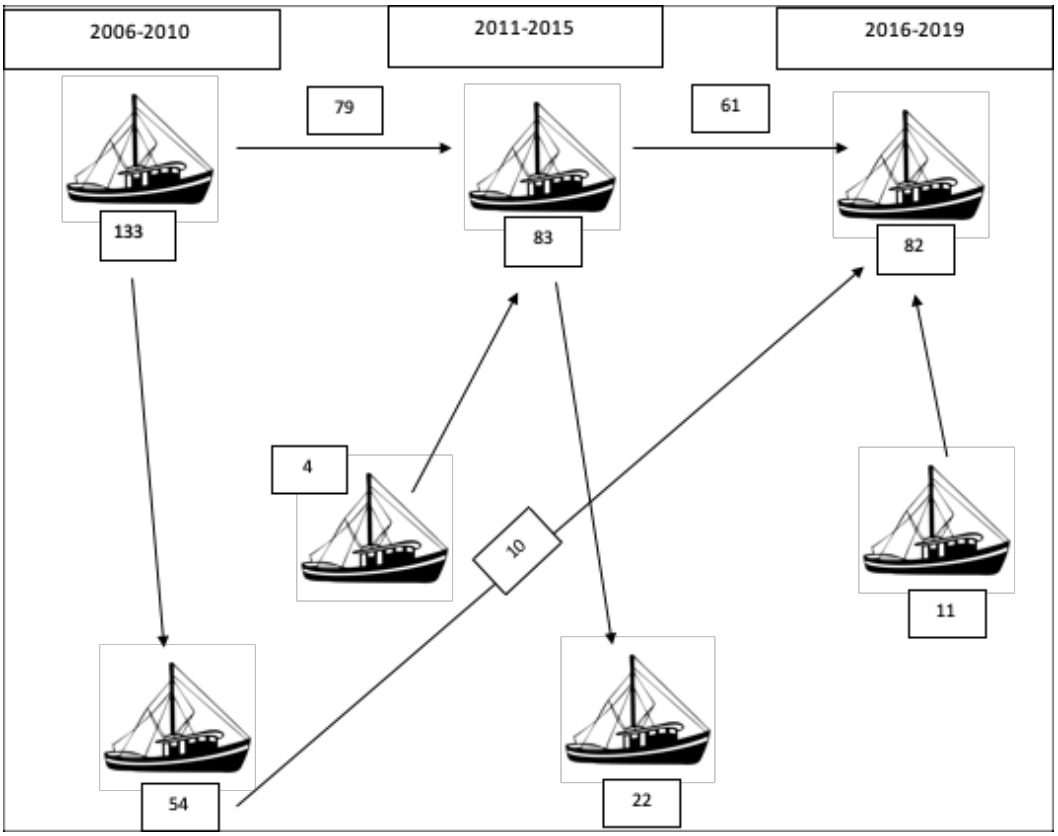


Figure 6. Diagram of the number of non-whiting trawl vessels that participated, entered, and exited the fishery in three periods (2006-2010, 2011-2015, and 2016-2019).

Given the vessel departures seen with the implementation of the trawl IFQ program, it is important to consider whether the loss in fishing vessels could be a cause of the current trawl under attainment. Figure 7 below shows the average landings and revenue per year in the three periods presented above (2006-2010, 2011-2015, and 2016-2019) by four different groups:

Stable Participants—Vessels in this category had at least one non-whiting trawl landing in each period.

Re-entered—Vessels in this category participated in at least one year from 2006-2010, were absent from 2011 to 2015 and re-entered in the latter years (2016-2019).

Entered—Vessels in this category did not participate in 2006-2010 and entered the non-whiting trawl fishery after 2010 (i.e., in the IFQ program).[7]

Exited in Following Period—Vessels in this category that had landings in 2006-2010 and/or 2011-2015 but not after (i.e., exited after the 2006-2010 period or after the 2011-2015 period).

[7] Three of the 11 vessels classified as new entrants had one or two years of non-whiting trawl landings between 1994 and 2000, and one of the 11 had landings in every year from 1994-2005. The other 7 vessels showing as new entrants did not have a history of non-whiting trawl landings.

On average, the vessels with participation across the periods have increased their landings and revenue with each period (shown in black)—likely due to increases in ACLs and trawl allocations, particularly in 2016-2019 with the rebuilding of the midwater rockfish fishery. Increases by these vessels alone led to harvest levels and revenue that reached very near the total pre-catch share level. The vessels that entered the fishery after initial program implementation in 2011 did not catch as much as the vessels that left the fishery in the preceding period. However, together with the stable participants, their total catch in 2016-2019 exceeded that of the pre-catch share fleet. The 2016-2019 data on stable participants shows that the vessels likely had the capacity to make up for the departing vessels (coming very close to the 2006-2010 totals) and that factors other than the amount of trawl vessel participation are likely the causes of under attainment.

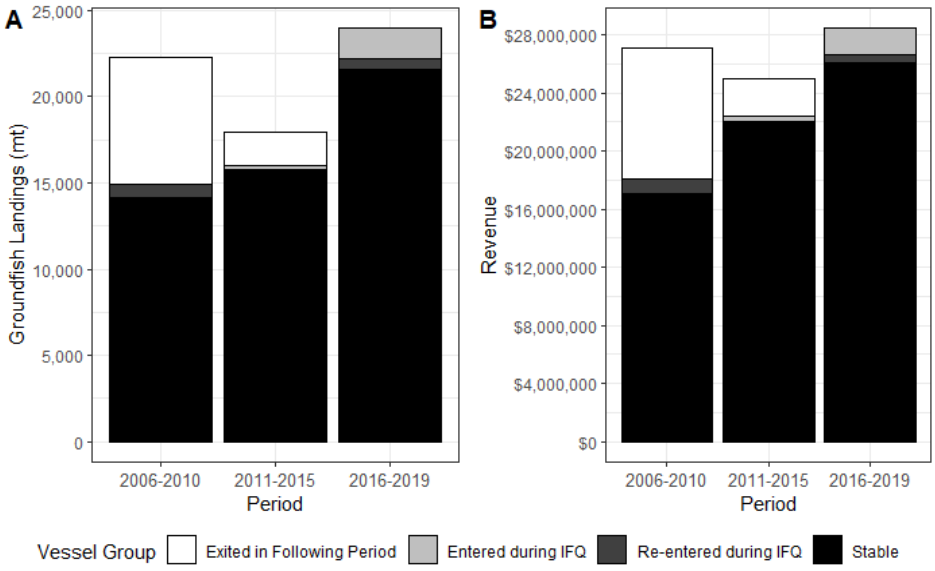
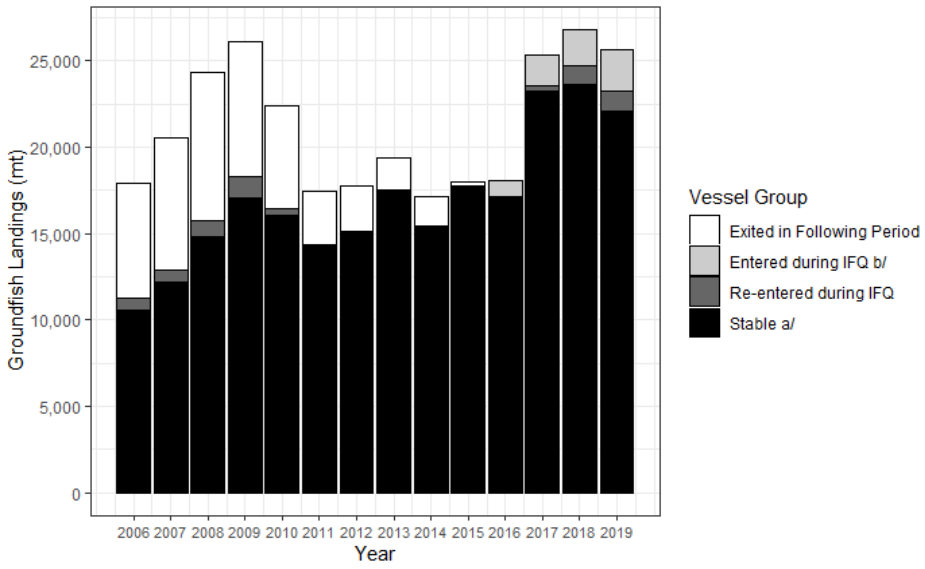


Figure 7. (UPDATED) Average non-whiting trawl sector landings (mt; A) and revenue not adjusted for inflation (B) by period and vessel group (stable, re-entered fishery, entered fishery, or exited in following period).

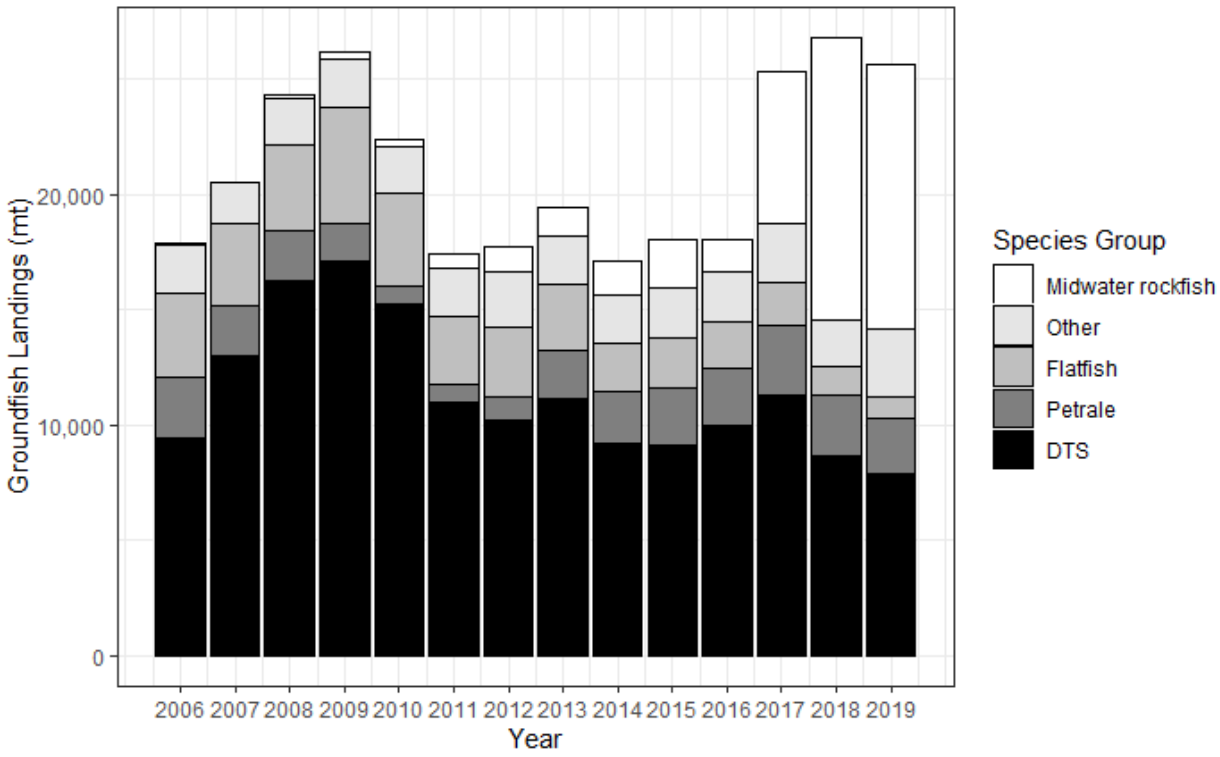
Taking a closer look at these vessels, Figure 8 below provides a similar view of landings, but at the individual year level. Given the similarities in the revenue patterns in Figure 7, the following series of graphs only show landings trends. Due to confidentiality, certain vessel groups were combined (see footnotes). Stable participants' landings have generally increased over time, with a slight decrease at the start of the IFQ program. The largest increase appears between 2016 and 2017, which coincides with the re-emergence of the midwater rockfish fishery as shown in Figure 9. Those vessels that harvested non-whiting trawl prior to the IFQ program and re-entered after 2016 appear to harvest a similar tonnage during both periods. Overall, the vessels that entered the fishery during the IFQ program have landed less than those vessels that exited the fishery, especially those fishing prior to trawl rationalization. This implies that most of the decline in harvest resulting from those exiting is made up by existing participants.



a/ Fewer than 3 vessels entered the fishery between 2011-2015 and were included in the "stable" bar
b/ Fewer than 3 vessels re-entered the fishery in 2016 and were included in the "entered during IFQ" bar

Figure 8. Non-whiting trawl groundfish landings (mt) by year and vessel group, 2006-2019.

While the number of vessels that participated in the non-whiting trawl fishery varied across years, the species composition of their landings was fairly consistent in terms of proportions from 2006 to 2016, with Dover sole, thornyheads, and sablefish (DTS) being the main focus of the fishery (Figure 9). Dover sole landings were the driving force behind the spike in DTS landings from 2007 to 2010, followed by a decrease in 2011 (co-occurring with the start of the IFQ program). As will be discussed in following sections, that decline in harvest could be due to constraints from limited amounts of sablefish north, competition from imports, or a lack of markets. Catch of petrale sole increased concurrently with increases in the ACL starting in 2013. The re-emergence of the midwater rockfish fishery (discussed in Section 1.2) for species such as canary, widow, yellowtail, and chilipepper rockfishes resulted in landings that exceeded those of DTS starting in 2018 and accounted for over 45 percent of total non-whiting trawl landings in 2018-2019.

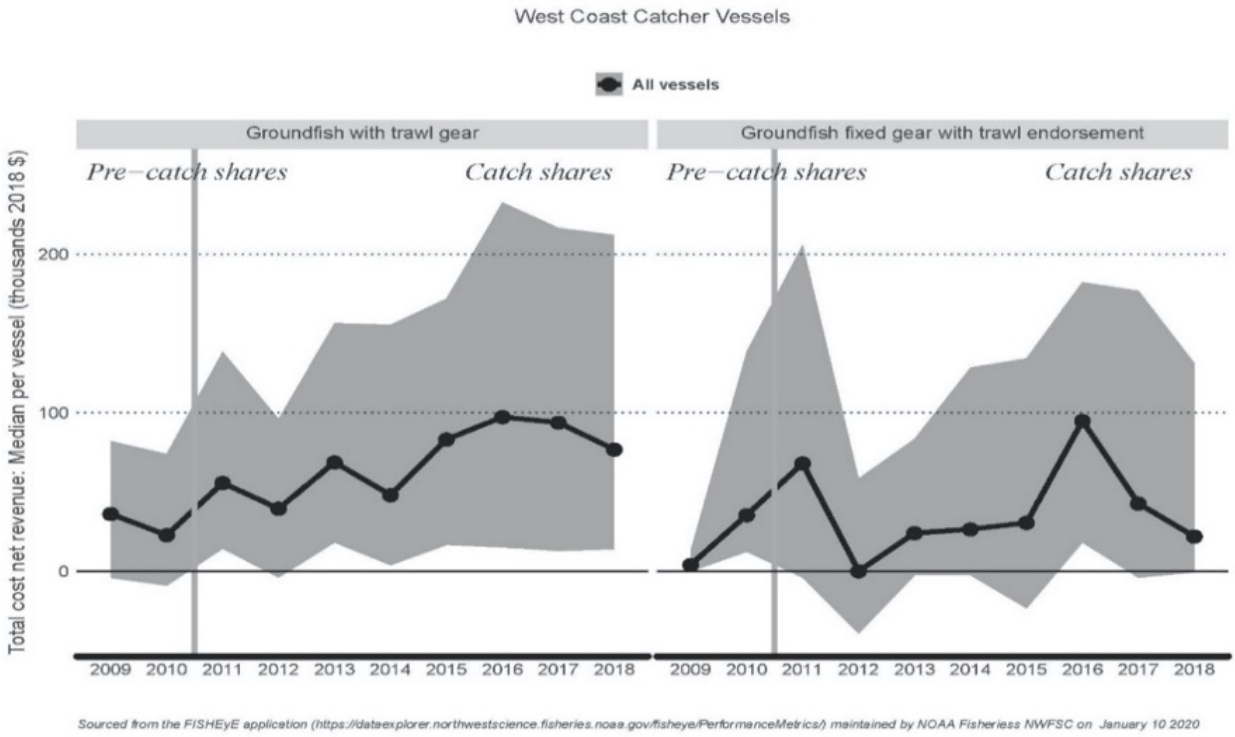


Note: Midwater rockfish= canary, widow, yellowtail north of 40° 10' N. lat., chilipepper, and bocaccio; flatfish=all flatfish species except for Petrale sole and Dover sole; DTS= Dover sole, shortspine thornyhead, longspine thornyhead, and sablefish.

Figure 9. Landings in the non-whiting trawl sector by species group, 2011-2019.

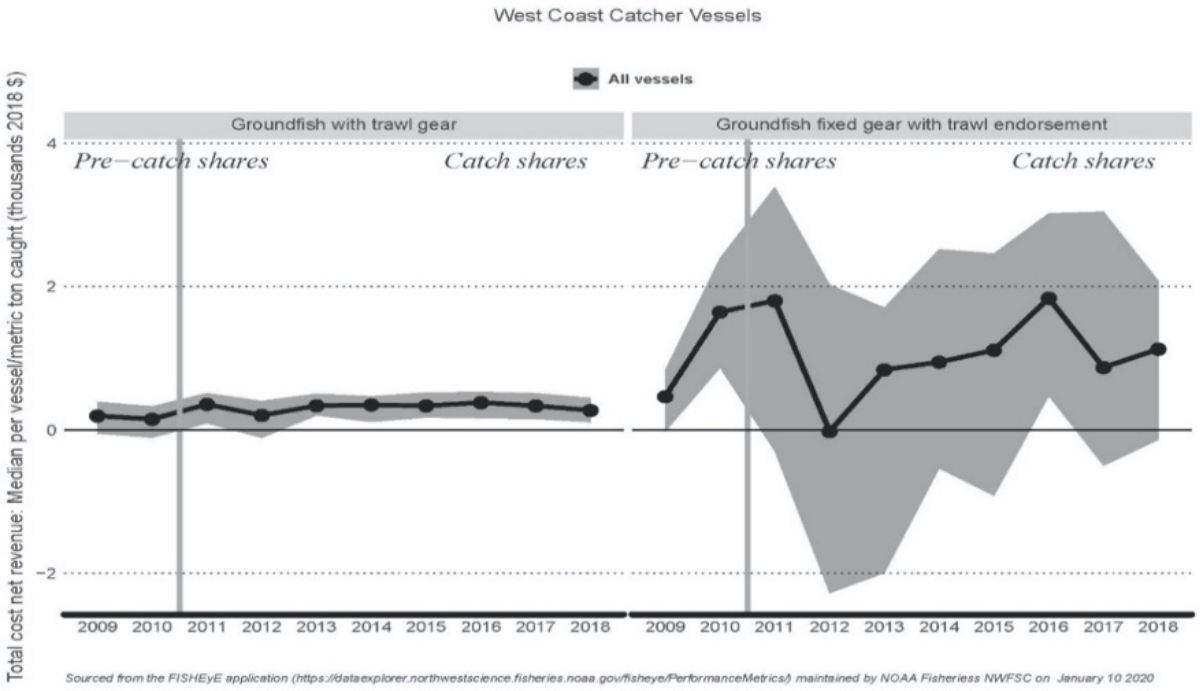
Data on vessels entering and exiting the fishery and their harvest levels indicate that after the start of program consolidation the fleet still likely had sufficient capacity to harvest at pre-catch share levels. At the same time, attainment could still be constrained by a lower intensity of vessel participation, if low profitability caused the vessel exits and provided insufficient incentive for the expansion of harvest by remaining vessels. However, summaries from the National Marine Fisheries Service (NMFS) Economic Data Collection (EDC) program generally show that non-whiting trawl gear vessels became more profitable after implementation of the catch share program, with trawl gear vessels generally showing somewhat higher median profitability than gear-switched fixed gear vessels (Figure 10). Over the last three years (2016-2018), the median vessel total cost net revenue (revenue after taking into account fixed and variable costs) has been over twice the pre-catch share levels. Median vessel total cost net revenue approached $100 thousand, while the 25th percentile vessel has been around $10 to $15 thousand and the 75th percentile vessel has been over $200 thousand. Increased total cost net revenue, including on a per mt (Figure 11) and per day (Figure 12) basis, seems to indicate that some factor other than adequate profitability was likely constraining trawl allocation attainment. In considering these data, it should be noted that some of the apparent increases in profitability might be the result of less efficient vessels leaving the fishery rather than an increase in efficiency of remaining vessels.

However, the data still indicates that profitability does not appear to have constrained either the number of vessels participating or the level of participation for individual vessels.



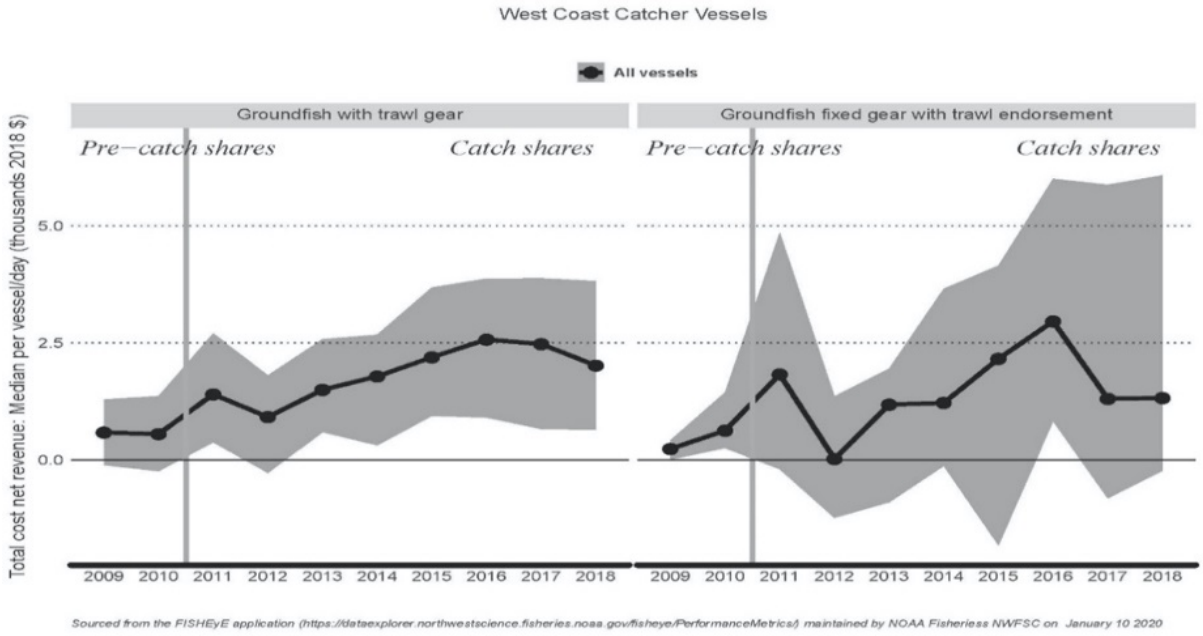
Note: Median vessel shown by the line, top of the gray area denotes the 75th percentile vessel, and the bottom the 25th percentile vessel.

Figure 10. Total cost net revenue for non-whiting trawl and fixed gear vessels, after taking into account variable and fixed costs, 2009 through 2018. Source: The FISHEyE application maintained by NOAA Fisheries, NWFSC on January 09, 2020.



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 11. Non-whiting trawl and fixed gear vessel total cost net revenue per metric ton, after taking into account variable and fixed costs, 2009 through 2018. Source: The FISHEyE application maintained by NOAA Fisheries, NWFSC on January 09, 2020.



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 12. Non-whiting trawl and fixed gear vessel total cost net revenue per day, after taking into account variable and fixed costs, 2009 through 2018. Source: The FISHEyE application maintained by NOAA Fisheries, NWFSC on January 09, 2020.

2.2 Market Limits—Domestic Markets and Competing Imports

Section Summary: Expansion of the attainment of trawl allocations for some species will likely require the development of markets. 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. It has been argued in public comment that uncertainty about access to supply of sablefish could be dampening investments that might improve the competitiveness of West Coast products, and, as a general proposition, there is some support for this in academic literature and a discussion in the recently completed catch share review. As an alternative approach to deal with commodification, marketing efforts have been undertaken that distinguish West Coast wild caught fish from global whitefish commodities.

The proposed purpose and need statement identifies a lack of markets as another factor that could be constraining trawl allocation attainment, particularly with respect to Dover sole. Section 2.5 explores the potential for expansion of trawl catch assuming that sablefish is constraining and markets are able to absorb the additional production. However, if markets are not able to absorb

the additional production, that expansion might be thwarted, or prices might decline in order to increase amounts demanded (if lower prices can still support profitable operations). Alternatively, enhanced domestic marketing efforts could expand market capacity while maintaining prices. For example, with the recent rebuilding of widow and canary rockfish, the redevelopment of the midwater rockfish was facilitated in part by a cooperative effort among vessels and processors to coordinate production and support marketing efforts to expand demand.

One challenge in developing markets may be competition from imports. Information provided here is not intended as a complete market analysis but rather an exploration of some data indicators and studies related to the possible interaction between imports and the domestic market for fresh whitefish, in which a number of trawl species likely compete (including Dover sole). In considering these market studies, it is important to take into account that the dynamics of international seafood markets are rapidly changing and therefore individual market studies may be difficult to apply to across time periods. (Bjørndal & Guillen, 2016).

Competition from farmed tilapia and catfish (*Ictalurus*, *Silurus*, and *Pangasius*, the latter also known as swai) in the whitefish market has been a focus of several studies over the last decade or so, and competition of those products with Dover sole has been a topic of public comment during deliberations on trawl allocation attainment issues. U.S. imports of tilapia and catfish, fresh and frozen, have increased each year from 1994 to 2013 (Figure 13). 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 (note in Figure 13 that the axis for the processed weight of imports, on the left, is 33 times the scale of the axis for round-weight Dover sole landings, on the right).

[8] Close to 80 percent are reported as fillets (weighted annual average)

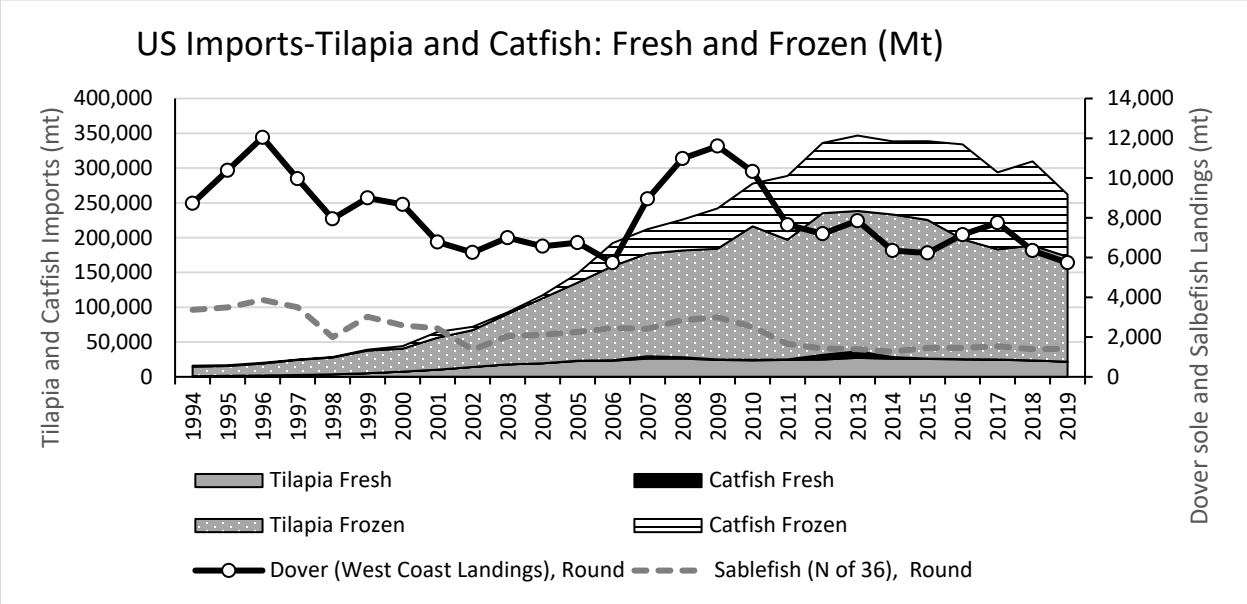


Figure 13. Import volume of processed fresh and frozen tilapia and catfish and limited entry trawl gear landings of Dover sole and northern sablefish (excluding gear switching). (Sources: NOAA Fisheries Foreign Trade Data and PacFIN Answers Database)

Since 1994, there have been two production peaks in West Coast landings of Dover sole, one in 1996 and the other in 2009, both at similar levels (Figure 13). The peak in 2009 was at about 11,000 mt, after which landings dropped 12 percent in 2010. Landings dropped another 24 percent in 2011, concurrent with both implementation of the catch share program, and continued increases in imports of tilapia and catfish. Conditions in the seafood market in which the peaks occurred were likely quite different from one another due to shifting market conditions, including increased commodification of international seafood trade. Seafood commodification occurs when a number of fish species available in relatively large volumes are treated as raw products that can be substituted for one another because of their similar characteristics.

Commodification of seafood is a more recent phenomena that has led to products that were previously sold in more isolated market channels with fewer substitutes competing with an increasing number of other fisheries products (Asche et al., 2009). This increasing commodification is likely to continue into the future as larger volumes of similar products become available year-round (Anderson et al., 2018). Commodification is associated with the stabilization of wild fish supply and innovations such as IFQ programs that have allowed more efficient supply chains to develop (Anderson et al., 2018).[9] Expansion and commodification of aquaculture products has also contributed to global commodification of seafood. While global wild fish production has stabilized, aquaculture production has increased by about ten-fold from the mid-

[9] Also contributing to commodification are improved processing and preservation technologies and improved transportation logistics that decreased the constraints of seasonality and further increase efficiency and profitability (Anderson 2018).

1980s through 2017 (source: FAO data). In the past, only the same species of aquaculture and wild caught fish tended to compete with one another (e.g. salmon). Now, aquaculture-raised fish of one species compete with wild caught fish of other species, further contributing to commodification (Asche et al., 2009, Asche and Zhang, 2013). 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).

In U.S. markets, there appears to be a connection between fresh farmed tilapia and wild caught fish. Fresh tilapia imports (Figure 14) have grown rapidly without a price reduction (Figure 15), indicating that the tilapia market share has grown by displacement of other products rather than generating higher amounts demanded through lower prices (Norman-López and Asche, 2008). In U.S. markets, fresh tilapia fillet imports are competing to some degree with whitefish such as whole red snapper, wild fresh sea dab fillets, and blackback flounder, thereby influencing the price of those species (Norman-López, 2009). While no market studies were found on tilapia/Pacific Dover sole (*Microstomus pacificus*) competition, tilapia competition with these other species indicates a possibility that there is also competition with Dover sole. Norman-López (2009) hypothesizes that tilapia may have filled in for declining availability of wild-caught species.

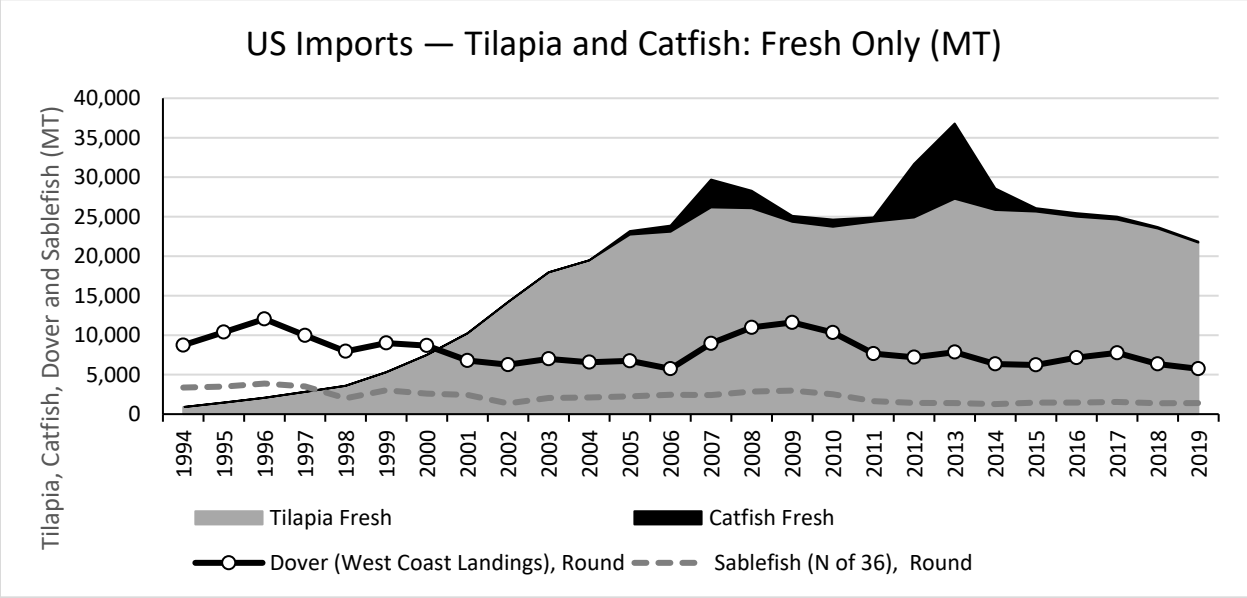


Figure 14. Import volume of processed fresh tilapia and catfish and limited entry trawl gear landings of Dover sole and northern sablefish (excluding gear switching). (Sources: NOAA Fisheries Foreign Trade Data and PacFIN Answers Database)

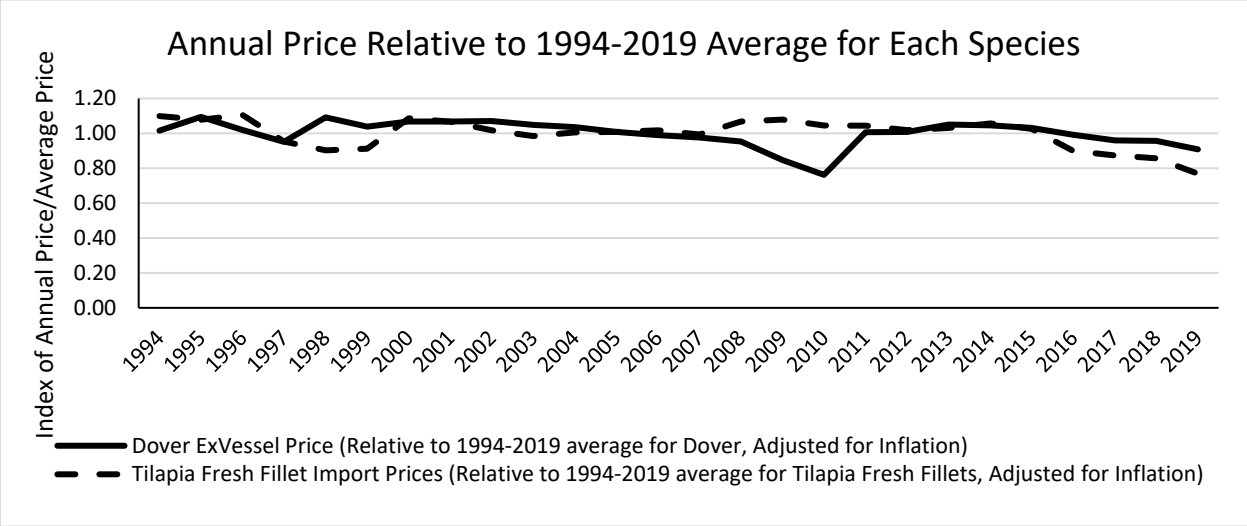


Figure 15. Indices of annual prices for Dover sole (exvessel price) and fresh tilapia fillet import prices (customs value) relative to the 1994-2019 average for each species.

In 2007, when Dover sole ACLs and trawl allocations increased dramatically, Dover sole landings began to increase despite continuing increases of fresh tilapia imports (Figure 14). While ACLs have remained higher and increased even more (rising from less than 10,000 mt to 50,000 mt over eight years; SaMTAAC Agenda Item B.2, Supplemental Attachment 2, Figure 3), the Dover sole landings increase was short lived, beginning to decline in 2010 and declining more substantially thereafter. On the one hand, the years of high production in 2007 to 2010 could indicate that the market is able to absorb increased Dover landings but that other constraints restricted Dover sole landings causing the decline (e.g., constraints and consequences related to the new IFQ program in 2011). This expansion might have also been supported by a decrease in the exvessel price for Dover sole during that period, which might not have been sustainable (Figure 15). On the other hand, the rapid increase and decline could have been the result of an information lag within the market and imperfect information. Interactions between markets are often difficult to discern because of lagged effects (e.g., overproduction is sometimes not recognized until months later when excess inventory remains in cold storage) and factors such as full market saturation (defined here as the levels at which consumers do not absorb additional production without price reductions or additional investment in market development). The expanded landings/purchases of Dover sole came in the midst of a decade-long and ongoing ramp-up of imports of fresh tilapia. In some cases, it can take years for markets to stabilize as significant changes occur; for example, a U.S. market that included cod, haddock and pollock took six years to stabilize at a new equilibrium after the introduction of tilapia (Asche and Zhang, 2013).

It has been argued in public comment that uncertainty about availability of sablefish QP in the future may be dampening the investments needed to develop markets and efficient processing capacity capable of producing price competitive products (e.g. fillet machinery). Certainty about future supply can improve the competitiveness of an industry by helping to rationalize investment in cost reducing technologies. This is particularly true where large investments are needed to support price competitive production (Kvaløy and Tveteras, 2008). If fresh tilapia is competing

in U.S. whitefish markets and lower farmed tilapia prices are a leading influencer of whitefish prices and consequently the demand for some wild fish (as is indicated by the work of Norman-López, 2009), conditions supportive of investments that improve efficiency may become increasingly important to the price competitiveness of U.S. domestic wild fish production. The possible impacts of uncertainty about access to raw products will be discussed further in Section 2.4.

The recently completed catch share review also emphasized the importance of certainty of raw product supply to developing competitive products and potential interaction with other constraining factors.

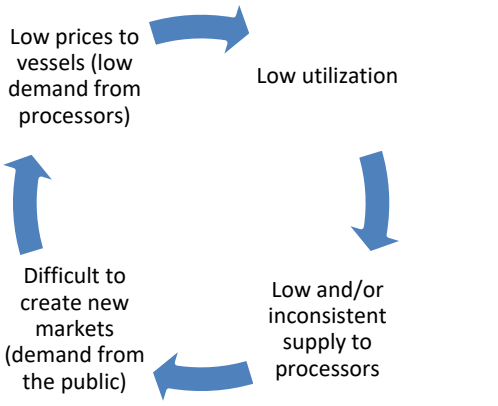


Figure 16. Illustration of cycle of low demand and low utilization.

> 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, 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 16]. (PFMC and NMFS, 2017, page ES-22)

While competition in global whitefish markets is a challenge, another response is to distinguish West Coast products from general whitefish commodities. If this effort can be made on a sufficient scale, it may increase consumer demand enough to expand attainment of the trawl allocations with less need for price competition with commodified seafood. Such efforts have been undertaken through marketing tools such as certification programs (e.g., Marine Stewardship Council certification) and co-operative efforts such as that by Positively Groundfish (PositivelyGroundfish.Org).

2.3 Infrastructure Limitation (Physical and Skilled Labor)

Summary: It has been hypothesized that infrastructure limitations could be causing low quota attainment under the catch share program. There are two types of infrastructure

addressed here: physical and human services and organization. Overall, there are no strong indications that physical infrastructure has declined substantially on a coastwide basis under the IFQ program, except with respect to a decline in the number of processing entities. The number of processing companies is 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 addition, there are some signs of infrastructure investment in more northern ports (Oregon and Washington). With respect to seafood processing capacity in coastal communities (without respect to the fisheries involved), Bureau of Labor Statistics (BLS) data indicates that there was a peak in employment activity in the 2012-2014 period, that tended to occur more in northern ports, and a more recent increase that appears to have a more southward distribution. Service and organizational infrastructure is more difficult to assess. An effort will continue to determine if there is quantitative information on skilled labor that might provide insight. One aspect of organizational infrastructure is the development of markets. Development of markets is discussed briefly here but in more detail in Section 2.2.

With implementation of the trawl catch share program, there has been a concern about declines in attainment of allocations and how it may be related to loss of infrastructure along some parts of the coast. Infrastructure includes all the underlying resources required to support an activity, including both physical assets and human services and organizational structures. There are many different types of physical infrastructure needed to support the fishing industry including harbors and adequate navigation channels, docks, offloading equipment; ice and cold storage; fish buying and processing capacity; trucking, hoists and cranes; dry docks and ship yards; and marine vessel suppliers. With respect to human services and organizational structure, a few keys are a labor force trained with the needed skills and established marketing channels.

Trawl allocations generally cover major expanses of the coast (e.g., coastwide, north and south of 40º 10’ N. lat., north and south of 36º N. lat.). Therefore, a determination of whether infrastructure might be limiting attainment of the trawl allocation needs to be based on a broad geographic evaluation. At the same time, both the fishery resource and human communities are distributed along the coast such that inadequate or diminished infrastructure in some ports could diminish coastwide capacity to a degree that would be hard to compensate for through increased capacity in fewer centralized ports.

The recently completed five-year review of the trawl catch share program included a study that looked at changes in infrastructure after IFQ program implementation up through 2017 (PFMC and NMFS, 2017, Appendix D). Infrastructure assessments were extracted from NMFS port assessments conducted prior to the catch share program (Norman, et al., 2007) and key informants were interviewed to try to determine how infrastructure may have changed after implementation of the catch share program. Results for a few of the infrastructure categories in the review are summarized in Table 4. For each of these categories, there is an indicator of whether the infrastructure element is present and whether it has been enhanced, not changed, or diminished in some notable fashion since implementation of the catch share program. The presence of trawl landings in a port may be the best indicator of whether the minimum infrastructure needed is

available in that port, though it does not indicate the degree to which infrastructure is adequate to support all the activity that might otherwise occur in a port. Here, the presence of active IFQ first receivers (FRs) is used as the indicator of trawl sector landing activity for a port. The last five columns of Table 4 are based on current FR license data and indicate the presence of an IFQ FR in a port, changes in the number of FRs over the course of the catch share program, the current number of FRs, and whether the FRs are receiving from trawlers or gear-switched vessels (IFQ fixed gear).

With respect to the infrastructure information from the catch share program review, for the most part, north coast (Oregon and Washington) infrastructure elements have been stable or improving with the most notable declines coming in the reduction in the number of processors active in several ports. In particular, there are a number of ports that have made investments in ice plants and cold storage; boat hoists, lifts and cranes; and shipyards and drydocks. This investment may be in line with the increase in the proportion of trawl sector catch taken in the north, as reflected by the sablefish catch in Figure 4 and total non-whiting catch in Figure 8, although such investments are not driven just by the groundfish fishery. For California, there have been a few ports that have lost fuel docks (large vessels often have fuel trucked in) and, similar to the north, there has been a decline in processors. There have not been as many instances of infrastructure improvements in California as there have been in Washington and Oregon. This assessment, based on the catch share review published in 2017, does not include changes that have occurred in the last several years. For example, the City of Monterey is awarding new leases for seafood offloading on its Commercial Wharf ll. Additionally, the City has purchased groundfish quota shares (QS) and leases the pounds to stimulate offloading. Nearby Moss Landing Harbor has just awarded a long-term lease to a major groundfish buyer—so this may result in increased groundfish landings. Another example is the recent loss of a processing facility in Ilwaco.

As mentioned, one indicator of sufficient infrastructure is current activity. Over the course of the IFQ program, there has been some consolidation among FRs, mainly in the more southern part California. The number of licensed FRs in Washington and Oregon has declined in two of nine ports (both the ports with declines were in Oregon) while the number in California has declined in five of 11 ports, all in the area from Half Moon Bay south. At the same time, there has been only one port in Washington and Oregon that has seen an increase in IFQ FRs over the course of the IFQ program while there are three such ports in California, all in the area north of Half Moon Bay. Since some licenses are inactive, a refinement of this analysis is needed to assess how active FRs in a port have changed over time.

Overall, 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 of infrastructure in these categories is affecting attainment of the trawl allocation. At the same time, with respect to the number of processing companies active in a port, there are seven instances of losses and only two of improvements. While total processing capacity is not necessarily related to the number of processing companies in a port (as distinct from licensed FRs), the number processing companies pursuing different contacts and marketing strategies might have some bearing on the capacity of

market channels to absorb West Coast product. The previous section (Section 2.2) discussed issues of market capacity and constraint on harvest of the trawl allocation and the following section (Section 2.4) discusses how QS control limits might inhibit major capital investments in processing infrastructure.

While skilled labor is crucial to processing capacity and public comment has been received about the impacts of labor shortages on processing capacity, quantitative information has not been identified to help assess trends in capacity of labor infrastructure. This issue will continue to be investigated.

Table 4. (UPDATED) 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 = ?

While of historic and recent interviews on the presence of processors in a port, counts of FR licenses, and the presence or absence of IFQ deliveries in a port are a few indicators of the presence

of buyer and processing infrastructure in a port, another indicator is the number of businesses that report seafood product preparation and packaging activity to the BLS (Table 5). These data are not specific as to the type of processing activity (e.g. groundfish, crab) and there is some indication that the data may not be complete for some areas. Because of this, the data might be viewed as more of an index of change over time than an absolute estimate of number of processors and jobs. Size of processors might be indicated by the number of jobs and amount of wages paid (Table 6). The existence of large processors in an area may indicate the presence of some basic elements of infrastructure, such as ability to receive fish, cold storage capacity, and wastewater handling capacity. In terms of number jobs, the data seem to indicate one peak in the 2012-2014 period (more in northern areas) and another in more recent years (with the high points distributed to more southern areas). Note that these trends may also be influenced by missing data that cannot be released due to confidentiality. BLS data is not used very often in Council documents. Its inclusion here is in response to request for an assessment of infrastructure. Public comment on the degree to which these data are representative and of value would be useful in determining whether it should be considered in the future.

Table 5. Number of processing entities (all species) reporting employment statistics to the U.S. Bureau of Labor Statistics. Source: summary of U.S. Bureau of Labor Statistics Quarterly Census of Employment and Wages (QCEW) data for NAICS 3117 "Seafood product preparation and packaging BLS," retrieved from https://www.bls.gov/cew/downloadable-data-files.htm, June 5, 2020.

Area [a/]	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Average Businesses
Grays Harbor County, WA	5	5	5	5	4	5	5	5	5	5	4	4	4	4	4.6
Pacific County, WA	12	11	11	12	13	13	13	14	14	14	14	13	12	12	12.7
Clatsop County, OR	12	12	11	11	11	10	10	10	10	10	10	11	10	9	10.5
Tillamook County, OR	2	2	2	1	1	1	2	2	2	2	2	2	2	2	1.8
Lincoln County, OR	5	4	4	4	4	3	3	3	3	5	5	6	7	8	4.6
Lane County, OR	2	1	1	1	1	1	1	1	1	1	1	1	1	1	1.1
Coos County, OR	3	4	4	4	4	5	5	4	4	4	4	4	4	5	4.1
Curry County, OR										1	1	2	2	2	1.6
Del Norte County, CA	1	1													1.0
Humboldt County, CA	4	4	4	4	4	4	4	4	4	4	4	4	5	5	4.1
Mendocino County, CA	3	3	3	3	4	4	4	3	3	3	3	3	3	3	3.2
Sonoma County, CA	1	1	1	1	1							1	1	1	1.0
	50	**48**	**46**	**46**	**47**	**46**	**47**	**46**	**46**	**49**	**48**	**51**	**51**	**52**	48.1

a/ Darker shading indicates values that are above the average.

Table 6. Number of seafood product preparation and packaging processing jobs (2006-2019) and average income reported (inflation adjusted) reported to the U.S. Bureau of Labor Statistics for coastal counties.[a/] Source: summary of U.S. Bureau of Labor Statistics Quarterly Census of Employment and Wages (QCEW) data for NAICS 3117 "Seafood product preparation and packaging BLS," retrieved from https://www.bls.gov/cew/downloadable-data-files.htm, June 5, 2020.

Area	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	Avg Annual Employees	Total Average Annual Wages ($ thous)	Average Wages/ Employee ($ thous)
Grays Harbor Cnty, WA	441	416	489	529	491	517	510	540	533	475	447	432	461	475	483	13,848	29
Pacific Cnty, WA	598	519	500	491	566	523	482	539	490	461	506	519	500	411	508	14,649	29
Clatsop Cnty, OR	395	409	426	413	495	476	545	540	482	423	423	431	449	484	457	14,761	32
Tillamook Cnty, OR	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
Lincoln Cnty, OR	189	188	-	-	-	-	-	-	-	256	263	270	0	356	109	3,897	36
Lane Cnty, OR	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
Coos Cnty, OR	-	266	242	247	249	259	261	264	252	247	253	243	241	253	234	6,000	26
Curry Cnty, OR										-	-	-	-	-			
Del Norte Cnty, CA	-	-															
Humboldt Cnty, CA	162	162	179	151	152	152	147	143	154	141	148	159	204	208	162	4,948	31
Mendocino Cnty, CA	-	-	-	-	-	-	203	125	126	105	87	85	76	71	63	685	11
Sonoma Cnty, CA	-	-	-	-	-							-	-	-			
Totals	1,785	1,960	1,836	1,831	1,953	1,927	2,148	2,151	2,037	2,108	2,127	2,139	1,931	2,258	2,014	58,789	28

a/ Darker shading indicates values that are above the average. Yellow indicates values screened by BLS to preserve confidentiality. Totals and averages do not include the screened data.

2.4 Catch Share System Design

Section Summary: The topic covered in this section has not been the focus of analysis previously provided to the SaMTAAC. Quota share (QS) control limits are recognized as balancing concerns about distribution of opportunity among individuals and communities with the potential for some reduction in efficiency. 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 and when uncertainty is high, a strategy for reducing risk is securing 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. 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 pre-catch share trip limits. A processor could secure access to QP through QS acquisition but is limited in its ability to do so by the QS control limits. 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. This is not to say that the current QS control limits do not appropriately balance policy trade-offs, but rather to note that among the trade-offs associated with use of such limits there is a possible consequence for some types of capital investments that may impact allocation attainment.

The topic covered in this section was mentioned in discussion but has not been the focus of analysis previously provided to the SaMTAAC.

In general, catch share programs are intended to bring many of the economic advantages of private markets to fishery management systems. However, due to the public nature of the resource that is being managed and the consideration of a number of competing objectives mandated by the Magnuson Stevens Act (MSA), the catch share program does not completely emulate a private market-based system. For example, the trawl catch share program includes QS control limits because maximums on the ownership of quota are mandated by the MSA to achieve policy objectives that are not necessarily directly related to efficiency. In the general economy, limits on the degree to which an entity owns or controls economic assets are not usually imposed until levels of aggregation are great enough to raise antitrust concerns and thereby adversely impact efficiency. Trawl QS control limits are set at levels lower than those needed for antitrust concerns. The QS control limits, set at levels lower that necessary to ensure efficiency, are intended to encourage the dispersion of benefits across individuals and communities. However, the control limit might also prevent a company from reducing risk by acquiring additional QS.

QS control limits could be inhibiting market solutions that would normally come into play when additional security of access to key inputs (e.g., fish) is needed to reduce risk enough to justify major specialized capital investments (e.g., expensive processing equipment for which there are

few other uses). As described in Section 2.2, certainty about future input supplies can improve the competitiveness of an industry by helping justify large scale investments in cost reducing technologies (Kvaløy and Tveteras, 2008). For producers reliant on the availability of generic products (e.g., oil, paper, or grain), there is enough production from enough different sources that securing access to the source of a key input through acquisition of a supply (vertical integration) is not necessary to reduce capital investment risk. However, where alternative sources of a key input are limited, as is the case for fish plants located in a particular port and with equipment investments devoted to a limited range of species and products, the financial risk associated with an interruption in supply is greater.

Prior to catch shares, processors could acquire fish from any licensed vessel, subject to the cumulative landing limits which constrained an individual vessel's catch. The total fishing opportunity available under cumulative landing limits (number of vessels times the limits) was much greater than the trawl allocation, because it was assumed that many vessels would catch substantially less than the limit, which could be changed inseason if necessary to further control catch. 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, the availability of which is much more limited, and therefore uncertain, as compared with the opportunity provided by per-vessel cumulative landing limits. Processors can, and some do, secure access to QP through QS acquisition, but QS control limits constrain use of that strategy. Thus, the limitation that QS control limits impose might be inhibiting investments in seafood plants that would improve production efficiency, increase competitiveness of some West Coast seafood products in globalized markets, and foster expansion of market share for those products, increasing trawl allocation attainment.

In summary, restricting activity in a system that might otherwise more closely mimic a more fully privatized market system may be leading to the need to consider other fishery management measures to mitigate risk and provide conditions more conducive to investment. This is not to say that the current QS control limits do not represent appropriate balance of policy trade-offs but rather to note that among the trade-offs in the use of such limits there may be a potential consequence for capital investments and allocation attainment.

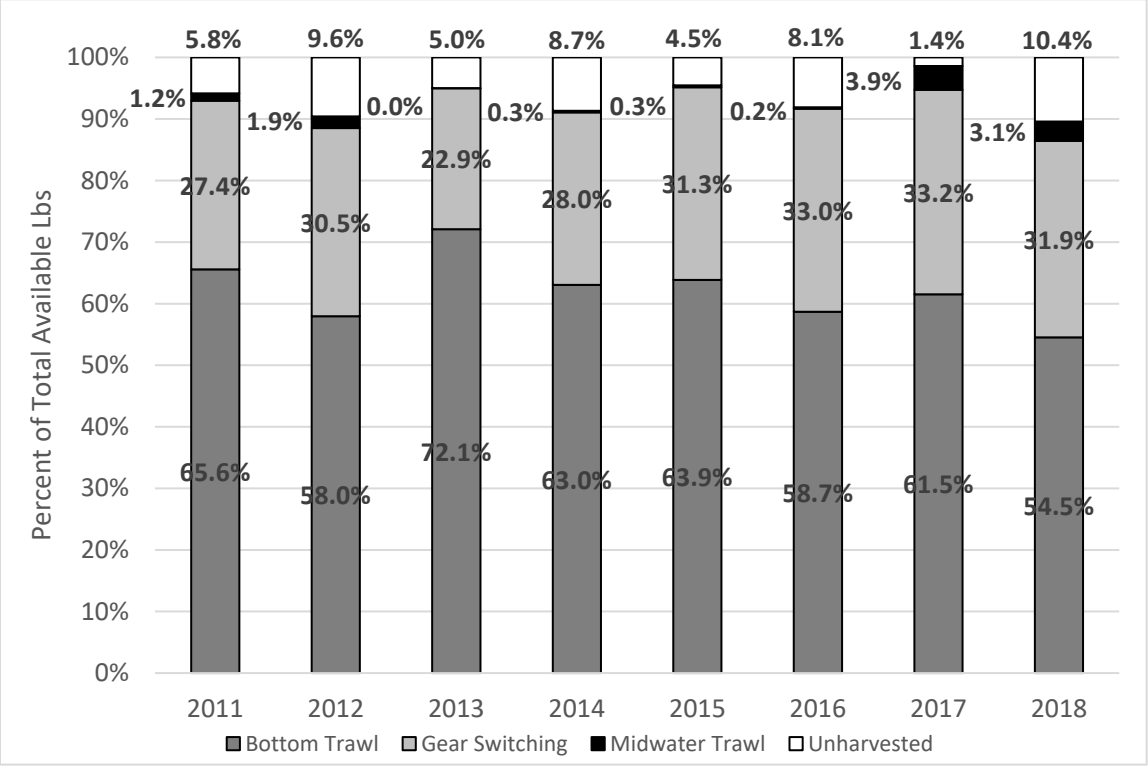
2.5 Sablefish North QP—Competing Users

Section Summary: In the IFQ sector, sablefish north is taken across all gear types and fisheries in various amounts and therefore all participants need quota either for direct targeting or to cover bycatch. This section finds with respect to northern sablefish that:

- *Bottom trawl fisheries are the dominant source of catch at* about *62 percent from 2016-2018 followed by gear-switching entities (*about *30 percent).*
- *In recent years, the shoreside whiting fisheries have seen an increase in their bycatch, taking over seven percent of the 2019 allocation, due to interactions with immature year classes.*
- *If all sablefish north that was used for gear switching were instead used in the DTS strategy, the hypothetical additional revenue, assuming markets could absorb the*

product and not impact prices, would be have been about *$6.0 to 9.3 million in 2016-2019.*

Sablefish is utilized by all IFQ program fishing strategies, from fixed gear (gear switchers) to bottom trawl to whiting. Figure 17 shows the overall percent of IFQ sablefish north mortality total available QPs caught by each sector from 2011 to 2018. Note that this is total catch (i.e. does not include discard mortality rates) as prior to 2019, sablefish discards did not have associated survival credits. The re-emerging midwater rockfish fishery is combined with the shoreside hake (whiting) fishery as there was limited sablefish bycatch by the midwater rockfish fishery overall. Gear-switching operations have grown from taking an average of 27.2 percent of the total IFQ catch in the first four years of the IFQ program to over 32.4 percent in 2015-2018.



Note: Midwater trawl includes both midwater rockfish and shoreside whiting.

Figure 17. (UPDATED) Percent of total IFQ available pounds of sablefish north of 36° N. lat. by sub-sector, 2011-2018. Source: GEMM

In recent years, sablefish bycatch in shoreside whiting fisheries has grown from less than 0.3 percent in 2013-2016 to over three percent of the total available pounds in 2017-2018 and is

estimated at approximately 7 percent in 2019 (based on preliminary data not displayed here[10]), due to increased bycatch of recruitment classes. An unquantified 2019 year class entering the fishery contributes to bycatch rate uncertainty for future years. The amount of sablefish that can be taken as bycatch is extremely variable (ranging from 0.3 mt in 2008 to 186 mt in 2019[11]) with high years likely representing the fishery interacting with large recruitment classes. If these trends continue, whiting participants could potentially need increased access to sablefish north quota causing greater competition for sablefish QP among all participants.

To the degree that gear-switching vessels acquire and use sablefish north QP with fixed gear, it reduces the overall portion of the trawl allocation that can be used to harvest other IFQ species that are trawl gear dominant, such as Dover sole and thornyheads. In recent years, gear-switching vessels have been harvesting approximately 800 to 900 mt of sablefish north and earning between 4.1 and 6.5 million dollars in exvessel revenue from all species caught (Table 7) with 85 to 95 percent of the total revenue coming from northern sablefish.

Table 7. Total gear-switched revenue from all species (millions) and sablefish north landings (mt) and percentage of total revenue, 2016-2019. Source: PacFIN

Year	Total Revenue from All Species ($million)	Sablefish North	
		Landings (mt)	Percent of Total Revenue
2016	6.45	810.9	85.1%
2017	6.28	845.5	90.9%
2018	4.26	805.7	94.7%
2019	4.10	905.5	91.3%

Internal Reference: 6 Trawl Analysis

If the Council were to limit or eliminate gear switching of sablefish north in the IFQ sector, then there would be additional sablefish available to trawl vessels to harvest other complexes in which sablefish occur. Here we focus on the DTS complex, which has been a major concern with respect to under-attainment issues. Table 8 below shows the actual landings (millions of pounds) and revenue (millions of dollars) from DTS in the bottom trawl fishery for 2016 to 2019 and the hypothetical landings and revenue if trawl vessels had targeted DTS using all the sablefish QP that were actually harvested with fixed gear. The hypothetical landings of DTS are based on each year's bottom trawl ratio of Dover sole and thornyheads landings to sablefish landings. That ratio is then applied to the assumption that all sablefish caught in that year by gear-switching vessels would instead have been caught by bottom trawl vessels targeting DTS. For example, if the ratio were 100 pounds of Dover sole and thornyheads to 10 pounds of sablefish (for a total of 110 pounds), and if an additional five pounds of sablefish would have been made available from a prohibition of fixed gear, then the prohibition's hypothetical result for DTS overall would be 165 pounds (15 pounds of sablefish plus 150 pounds of Dover sole and thornyheads). Note that a hypothetical such as this is likely an overestimate of the increase in DTS revenue or landings as it

[10] Preliminary 2019 data (queried on January 3, 2020) shows that the whiting fishery landed approximately 186 mt of sablefish north—over 50 mt more than in 2002 (highest bycatch on record).

[11] See Table 19 in Agenda Item B.2, Attachment 1 REVISED from the January 2020 SaMTAAC meeting.

assumes all bottom trawl caught sablefish north would be used in the prosecution of the DTS fishery. While DTS trips (with and without other flatfish) account for the overwhelming majority of sablefish caught in the bottom trawl fishery, as shown in the analysis provided for the May 2019 SaMTAAC meeting, sablefish might be used in accessing other flatfish stocks or shelf rockfish in other target strategies, depending on market limitations. In addition, this hypothetical holds constant any bycatch of sablefish by midwater gear, which as described above, has been increasing in recent years in the whiting fishery.

If sablefish gear switching were prohibited, and the additional 1.8 to 1.9 million pounds of sablefish north from fixed gear were used entirely for DTS in the historical ratios, it could result in over 5,000 additional mt (11 million pounds) of DTS complex compared to actual landings, if the market were able to absorb the additional catch (Table 8). Assuming the additional catch could be absorbed without altering market prices and applying the average revenue per metric ton displayed in Table 8, this hypothetical would result in additional annual revenue of $6.0 million to $9.3 million. This amount would be greater than total exvessel revenue from the fixed gear sablefish fishery from 2016 to 2019 (Table 7). This shift might also be accompanied by some geographic redistribution of economic activity. Some ports that have historically focused on gear switching may not be able to handle the increase in trawl caught groundfish, which requires more processing capacity.

Table 8. (UPDATED) Actual landings (mt) and revenue (millions of dollars) of DTS complex landed in 2016-2019 and the hypothetical increase in landings and revenue[a/] assuming that all sablefish previously taken by gear switching were instead taken with trawl gear. Source: PacFIN.

Year	Dover sole and Thornyhead to Sablefish Landings Ratio	Revenue per metric ton	Actual DTS Complex		Hypothetical Increase	
			Landings (mt)	Revenue	Landings (mt)	Revenue
Hypothetical Results Assume that the Market can Absorb Additional Production at Current Exvessel Prices. See Section 2.2 for a Discussion of Market Limits						
2016	5.9	1,539	9,961	15.3	5,559	8.6
2017	6.3	1,503	11,283	17.0	6,200	9.3
2018	5.3	1,303	8,622	11.2	5,039	6.6
2019	4.6	1,184	7,903	9.4	5,102	6.0

a/ Ratios of Dover sole and thornyheads and the revenue per mt of complex species landed were assumed to remain the actual values in that year. Internal Reference:6 Trawl Analysis

3.0 Trawl Sector Participants

Section Summary: The SaMTAAC alternatives focus on gear switching as a possible current or potential future limit on attainment of the trawl allocation. The purpose of this section is to provide some general characterization of the participants that would be impacted by a limitation on gear switching for northern sablefish (both trawl and fixed gear). It focuses on non-whiting and whiting vessels that have northern sablefish landings. A few highlights of this section include:

- *An average of 97 percent of all IFQ participants land sablefish north.*
- *40 distinct vessels and permits have harvested sablefish north with fixed gear, with an average of two permits and vessels utilizing both trawl and fixed gear in a single year (2011-2019).*
- *Gear-switching vessels lease approximately 50 percent of their permits while trawl vessels tend to own their permits.*
- *Only eight vessels have used more than one permit to gear switch from 2011 to 2019, with ten permits being used on more than two vessels.*
- *There is no permit-vessel combination that has been used in all nine years for gear switching.*
- *The majority of gear-switching vessels and permits have landed more than 10,000 lbs of sablefish from 2011 to 2019.*
- *Oregon residents own the majority of the permits and vessels that have been used for harvesting sablefish north from 2016 to 2019 and the landings they bring to Oregon constitute approximately half of the coastwide total.*

As described in Section 2.5, sablefish north is used across numerous strategies. On average, approximately 97 percent of all vessels and permits with IFQ landings landed sablefish north. Table 9 below shows the number of vessels and permits that harvested sablefish north in the IFQ program with fixed gear and trawl gear from 2011 to 2019. Over the time series, there were 106 distinct vessels and 106 permits that harvested sablefish north with trawl gear compared to 40 vessels and permits associated with gear switching. Within these gear-switching totals are also a subset of vessels and permits that harvested sablefish north with fixed gear and trawl gear in the same year. In the last nine years, 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 about 2 vessels and permits per year. Due to confidentiality, no yearly totals can be provided for those vessels or permits.

Table 9. Number of vessels and permits associated with IFQ sablefish north landings by year and gear, 2011-2019.

Year	Vessels		Permits	
	Trawl	**FG**	**Trawl**	**FG**
2011	85	17	87	17
2012	82	20	82	21
2013	80	11	80	11
2014	78	15	79	14
2015	75	14	75	14
2016	71	16	72	16
2017	79	16	80	16
2018	79	15	79	15
2019	77	15	78	15
Total Unique Participants	106	40	106	40

To indicate the fluctuations and levels of the participation in the fishery, the following series of figures looks at the number of vessels and permits and the amount of gear switching those units have landed. Figure 18 below shows the cumulative number of distinct gear-switching participants throughout the time series. While the number of gear-switching vessels and permits has stabilized to approximately 16 in the last four years, there have actually been eight new vessels and seven new permits entering the fishery in that same period. Figure 19 and Figure 20 show the number of vessels and permits (respectively) that landed IFQ sablefish north with fixed gear by amount and number of years from 2011 to 2019 that they landed that fish. Of the 40 vessels with associated fixed gear landings of sablefish north, 36 had landings in excess of 10,000 lbs for at least one year. Only 12 vessels have had at least five years of landings in excess of 10,000 lbs, with five of those 12 having more than 120,000 lbs landed in each of those five years (or more). With respect to permits, of the 40 permits associated with gear switching between 2011and 2019, 38 had landings of greater than 10,000 lbs in a single year. Similar to vessels, there were 12 permits with at least five years of landings greater than 10,000 lbs, but only three permits had more than 120,000 lbs in each of those years.

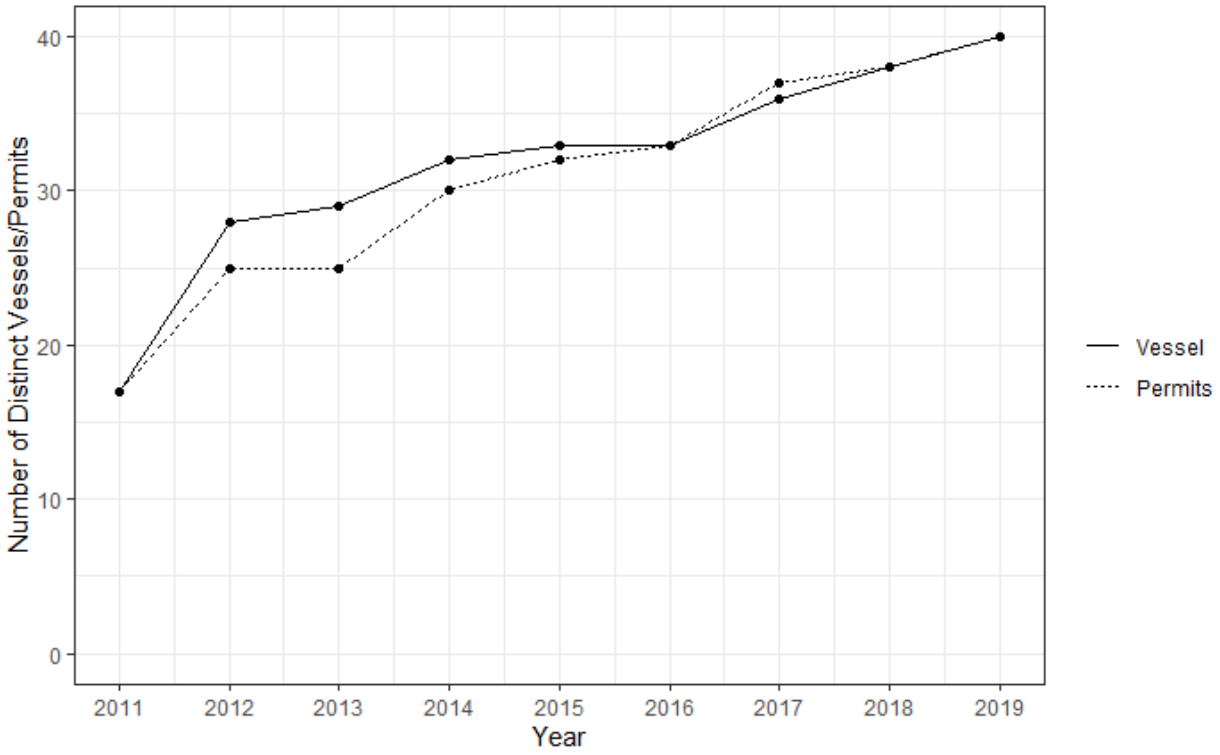


Figure 18. Cumulative number of vessels and permits entering the gear-switching fishery, 2011-2019.

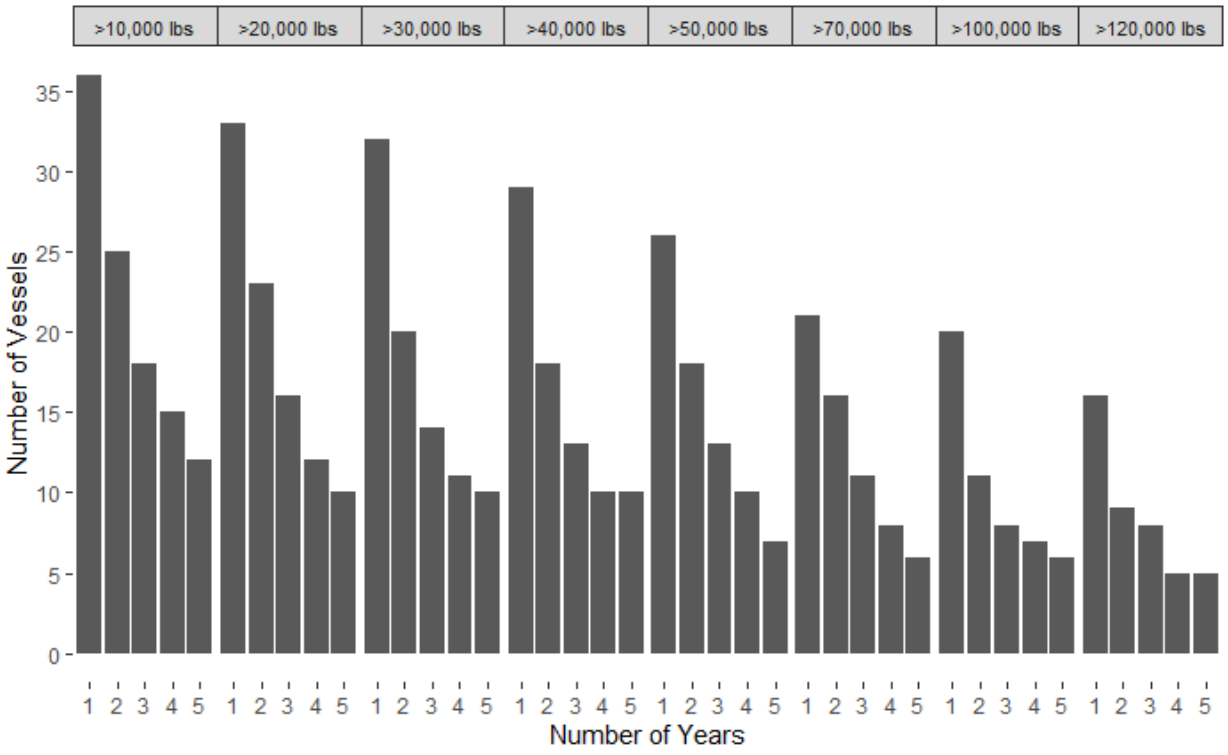


Figure 19. Number of vessels with gear-switched landings of sablefish north at specified sablefish landings amounts (rd. wt. lbs) and number of years, 2011-2019.

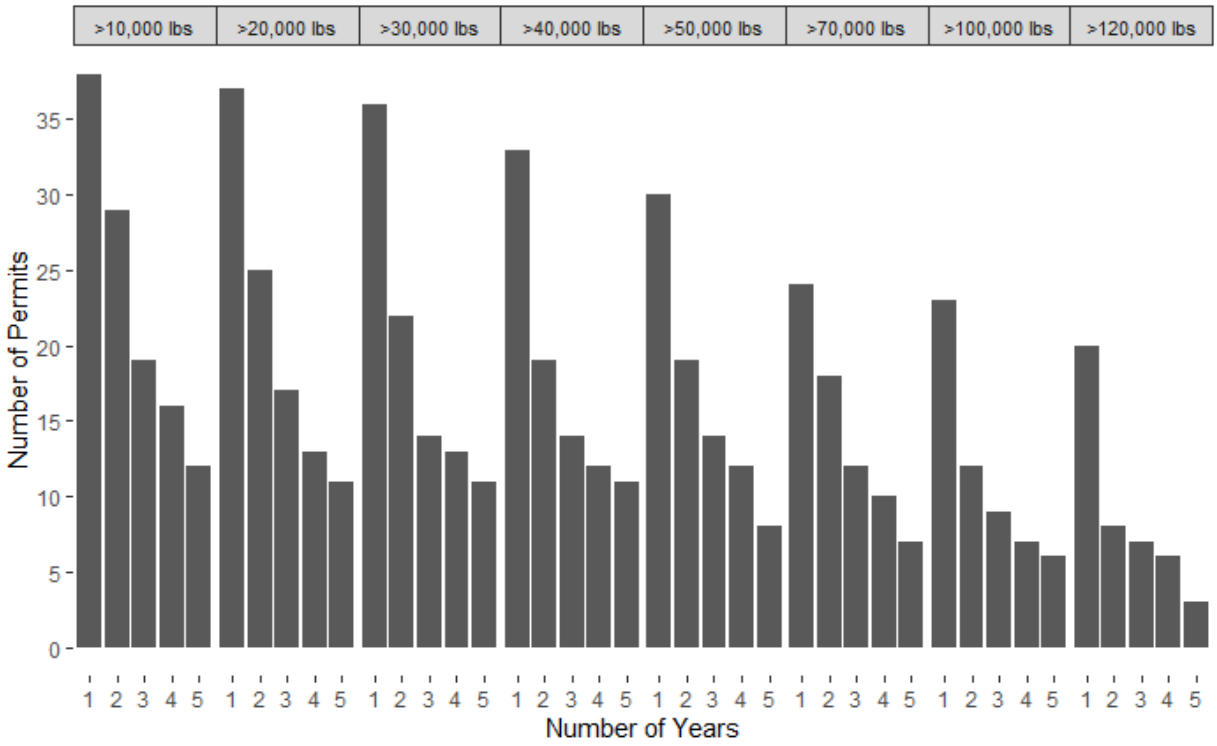
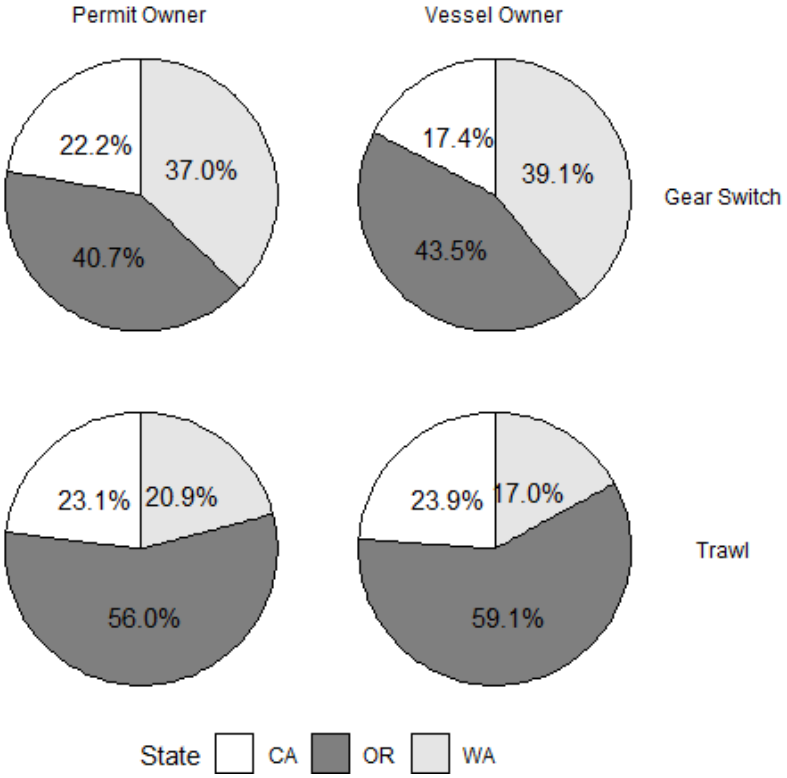


Figure 20. Number of permits with gear-switched landings of sablefish north at specified sablefish landings amounts (rd. wt. lbs) and number of years, 2011-2019.

The vessels and permits that participate in the trawl IFQ program are owned by entities across multiple states, including outside the West Coast. Benefits from landings accrue to the state in which the vessel and permit owners reside, through their expenditures and profits, as well as to the communities in which the fish are landed and processed, through associated processing jobs, local crew labor, fuel and supply purchases, as well as other avenues.

Figure 21 provides a comparison of the permit (left panel) and vessel (right panel) ownership by state between gear-switching and trawl entities (top and bottom panels respectively) from 2016 to 2019. As in Table 9, those vessels that used both trawl and fixed gear in the same year are included in the gear-switching category for consistency within this section. For both trawl and gear-switched vessels and permits harvesting sablefish north, Oregon residents owned a greater proportion of permits and vessels than the other states. The difference between state residents' contribution to the gear-switching fleet (as measured by the percentage of coastwide permits and vessels involved in gear switching) and state residents' contribution to the trawl fleet, was greater for Washington than the other states. Washington resident-owned vessels and permits used in gear switching, as a proportion of the coastwide total, is almost 17 and 21 percent higher, respectively, than its proportion of coastwide vessels and permits using trawl gear to harvest sablefish. In contrast, Oregon residents tend to contribute more heavily to the coastwide trawl fleet than the fixed gear fleet, but not with as great a differential as for Washington. California residents hold a

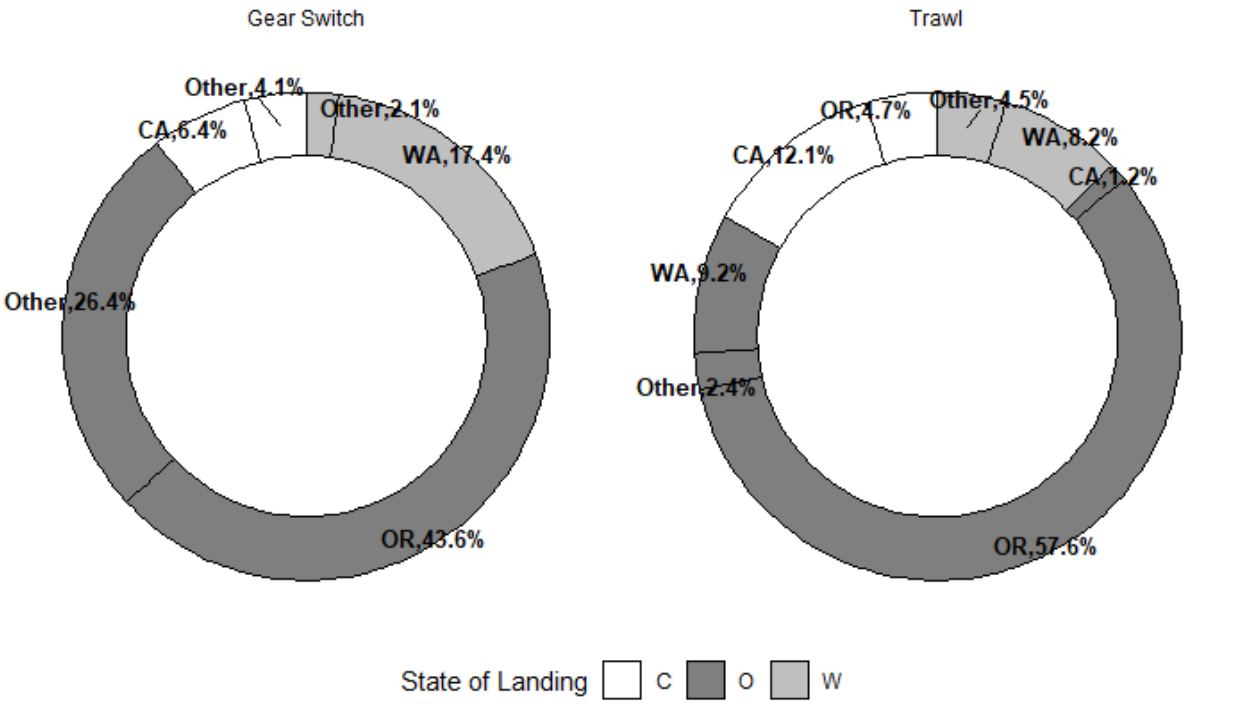
similar percentage of coastwide permits across both gear types, but a greater percentage of trawl vessels than of gear-switching vessels.



Note: 3.6 percent of vessels and 1.7 percent of permits are owned by entities from non-coastal states.

Figure 21. Percent of permits (left panel) and vessels (right panel) used for harvesting sablefish north with fixed gear (top row) and trawl gear (bottom row) by state of ownership.

Looking at those trawl sector vessels that harvested sablefish north from 2016 to 2019, Figure 22 below shows the total percentage of revenue (all fisheries) landed into each state, by state of ownership for the permit or vessel. Due to confidentiality, certain ownership groups were combined (described in footnote). Oregon has received more revenue than the other states for both types of vessel activity, with Washington seeing a higher revenue from gear switchers than California (and vice versa for trawl vessels). Washington had no records of landings of gear-switched sablefish made by California owned vessels. Oregon residents owned about 41 to 42 percent of the gear-switched vessels and permits, and about 55 to 57 percent of the vessels and permits using only trawl gear (Figure 21), while about 70 percent of the value gear-switched northern sablefish landings and 70 percent of the trawl gear landings occurred within Oregon (Figure 22). The Oregon share of permit and vessel ownership is comparable to its share of coastwide revenue landed in Oregon by Oregon residents (about 44 percent of coastwide gear-switched revenue and 57 percent of coastwide trawl revenue from northern sablefish). Thus, most of the difference between percentages owned by Oregon residents and percentages of value of all northern sablefish landings in Oregon is due to Oregon landings made by out of state owners.



Note: "Other" in this figure denotes landings from vessels owned by other states not shown. For gear-switched landings into a specific state, all landings from vessels owned by non-residents were combined as part of the "Other" category. Additionally, for trawl landings into Washington, non-Washington owned vessels from all states were combined into the "Other" category.

Figure 22. Percentage of coastwide revenue from sablefish north from 2016 to 2019 by gear by state of landing (shading of donut chart) and state of vessel ownership (noted by labels).

4.0 First Receivers (Buyers and Processors of IFQ Landings)

Section summary: In order to purchase IFQ fish, a business must have a first receiver (FR) license for each receiving site. Historically, close to half of all FRs of northern sablefish have also received fixed gear sablefish. There has been a declining trend in the number of FR licenses and in 2019, the number of fixed gear receivers declined by a substantially more than the decline in all receivers of northern sablefish. Most IFQ fixed gear sablefish purchases are made by FRs that also purchase from trawl vessels in at least some years.

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 nine years of the IFQ Program (through 2019) there have been a total of 88 FR licenses issues to 45 different FRs. Businesses that act as FRs often have multiple licenses when they have different fish receiving sites. Even as overall groundfish catch has increased in recent years (Figure 1), there has been a declining trend in the number of FRs.

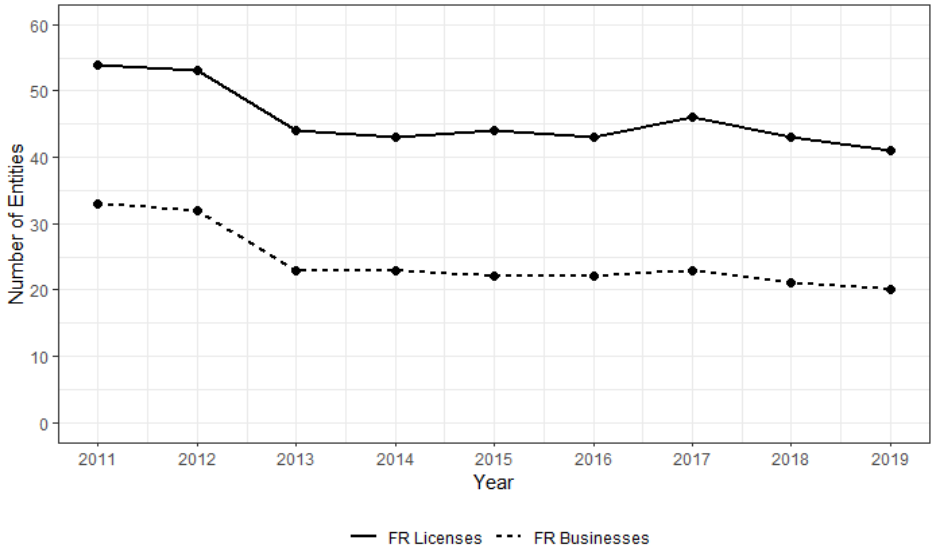
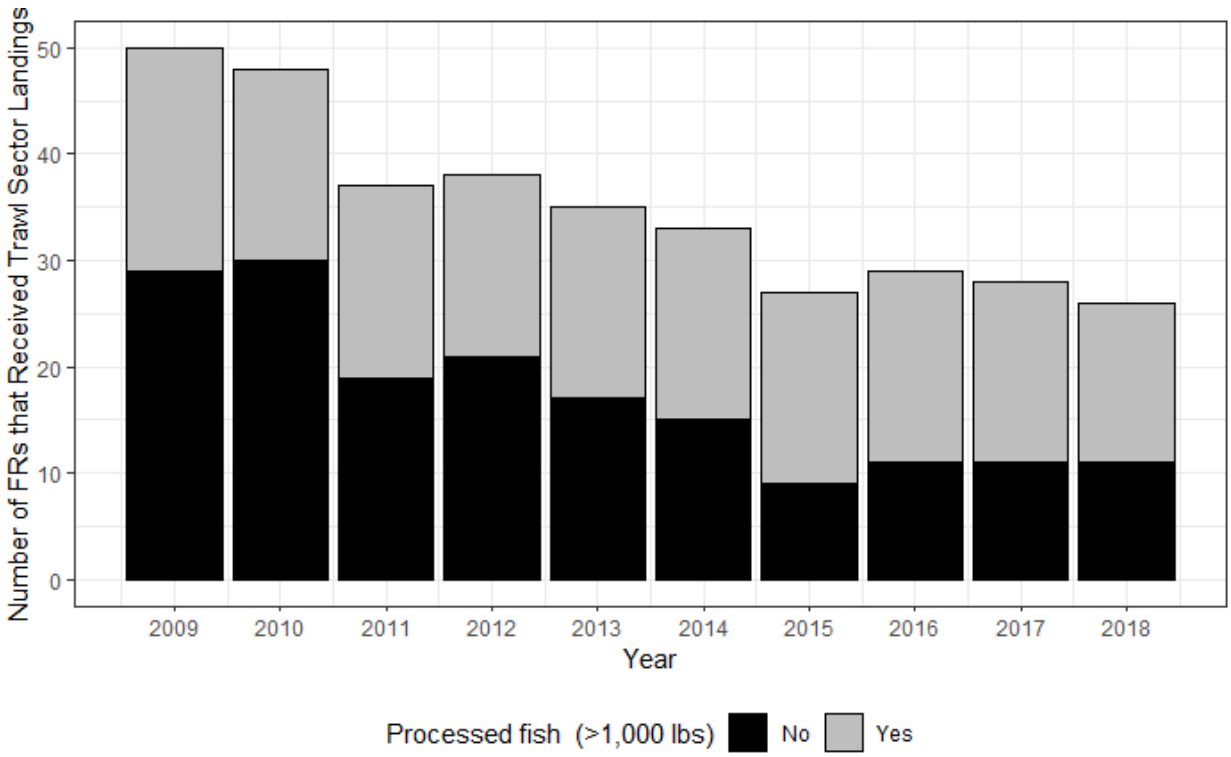


Figure 23. Number of FR licenses and businesses holding those licenses (2011-2019). Source: NMFS WCR Permit Data. (Internal Reference: FR Notebook)

The overall number of sites receiving trawl sector landings from 2009-2018 has declined, although the number of receivers that processed at least 1,000 lbs of fish has been stable (Table 26). Note that the classification of those that processed fish does not specify whether or not it was the IFQ groundfish that was processed. In other words, an FR could have received fixed gear sablefish and trucked it to another plant for processing, but if they processed Dungeness crab, they would be included in the "processing" category in this figure. There were 12-15 receivers in 2009 and 2010 that received trawl landings but did not go on to get an FR license when the IFQ program began in 2011.[12] The receivers that have left the fishery when the IFQ program started or did not renew a specific site license have mostly been those that only received product, but did not process it. Approximately 70 percent of the FR licenses that were issued were used to receive at least three trawl sector landings from 2011-2018 (based on EDC data).

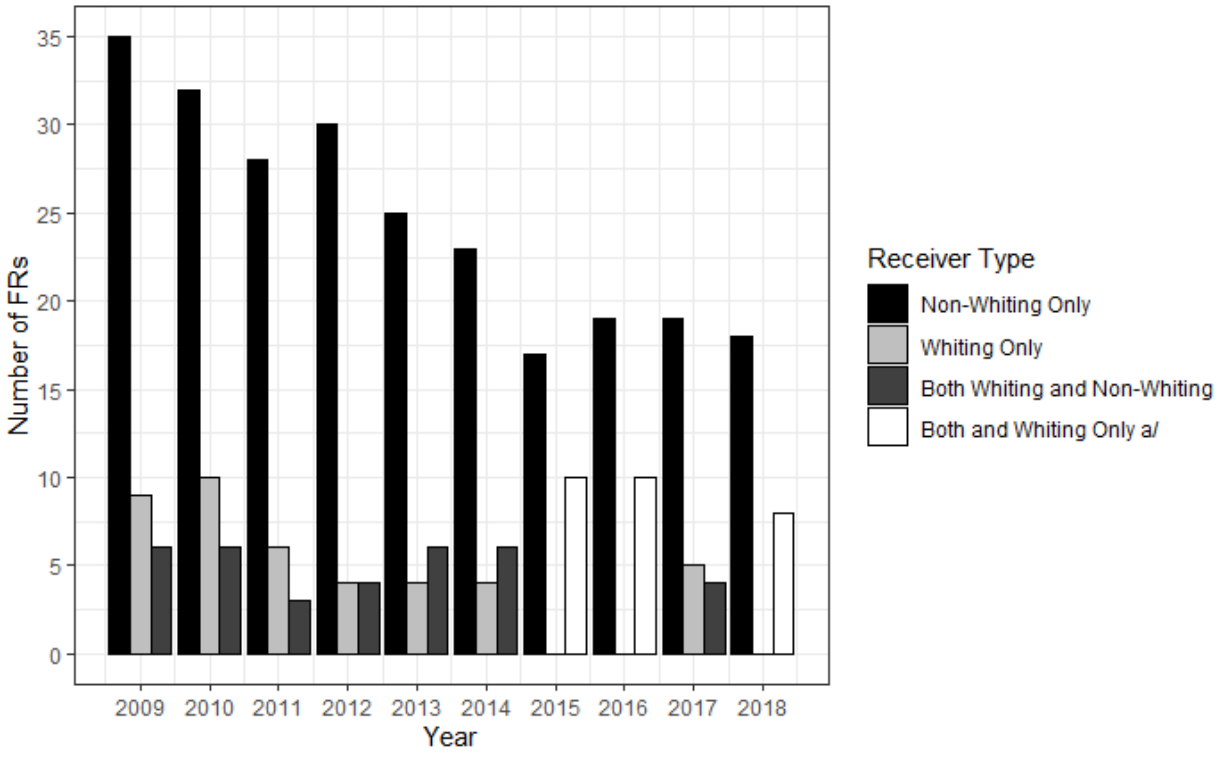
[12] For more details on the EDC survey, including for the 2009-2010 processors, please see the EDC Operations and Program Report.



Note: Counts from 2009 and 2010 include those receivers that did not continue as FR during the IFQ program.

Figure 24. Number of FRs that received at least three whiting or non-whiting deliveries in the trawl program. Shading denotes whether the receiver processed at least 1,000 lbs of fish (any species).

Some FRs received only whiting while others only non-whiting or received both whiting and non-whiting deliveries (Figure 25). The vast majority of FRs receive non-whiting deliveries only across the time period. Note that there is a drop in the number of whiting only associated FR licenses from 2009 and 2010 to the remainder of years. While some of this was due to whiting-only buyers not entering the IFQ program, three such 2009/2010 buyers entered the IFQ fishery but stopped using those licenses for whiting (e.g., shifted to a new FR license with non-whiting designation). There appears to be a general increase in the number of FR sites receiving both whiting and non-whiting when compared to the first years of the program (with the exception of 2017), which may suggest that sites are diversifying or companies consolidating their operations into fewer sites.



a/ Fewer than three licenses were categorized as "whiting only" and were grouped with those FR licenses that received both whiting and non-whiting groundfish.

Figure 25. Number of FRs that received at least three landings by landings type.

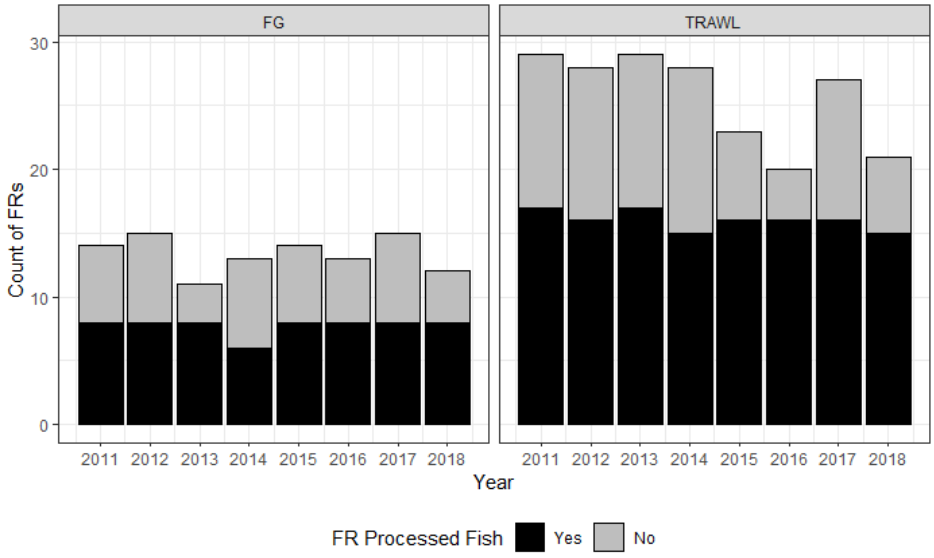
Most FRs that receive groundfish also receive northern sablefish (61 of the 88 that were active in the 2011-2019 period). Of the 61 FRs that purchased northern sablefish, there were 39 FR licenses owned by 26 entities that purchased IFQ fixed gear sablefish north. That represents almost 64 percent of all FR licenses that purchased sablefish north from any IFQ vessel (whiting or non-whiting) in the same time frame. Annually, an average of 27 of those FRs purchased northern sablefish; and on average about half of those received gear-switched sablefish (Table 10). Even though 2019 is estimated to have the highest proportion of the allocation taken with fixed gear (about 35.5 percent), it appears as though the purchasing channels are consolidating as the percentage of northern sablefish FRs buying from gear-switched vessels dropped to 33 percent.

Table 10: (UPDATED) Number of FRs that purchased that northern sablefish from 2011 to 2019.

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019
Number of First Receivers Receiving Gear-Switched Sablefish	14	15	11	13	14	13	15	12	9
Number of Entities Receiving Gear-Switched Sablefish	10	11	7	10	10	10	10	8	6
Total non-whiting FR Purchasing N. Sabl.[a/]	30	27	29	30	24	22	29	23	27
Percent of Total Non-Whiting FRs Purchasing Gear-switched Sablefish	47%	56%	38%	43%	58%	59%	52%	52%	33%

a/ Includes FRs that received both non-whiting and whiting deliveries.
Internal Reference: 4 Gear Switching Analysis

FRs that handled gear-switched caught sablefish were less likely to be processors than FRs that handled trawl caught sablefish. Figure 26 shows a breakdown of those FRs categorized by whether or not that FR license processed any fish (>1,000 lbs) and by gear type. Note that those FR licenses associated with both fixed gear and trawl caught fish are represented in both panels. On average, 59 percent of FRs associated with gear-switched catch each year actually processed some fish while the other FRs sold or shipped the product to another business to be processed. In seven out of eight years, there were more FRs that processed and received fixed gear sablefish compared to those that only received. Over the eight-year period, on average, 64 percent of all fixed gear sablefish was bought by FRs that also process. Comparatively, for those FRs that purchased trawl caught sablefish, an average of 64 percent also processed at least 1,000 lbs of fish in a year and those processing FRs purchased approximately 84 percent of trawl caught sablefish north on average over the eight years. A similar trend can be seen for those FRs that received Dover sole from 2011-2019, with an average of 59 percent of those FRs processing at least 1,000 lbs of fish in a given year.



Note: FRs that purchased both trawl and fixed gear caught fish would be included in both panels.

Figure 26. FRs that received landings of sablefish north by year and gear type and the number that were also associated with processing any fish (>1000 lbs).

Given that there has been a decline in the total number of FRs purchasing fixed gear sablefish north in the last three years, it begged the question of did the fixed gear buyers change their buying strategy to focus on trawl in recent years.

Of the 61 FR licenses that purchased sablefish north, 11 FRs purchased only from IFQ fixed gear and were responsible for 6.4 percent of the total northern sablefish purchases (Figure 27), which would constitute around 20 percent of the total IFQ fixed gear purchases from 2011-2019. Thus, most IFQ fixed gear purchases came from FRs that either consistently purchased both trawl and IFQ fixed gear sablefish or change strategies over time. Five FRs purchased consistently from both trawl and fixed gear and were responsible for 22.9 percent of the northern sablefish purchases of which just over half, about 10.8 percentage points, was from fixed gear. That 10.8 percent of the trawl allocation constituted 33 percent of the total IFQ fixed gear purchases. There were 23 FRs that changed their purchasing strategy during this period and were responsible for 52.2 percent of the northern sablefish purchases of which over half, about 29.6 percentage points, was from fixed gear. That 29.6 percent of the total sablefish north pounds purchased constituted 47.4 percent of the total IFQ fixed gear purchases. An FR was determined to have changed strategy if they went from purchasing from only trawl or only fixed gear or both fixed gear and trawl to a different classification (e.g. purchasing from both fixed gear and trawl during the 2011-2014 period and then only purchasing from trawl vessels in 2015 and beyond would be a "change"). Of the 23 FRs that changed strategies, 15 changed strategies one time. A majority (12) started as trawl FRs and either went from purchasing both fixed gear and trawl sablefish to just purchasing trawl sablefish north (8) or started as trawl-only sablefish but then added fixed gear or switched entirely to fixed

gear in terms of their trawl sector purchases (4). In contrast to the four FRs that started as trawl-only, three FRs started as fixed gear-only and either added trawl or shifted to trawl-only entirely. The remaining eight FRs moved at least twice between a trawl-only and a both gear purchasing strategies. Also included in the 23 FRs that changed strategy were six first receivers that purchased IFQ sablefish north in all nine years; each of these years included some trawl caught sablefish.

From 2011-2019, there were six businesses that only received sablefish north landings from a single vessel across the entirety of the time series. At the FR license level, there have been 14 FR licenses associated with only a single vessel delivering sablefish north in a year. Ten of those licenses received landings from only one vessel over the entire time series, while the other four received landings from multiple vessels over the nine years. When looking at the fixed gear-only buyers, the majority of the five dealers have three or less vessels delivering fish of any kind to them over the nine-year period.

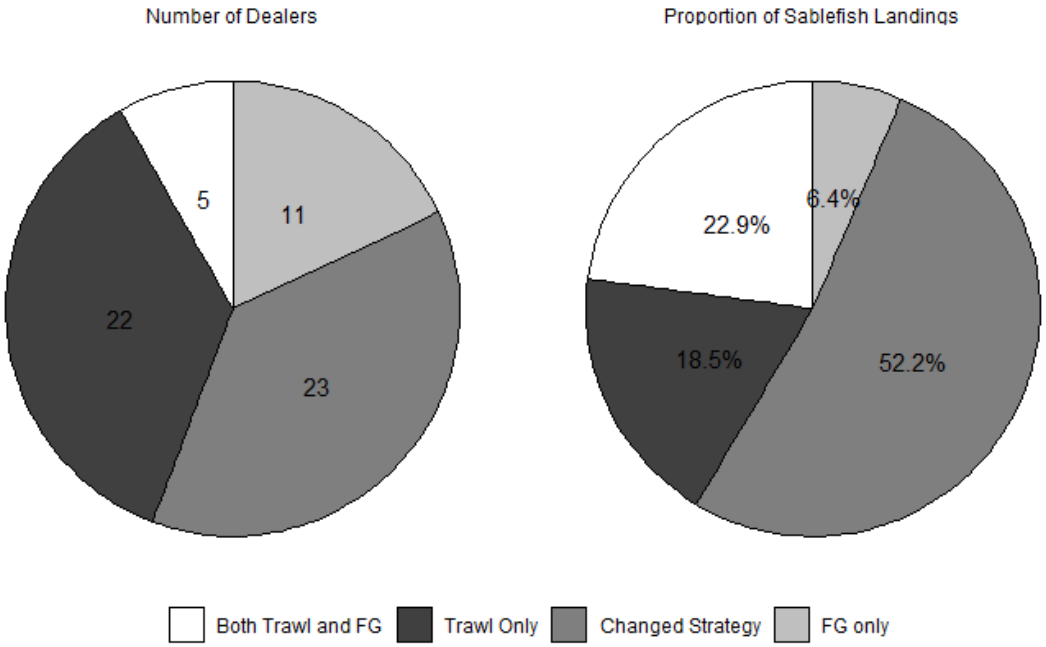


Figure 27: Number of first receivers and corresponding percentage of total sablefish north purchased by purchasing strategy, 2011-2019

5.0 **Communities**

Section Summary: This section looks at historic dependence of communities on the non-whiting trawl fishery, the importance of sablefish north to West Coast communities and how reduction or elimination of gear switching may impact certain communities. Some highlights include:

- *Astoria has been the major non-whiting trawl port from 2006-2019.*
- *During the IFQ era, Newport has seen the greatest overall amount of sablefish north landed with fixed gear with Astoria seeing the largest amount of trawl caught sablefish.*
- *Some ports, such as Newport and Astoria, may have the infrastructure to process trawl caught groundfish while others, like those south of San Francisco, primarily buy fixed gear and might be more impacted with reduction or elimination of gear switching.*
- *Overall, the groundfish fishery contributes close to 25 percent of all commercial fishery related income impacts to West Coast coastal communities (including Puget Sound), of which 19 percentage points is from the trawl sector.*
- *The trawl sector is estimated to generate about 1,300 jobs in coastal communities of which about 9 percent are associated with gear switching.*

As the effort and participant levels of the non-whiting trawl fishery have varied over time (Section 2.1), along with changing management measures (i.e. implementation of the IFQ fishery) and allocations, there have been impacts to various communities dependent on the fleets. Figure 28 below shows the relative landings of groundfish in the non-whiting trawl sector from 2006 to 2019 (including gear-switched landings during the IFQ era). Some communities have been able to maintain the amount of groundfish coming across the docks while other communities have lost or gained landings. Astoria has been the dominant non-whiting port across the entire series. Other ports, such as Crescent City and Fort Bragg, have seen decreases in the relative amount of landings, while others have ceased to see any non-whiting trawl (or gear-switched landings) during the IFQ era (Santa Barbara, Bodega Bay, and Tillamook).

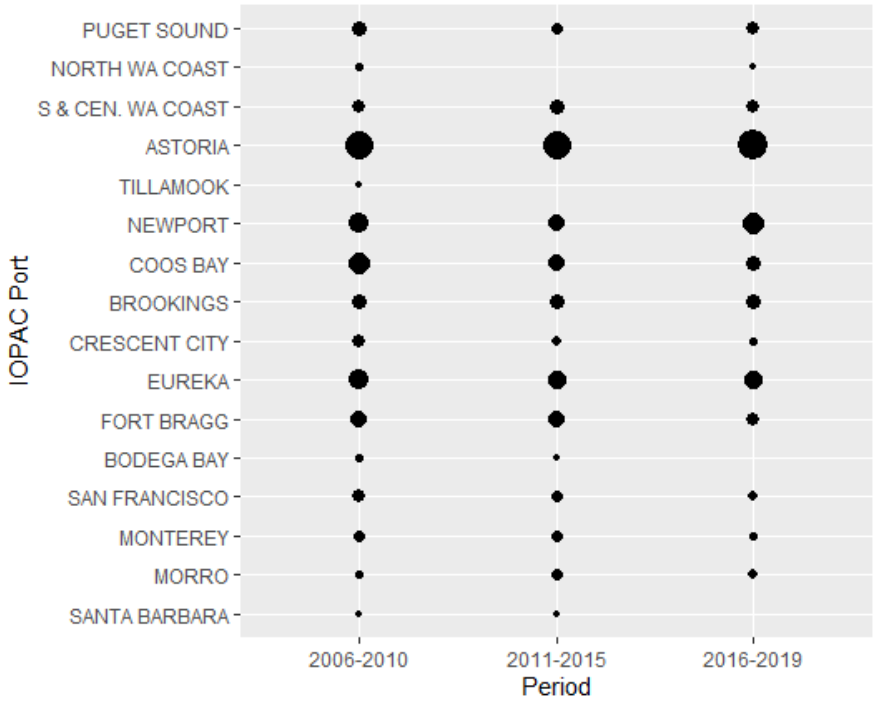


Figure 28. Relative landings of groundfish in the non-whiting trawl/IFQ sector (including gear-switched landings from 2011-2019) by Input/Output for Pacific Coast (IOPAC) port group and period.

While new provisions reducing or eliminating on gear-switching opportunity 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. Community related information is provided both here and in Section 2.3 on port infrastructure. Figure 29 below shows the relative amount of landings of sablefish north by IOPAC port group and by sector (IFQ-trawl, IFQ-fixed gear, and non-IFQ) for 2011 to 2019. Note that all non-groundfish sector and tribal landings of sablefish are included in the "non-IFQ" sector but retained at-sea bycatch is not included. The size of the bubble shows the relative amount of landings in that port group and sector compared to the other port groups and sectors. As examples, south and central Washington, Astoria, Newport, and Brookings have seen the large relative landings across each of the sectors over the last nine years. The farther south the port is (y-axis oriented north to south) there are fewer overall relative landings of sablefish north into those ports.

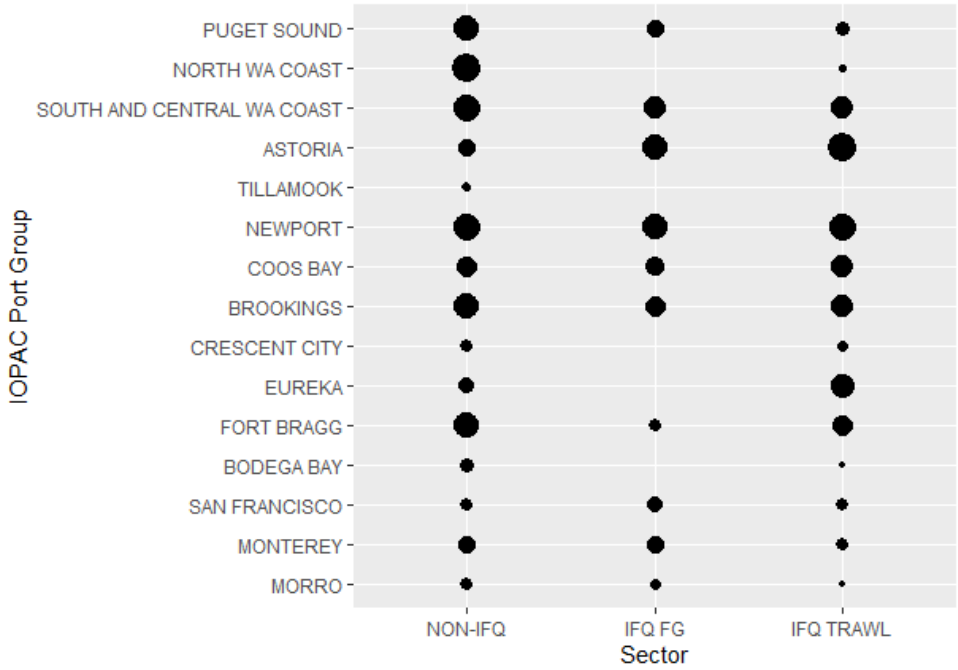


Figure 29. Relative landings of sablefish north by IOPAC port group and sector, 2011-2019.

The alternatives under consideration may limit the amount of gear switching for sablefish north of 36° N. lat.; the degree to which gear switching would be reduced is dependent on the alternative and the options selected within that alternative. The current amount of gear switching for a port provides a first indicator of the level of impacts that might result if all gear switching were eliminated and a community did not benefit from a compensating increase in trawling activity. In this regard, Table 11 shows the percent reduction in groundfish revenue in 2011-2019 by year if gear-switched sablefish north was not landed into those ports and there were not compensating increases in trawl activity. As a reminder, 85-95 percent of all revenue from gear-switched vessels in recent years is from sablefish north of 36° N. lat. However, many communities that may lose economic activity as a result of a reduction in gear switching could gain some compensating increases in trawl landings. This outcome might be expected if sablefish QP availability is constraining trawl harvest of other species and trawl gear vessels that benefit from gear-switching constraint increase their landings in the community.

Depending on the markets and other fishing opportunities, the reduction or elimination of fixed gear sablefish landings in the IFQ sector could be important to a port group. Community benefits from IFQ fixed gear sablefish varies by port and year. Some port groups, like Newport and the South/Central Washington Coast, have seen IFQ fixed gear landings across all nine years at different levels. Others, like Brookings, have only seen gear-switched sablefish north landings in a few years. While reduction or elimination of gear switching could reduce gear-switching activity in a port, it might also free up northern sablefish QP that could provide additional bottom trawl opportunities. However, some of these ports may not have the infrastructure to process large

amounts of trawl caught groundfish. Figure 29 may be instructive in that regard. Note that for Washington and Oregon, the port areas that predominate with respect to IFQ fixed gear landings are the same ones that predominate with respect to IFQ trawl gear landings. Therefore, there is some probability that reductions from restrictions on IFQ fixed gear landings might be offset by increases for the trawl sector in those ports. Similarly, if a reduction in gear switching were to enhance trawl gear landings overall, northern California ports such as Eureka and possibly Crescent City might experience a net benefit, since those ports are stronger trawl ports than they are IFQ fixed gear ports. On the other hand, from San Francisco south, the ports with history of sablefish north landings appear to be more predominate in IFQ fixed gear landings than they are trawl landings and so might be more adversely impacted by the elimination of gear switching.

Table 11. Percent reduction in total groundfish exvessel revenue by IOPAC port group if fixed gear IFQ sablefish north were not landed and there is no compensating increase in trawl vessel landings of sablefish and other co-occurring species, 2011-2019

IOPAC Port Group	2011	2012	2013	2014	2015	2016	2017	2018	2019
Puget Sound	8.35%	10.04%	-	7.80%	20.21%	10.62%	12.86%	5.93%	10.09%
North WA Coast	-	-	-	-	-	-	-	-	-
South and Central WA Coast	11.40%	7.97%	5.11%	11.16%	5.20%	5.57%	6.50%	4.45%	4.25%
Astoria	1.97%	9.33%	3.24%	2.57%	10.18%	10.29%	6.83%	8.11%	5.09%
Tillamook	-	-	-	-	-	-	-	-	-
Newport	16.05%	9.11%	5.30%	0.41%	12.21%	14.78%	10.69%	8.78%	9.25%
Coos Bay	2.19%	1.31%	3.49%	-	1.39%	17.40%	12.98%	3.46%	-
Brookings	-	-	-	18.63%	6.31%	-	-	0.35%	-
Crescent City	-	-	-	-	-	-	-	-	-
Eureka	-	-	-	-	-	-	-	-	-
Fort Bragg	4.36%	2.15%	0.77%	1.95%	1.51%	1.55%	1.72%	-	-
Bodega Bay	-	-	-	-	-	-	-	-	-
San Francisco	15.94%	4.30%	4.03%	34.96%	12.53%	4.86%	9.27%	-	6.07%
Monterey	7.20%	4.19%	-	-	0.30%	-	3.20%	6.66%	-
Morro	0.50%	0.09%	-	1.02%	2.11%	1.84%	1.69%	-	-

Overall, the groundfish fishery contributes 21 percent of all West Coast shoreside delivery commercial fishery related income impacts (including Puget Sound) and close to 25 percent for those deliveries occurring from Morro Bay north (Figure 30).[13] Of that 25 percent, 19 percentage points are from the shoreside trawl sector. Groundfish tends to contribute more to total income impacts in the more northern ports than in the more southern ports (Figure 32, Figure 33, and

[13] For a description of methodologies used to estimate income impacts, see Section 4.8.5 of the Pacific Coast Groundfish Fishery 2021-2022 Harvest Specifications and Management Measures analytical document from the June 2020 Council meeting (PFMC, 2020).

Figure 33). Gear switching contributes more to income impacts in Oregon ports than in the other two states (Figure 34). The trawl sector is estimated to generate about 1,300 jobs on average across all three states, of which about nine percent (~117 jobs) are associated with gear switching (Figure 35).

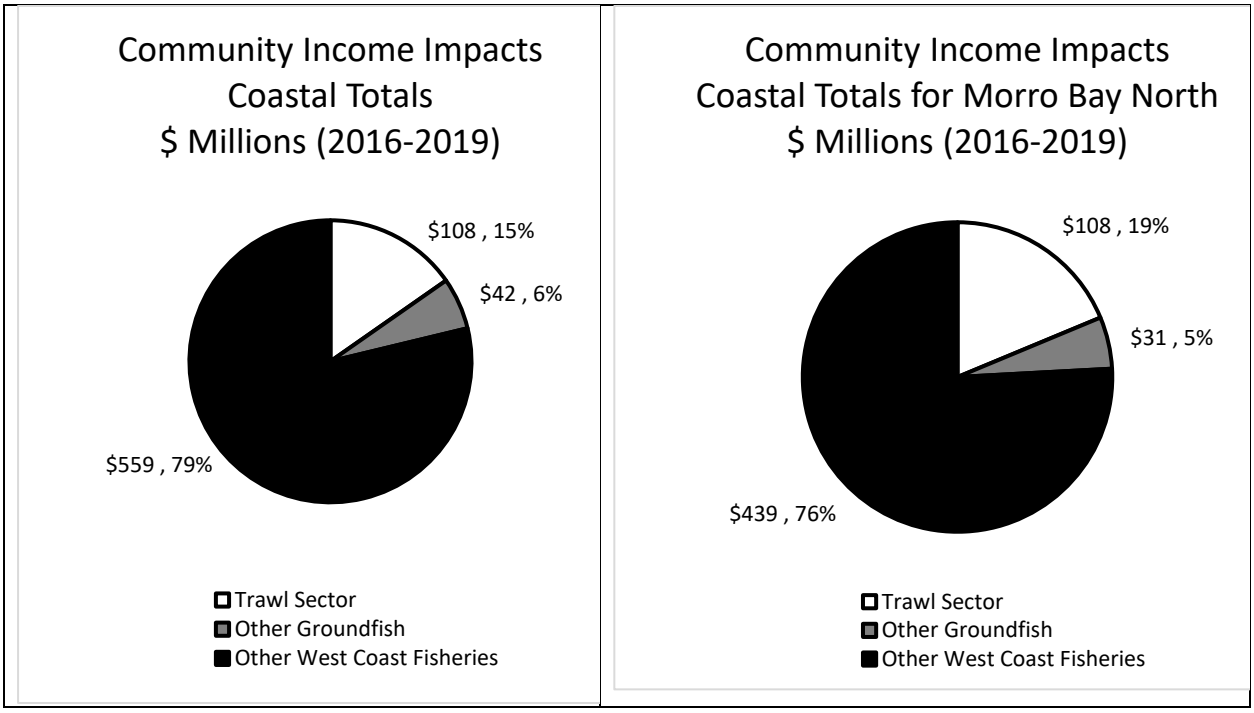


Figure 30. Annual average community income impacts associated with shoreside landings of West Coast ocean fisheries by broad sectors, including landings in Puget Sound.

Internal Reference: 2006-2019_Rev_Income_&_Employ_Summaries_for_SaMTAAC_07-27-2020

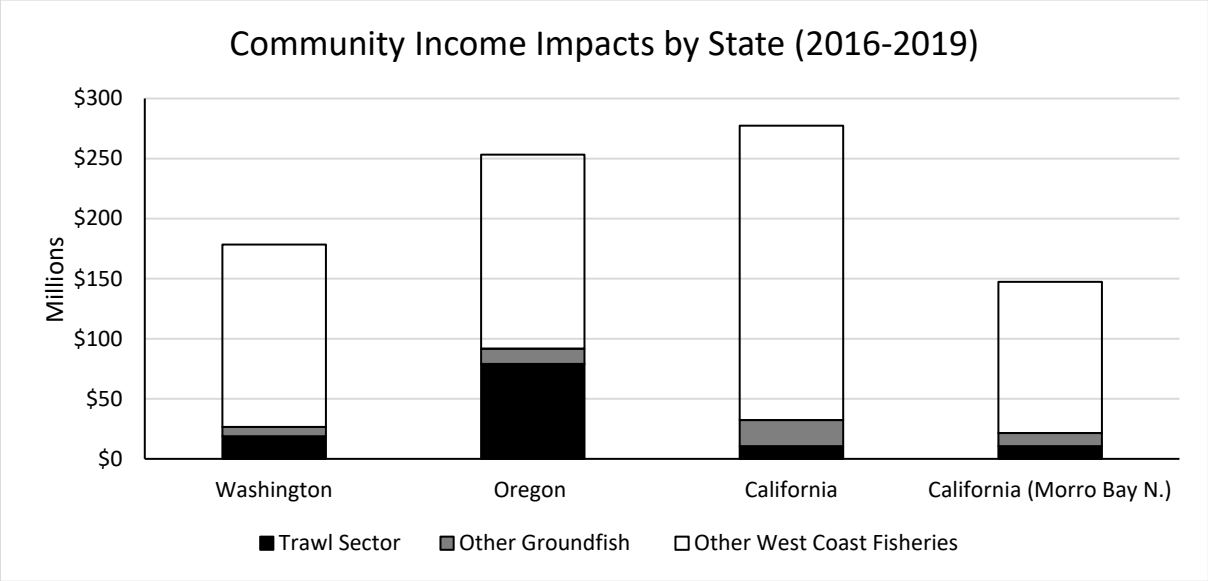


Figure 31. Average income impacts for shoreside trawl groundfish, other shoreside groundfish sectors, and all other commercial fisheries landing shoreside, average for 2016-2019.

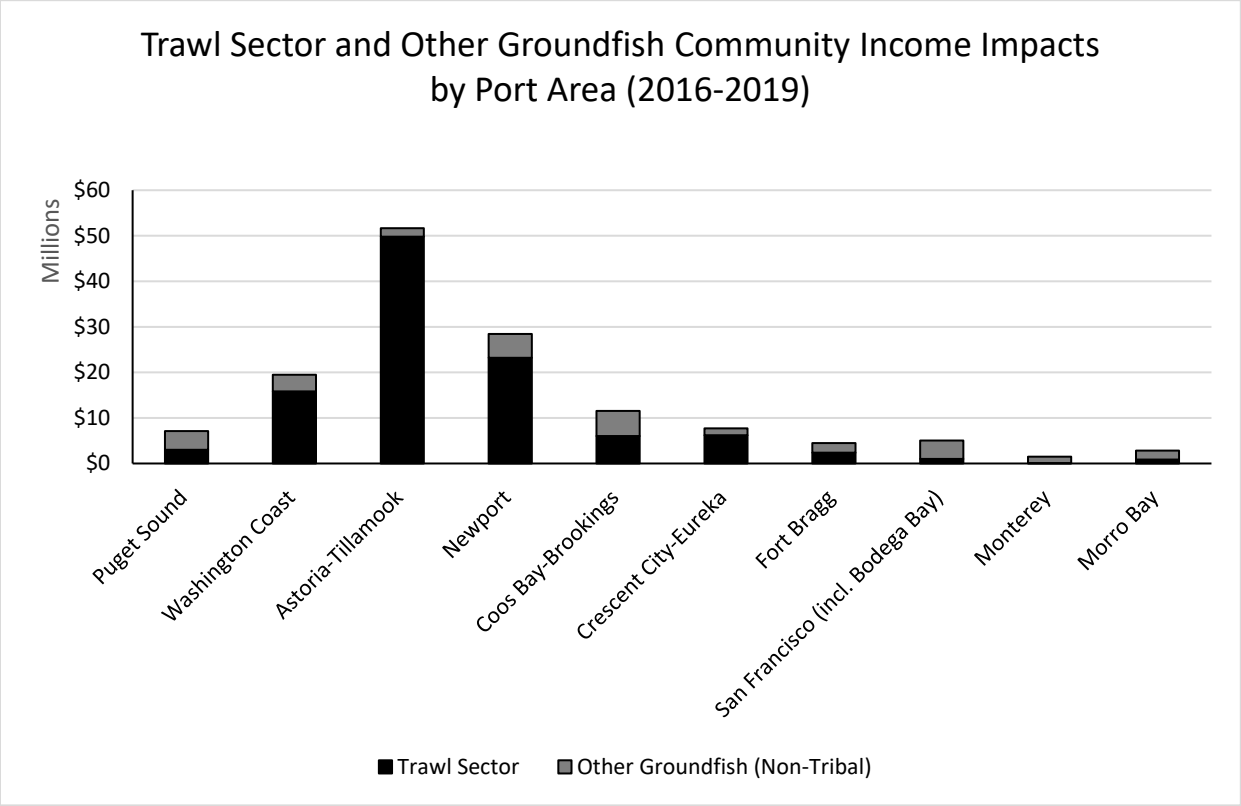


Figure 32. Average income impacts for shoreside trawl groundfish and other shoreside groundfish sectors by coastal community, including Puget Sound (2016-2019).

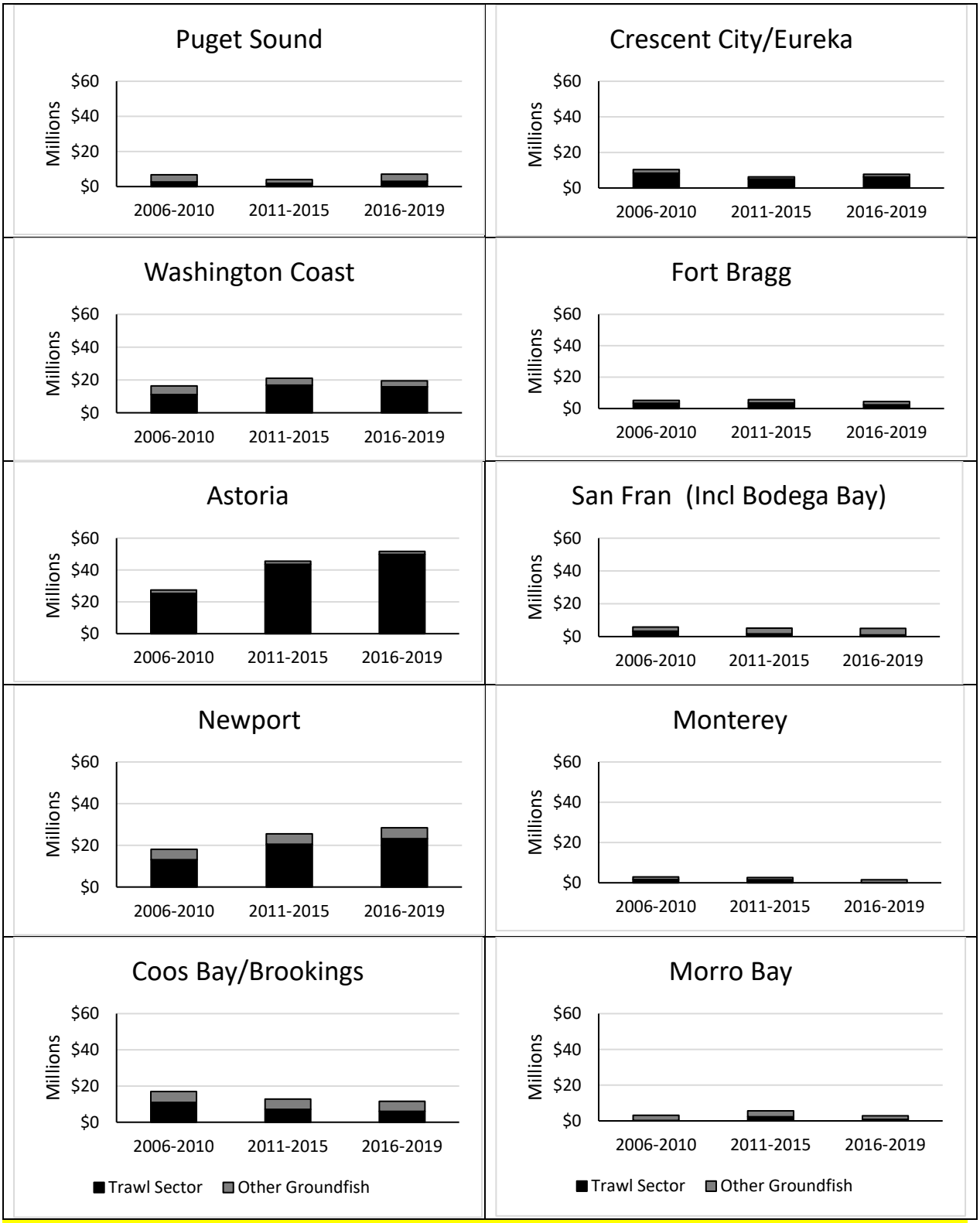


Figure 33. Average income impacts for shoreside trawl groundfish and other shoreside groundfish sectors for coastal communities, including Puget Sound, across three time periods (2006-2019).

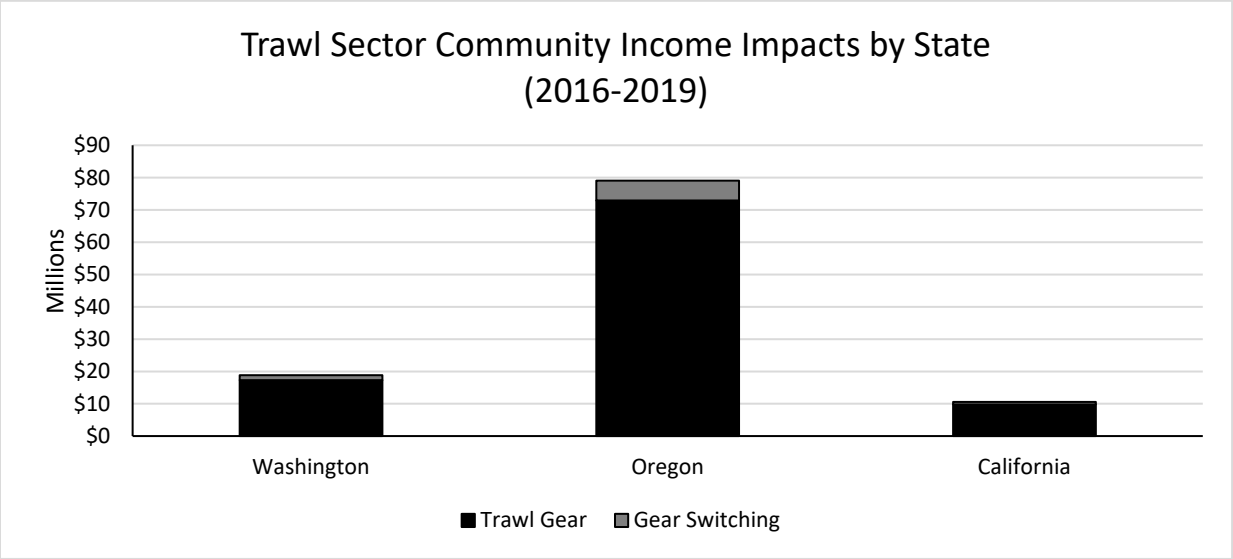


Figure 34. Average income impacts for shoreside trawl groundfish sector by gear (trawl and gear switched) in coastal communities (including Puget Sound) by state (2016-2019).

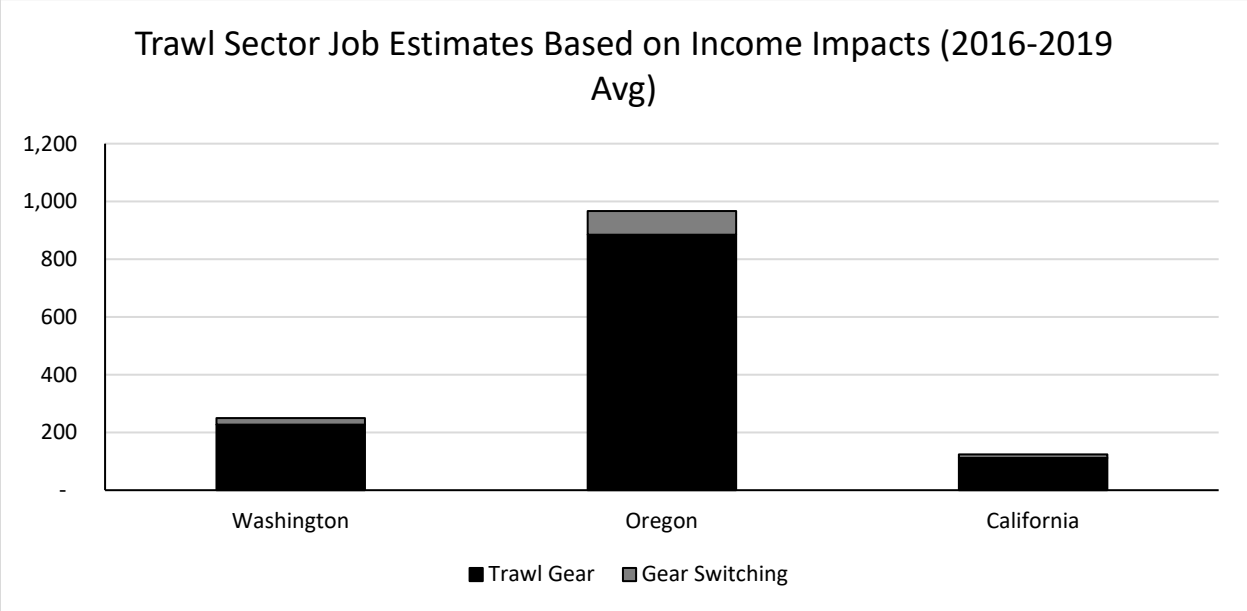


Figure 35. Average number of jobs associated with the trawl sector based on estimated income impacts by state (2016-2019 average).

6.0 Future Sablefish Constraints and Potential Gear Switching

Section 2.0 focuses on possible causes of under attainment, including whether fixed gear vessel use of sablefish QP might be constraining trawl harvest. Because the SaMTAAC alternatives

focus on limiting gear switching as a possible means for improving the availability of sablefish QP, this section evaluates some factors that might influence future demand for sablefish QP both within the trawl fleet and by gear-switching vessels.

6.1 Sablefish Biomass and Trawl Allocation

Section Summary: Based on the recent 2019 stock assessment and the Council's newly recommended default harvest control rule, sablefish north ACLs are expected to be the highest since the start of the IFQ program by an average of 1,000 mt and at the same magnitude as pre-catch shares levels. As sablefish biomass changes in concert with management changes, the degree to which sablefish north is available and needed by various fisheries may change.

Based on the 2019 stock assessment and under the Council's recommended alternative of P* of 0.45 for the 2021-22 biennium, the coastwide sablefish stock is expected to remain above target B_{msy} levels in the ten-year projection period. Figure 36 below shows the historical sablefish north ACLs from 1995 to 2020 shown in the black dots with solid connecting line. Based on the ten-year ABCs and removal assumptions described in Haltuch, et.al, 2019, the black dots with the dotted line show the proposed ACLs for 2021-22 and beyond based on the Council recommended ACL apportionment method which allocates 78.4 percent to north of 36º N. lat. based on a rolling five-year average from the bottom trawl survey. Note that if the Council continues using this apportionment methodology, this percentage will likely vary (although to what degree is unknown) as new trawl survey data become available in the future; and, therefore, these ACLs should be viewed with that in mind. Furthermore, it is highly likely that the Council will mandate another sablefish stock assessment, either full or an update, in the next couple of biennia, which would use actual catches (rather than full assumed removals coastwide) and may see a different trend in the biomass levels or determine the stock biomass is at a different scale. Based on the data available, the ACLs likely to be seen in the next few biennium are on average 1,000 mt higher than the ACLs seen since 2011. In the few preceding years prior to the IFQ program being implemented, ACLs were on the same magnitude as expected in the next few years.

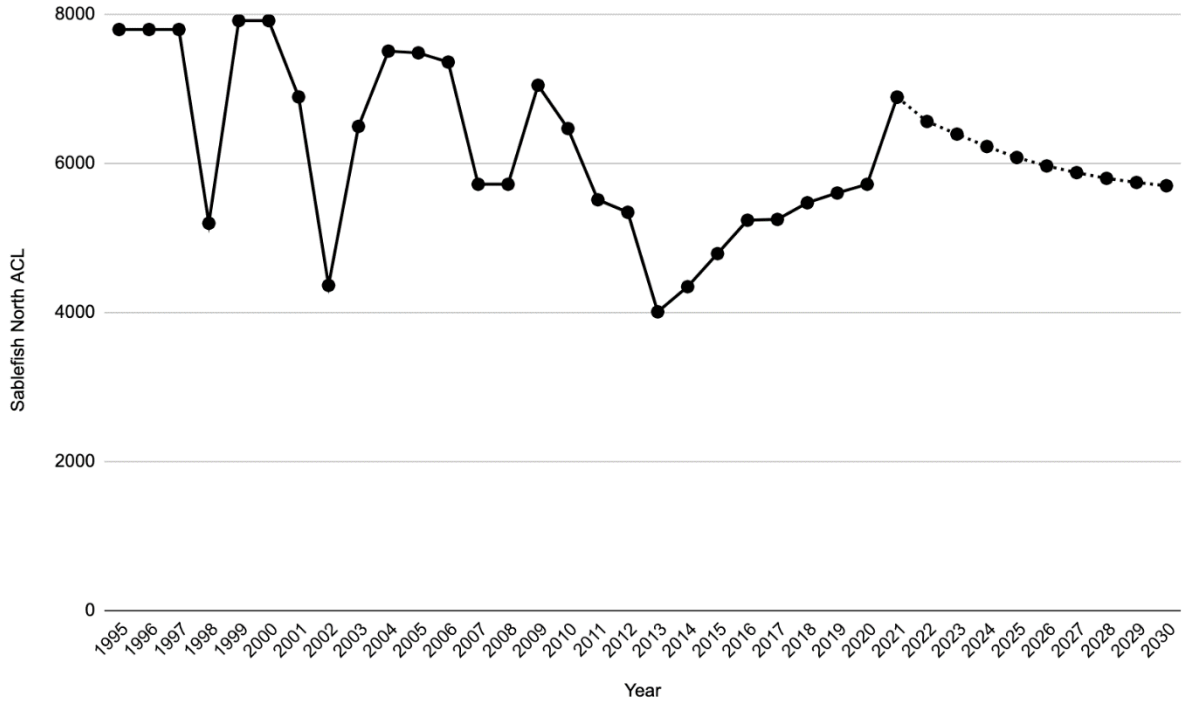


Figure 36. Sablefish north ACLs 1995-2030 (mt). ACLs from 1995-2020 based on regulations; 2021-22 based on Council's preferred alternative selected in June 2020. 2023 and beyond based on recommended apportionment method for 2021-2022 applied to ten-year ABC projections from 2019 stock assessment.

As sablefish biomass changes, in concert with changes in apportionment and health of the population (i.e. depletion), the degree to which sablefish is available and needed for the harvest of other stocks or complexes co-occurring with sablefish may change. On the one hand, if sablefish is constraining and increases in biomass are correlated with increases in rates of catch in the bottom trawl complexes (or strategies such as whiting), increased ACLs might not result in increased opportunity to take these other complexes. Changes in bycatch rates resulting from strong recruitment events and biomass changes may also shift relative sablefish bycatch rates between different strategies. For example, as discussed in Section 2.5, large year classes taken as bycatch in the whiting fishery may increase the amount of sablefish QP needed for that fishery and decrease the amount available for other trawl gear strategies. Alternatively, if vessels are able to maintain similar bycatch rates as biomass increases, then increases in allocations could alleviate the constraint in accessing co-occurring complexes and allow greater trawl attainment of other species. On the other hand, if sablefish is not constraining but rather the catch of some of the trawl complexes that take sablefish, such as DTS, is being constrained by market limits, then as the available QP increase, there may be an increase in surplus sablefish QP available for other uses. Depending on sablefish markets, this may increase the opportunity for gear-switching vessels to take sablefish that might otherwise go unused.

6.2 Sablefish Market Prices (Exvessel and QP)

Section Summary: If gear switching is limiting the attainment of trawl allocations, then changes in the exvessel price differential between fixed gear caught sablefish and trawl caught sablefish may influence future levels of gear switching.

- *Despite declines in sablefish exvessel prices, the amount of gear switching has increased in recent years.*
- *The price differential between fixed gear and trawl caught sablefish is 46 percent greater over the last three years as compared to the previous three years.*
- *While this information indicates the possibility of a relationship between these price differentials and the amount of gear switching, it is not a definitive study.*
- *Changes in the price of northern sablefish QP track changes in northern sablefish exvessel price.*
- *While trawlers receive a substantially lower exvessel price for northern sablefish than do fixed gear vessels, trawlers and fixed gear vessels are paying about the same market price for sablefish QP.*
- *Participation by fixed gear vessels is likely having some upward influence on sablefish QP prices; however, a reduction in fixed gear participation would likely have a substantial adverse impact on sablefish QP prices only if trawlers were not able to utilize the additional northern sablefish QP made available.*
- *Trawlers might increase their utilization of northern sablefish QP by increasing their harvest of complexes in which sablefish is taken (such as DTS) or harvesting similar amounts of the complex but increasing their per unit revenue by increasing the ratio of sablefish taken in the complex (which would not increase overall trawl attainment). The latter strategy might be more likely if market limits prevent increased harvest of species like Dover sole.*

Sablefish market prices likely influence the amount of gear switching through at least two interdependent mechanisms. First, when exvessel prices for sablefish increase while those for other species remain stable (see Figure 37 for trawl price fluctuations), the revenue incentive for fixed gear will increase more than for trawl, since sablefish makes up a smaller proportion of the catch for trawl gear than for fixed gear (Figure 38). Similarly, when prices decline, there will be a lesser impact on trawl revenue per unit of catch of the trawl complex than for fixed gear vessels.

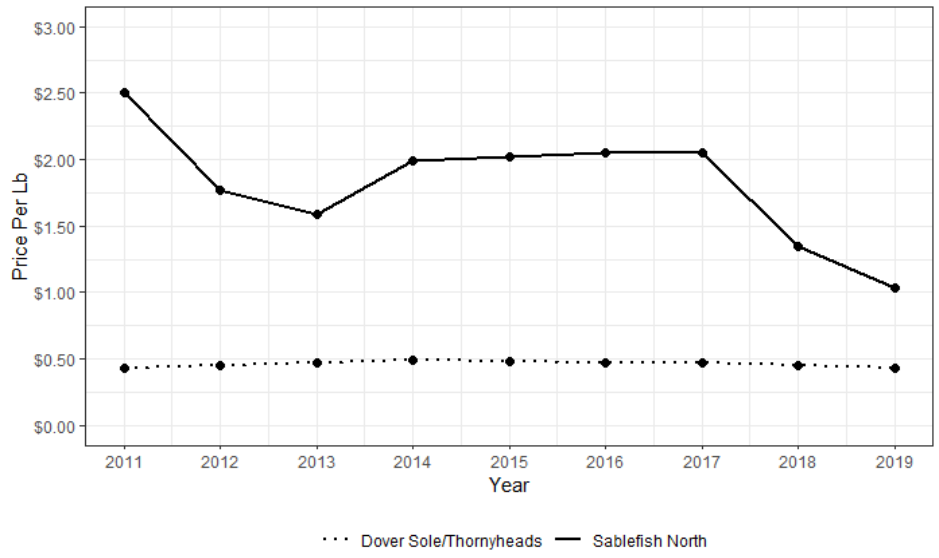


Figure 37. Weighted average price per pound of bottom trawl caught Dover sole and thornyheads compared to sablefish north, 2011-2019.

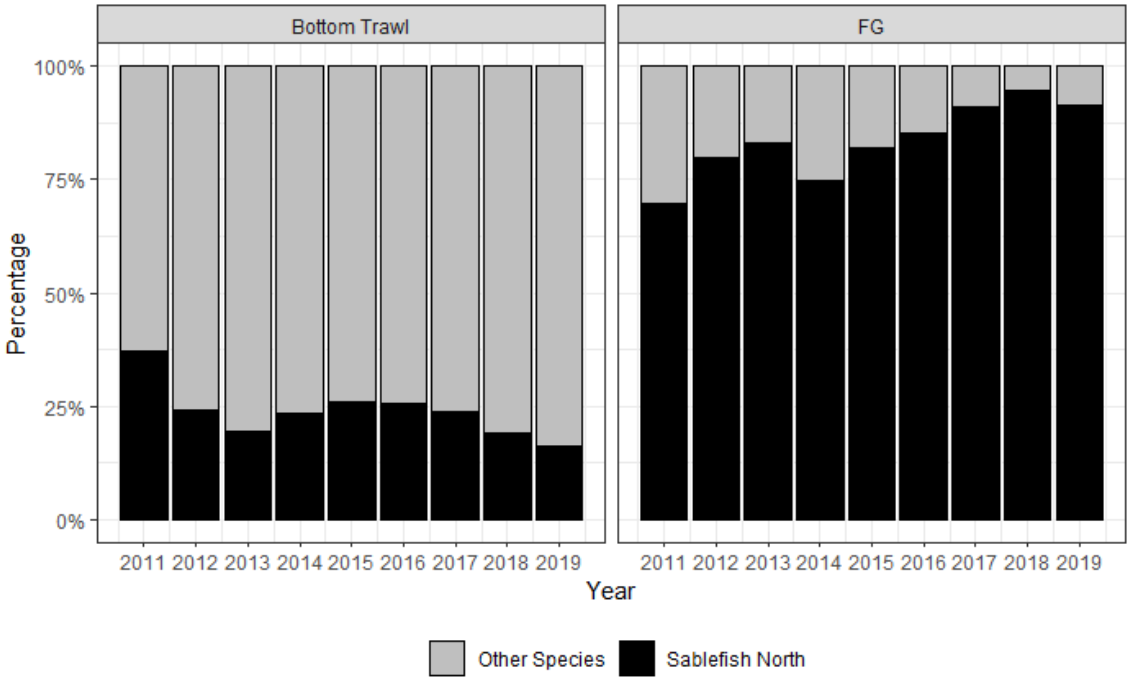


Figure 38. Proportion of catch for bottom trawl (left panel) and fixed gear (right panel) IFQ landings made up of sablefish north and other species, 2011-2019.

Second, the differential between prices for sablefish delivered by fixed gear vessels and sablefish delivered by trawl vessels likely influences the relative willingness of each group to buy QP (or the opportunity cost of holding QP rather than selling to someone else). In recent years, northern

sablefish exvessel prices have been declining dramatically, accompanied by a decline in QP prices (Table 12 and Figure 39) while trawl allocations have increased. At the same time, there have been new entrants to the gear switching fishery (Figure 18) and the total percentage of the available sablefish QP used by gear-switching vessels has increased from about 27.4 percent in 2011 to 34.0 percent in 2019 (Table 2, page 11). While exvessel prices have declined, the increase in amount of gear switching has been accompanied by an increase in the price differential between fixed gear and trawl caught sablefish (Figure 40). Fixed gear prices have ranged between $0.70 and $1.13 more than trawl prices from 2011 through 2019 and have averaged $1.02 more than trawl over the last four years. The price differential between fixed gear and trawl caught sablefish is 43 percent greater over the last four years as compared to the previous four years.

While this information indicates the possibility of a relationship between the northern sablefish price differentials and the amount of gear switching, it is not a definitive study. To the degree that the indication is accurate, even if sablefish prices decline, as long as gear switching remains adequately profitable and the market is able to absorb the fixed gear caught sablefish, the price differential between fixed gear and trawl caught sablefish could continue to contribute to gear switching. However, if other factors are constraining trawl harvest, the exvessel price differential may have a less important influence on total gear switching.

Table 12. (UPDATED) Average price per round weight pound for sablefish by gear type for sablefish north of 36° N. lat., the price difference between fixed gear and trawl in dollars per pound and as a percent of the trawl gear price and northern sablefish QP prices. (2011-2019). (Source: PacFIN).

Gear	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Trawl	2.51	1.78	1.59	1.98	2.02	2.05	1.93	1.30	0.93
Fixed Gear	3.53	2.49	2.31	2.68	2.74	3.07	3.06	2.28	1.88
Price Difference	1.02	0.71	0.72	0.70	0.72	1.02	1.13	0.98	0.95
Price Difference as Percent of Trawl Price	40.6%	39.9%	45.3%	35.4%	35.6%	49.8%	58.5%	75.4%	102.2%
Sablefish QP Prices[a/]	$1.07	$1.04	$0.88	$1.00	$1.11	$1.10	$1.21	$1.06	$0.61

a/ From Holland, 2020.

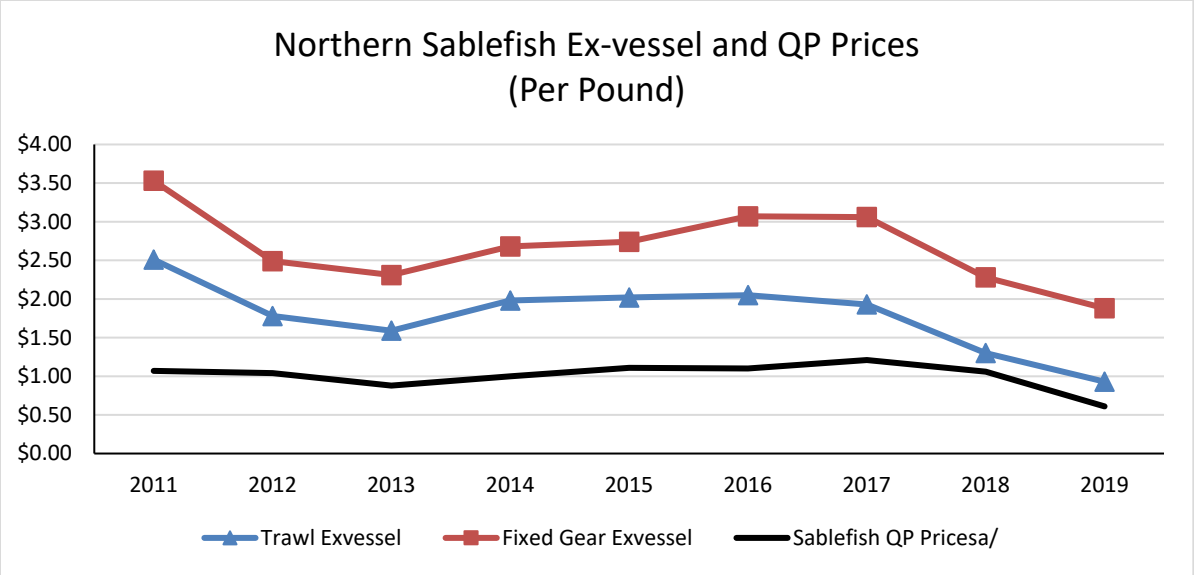


Figure 39. Annual northern sablefish exvessel values (by gear type) and QP prices per pound (2011-2019). (Source: PacFIN and Holland, 2020). Internal reference: Sablefish and QP Prices.xlsx.

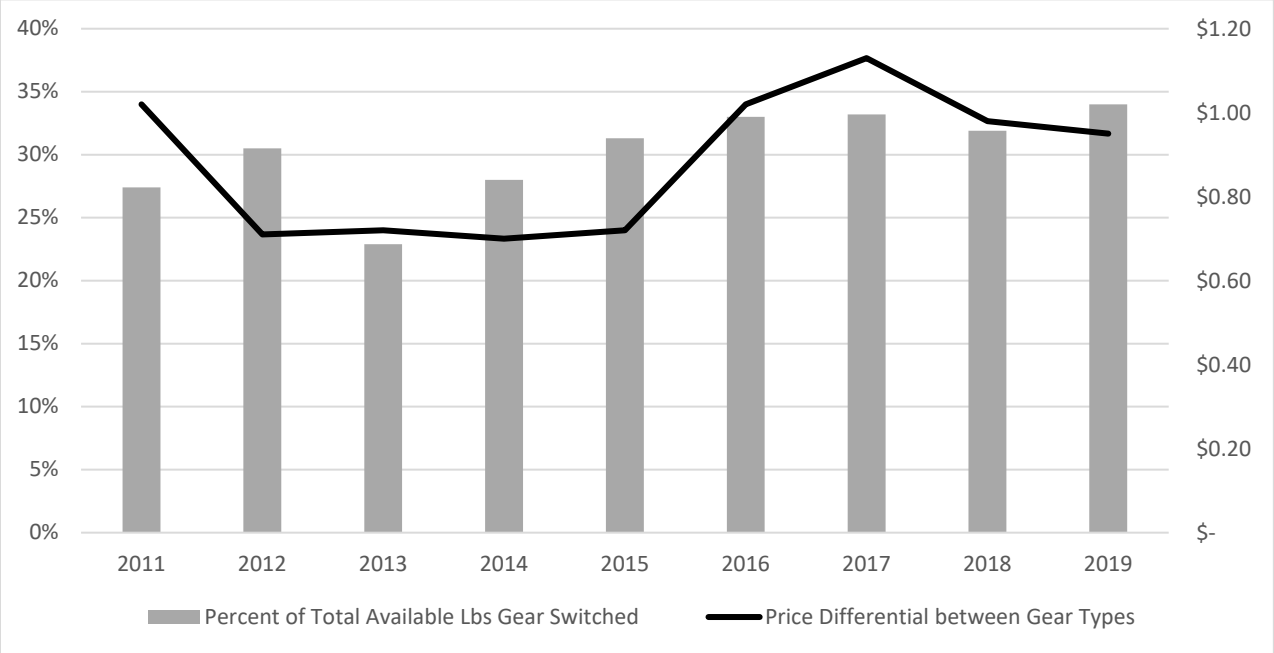
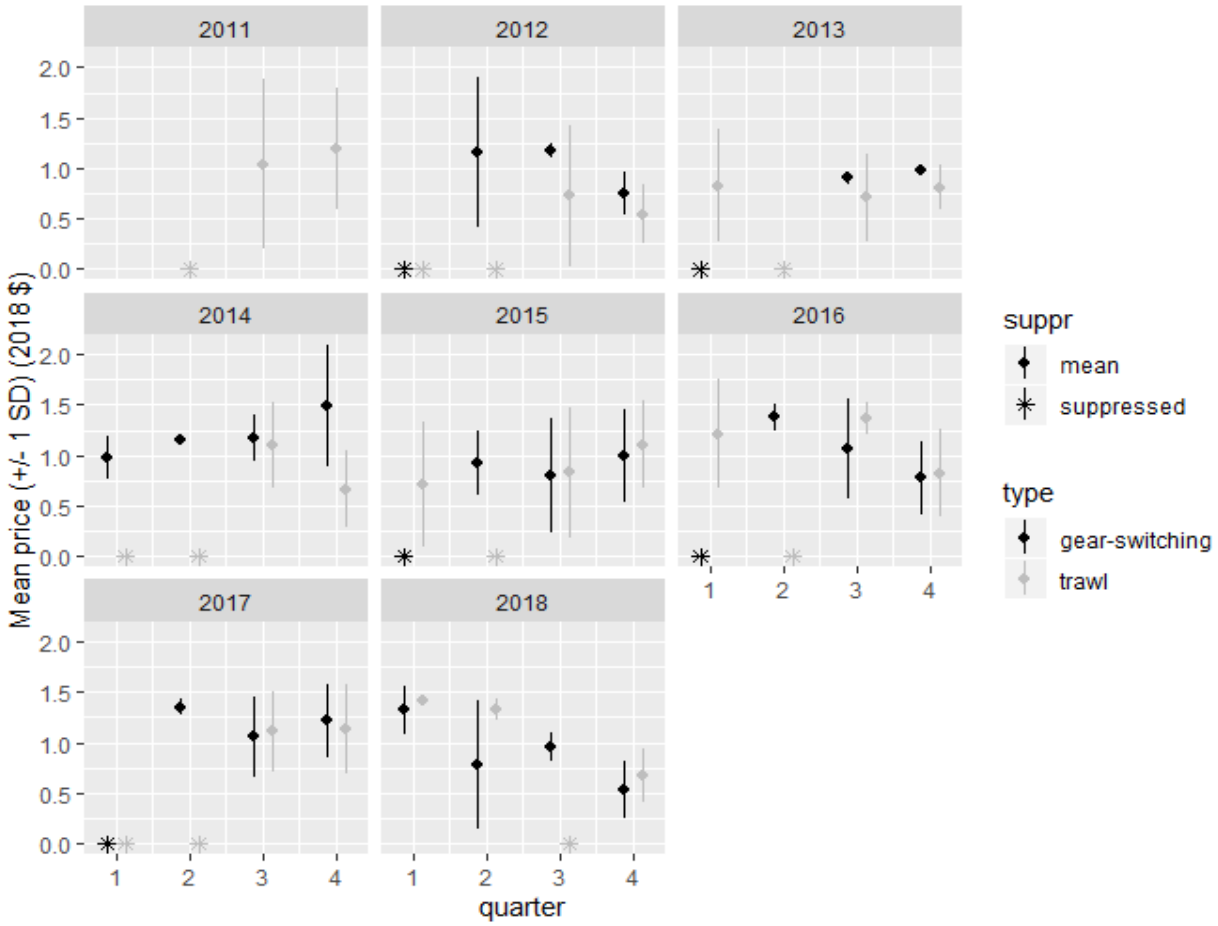


Figure 40. (UPDATED) Difference between fixed gear and trawl caught northern sablefish exvessel price per pound compared with amount of gear switching, 2011-2019. (Source: PacFIN and GEMM, IFQ Database) Internal Reference: Price vs. Utilization.xlsx

It is often suspected that because fixed gear vessels get an exvessel price that is substantially higher than for trawlers (Table 12), fixed gear vessels are also able to generate much higher profit per pound and hence pay substantially more for sablefish QP than trawlers. However, the trawl/fixed gear difference in the exvessel prices might not reflect the degree to which fixed gear vessels are willing and able to pay more for QP. If the revenues and costs related to the other species trawlers catch along with sablefish (e.g. Dover sole) are taken into account, the differential in marginal net revenue per pound of sablefish between fixed gear and trawl gear may be substantially lower than indicated by exvessel prices (or even reversed). Data on vessel profitability indicate that while fixed gear vessels have a higher profit per metric ton (Figure 11, page 19), the per vessel and per fishing day profit for trawl vessels is comparable and sometimes higher (taking into account variable and fixed costs; Figure 10, page 18, and Figure 12, page 20). Moreover, net revenue is likely to vary from vessel to vessel such that some fixed gear vessels are able to generate more net revenue per unit of catch than trawlers and vice versa. If the QP market is well functioning, the QP will be distributed to the most profitable vessels in each fleet (subject to vessel QP limits and to market constraints) and the distribution of QP between the two fleets would be expected to reflect the amount of fish needed by the most profitable vessels in each fleet. This, however, assumes there are no other constraints on either fleet such as a limit on the amount of fish the market can absorb.

While there is some question about whether much of the QP market is functioning well enough and with enough transactions to establish an efficient market price (Holland, 2020), the number of single species cash transactions reported for northern sablefish is greater than for any other species and substantially greater than for most. Through 2019, there were an average of 64 such transactions per year for northern sablefish QP compared to an average of about 6 transactions per year for all other species, except those for which the allocations are highly attained—Pacific whiting, petrale sole and widow rockfish (data from Holland, 2020). While there is some dispersion of northern sablefish QP prices around the averages, for cash transactions in which sablefish is the only species traded, trawlers and fixed gear are paying about the same average price for northern sablefish QP, particularly since 2015 (Figure 41 and Figure 42). If the market is functioning well, even if one group of vessels or processors is willing to pay substantially more than the other, they should be able to acquire QP at the market price rather than paying the full amount that they might be willing to pay. The fact that both gear groups are paying about the same average price may indicate there are enough transactions and available information about those transactions to set a market price.



Note: Suppressed ("suppr") indicate value withheld due to data confidentiality.

Figure 41. Mean QP prices for purchases by trawl and by gear-switching vessels by quarter and year. (Source: Erin Steiner, NWFSC, Sept 27, 2019).

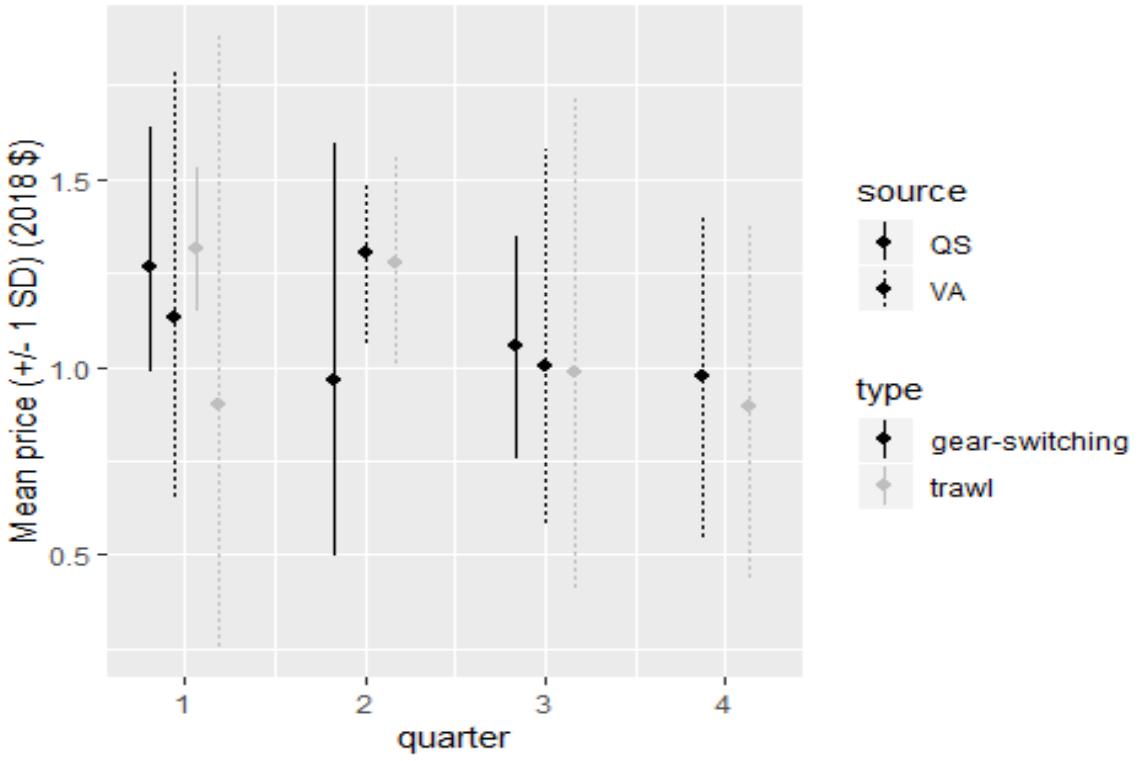


Figure 42. Mean QP prices for purchases by trawl and by gear switching vessels, from QS accounts and from other vessel accounts (VA) by quarter (2011-2018). (Source: Erin Steiner, NWFSC, Sept 24, 2019)

In general, northern sablefish QP prices have fluctuated with northern sablefish exvessel prices (Figure 39). While sablefish prices have fluctuated substantially, prices for other important trawl caught fish, such as Dover sole and thornyheads, have remained relatively stable (Figure 15 on page 24 and Figure 37). The apparent correlation in the exvessel and QP price fluctuations is stronger when viewed as proportions of the averages (Figure 43).

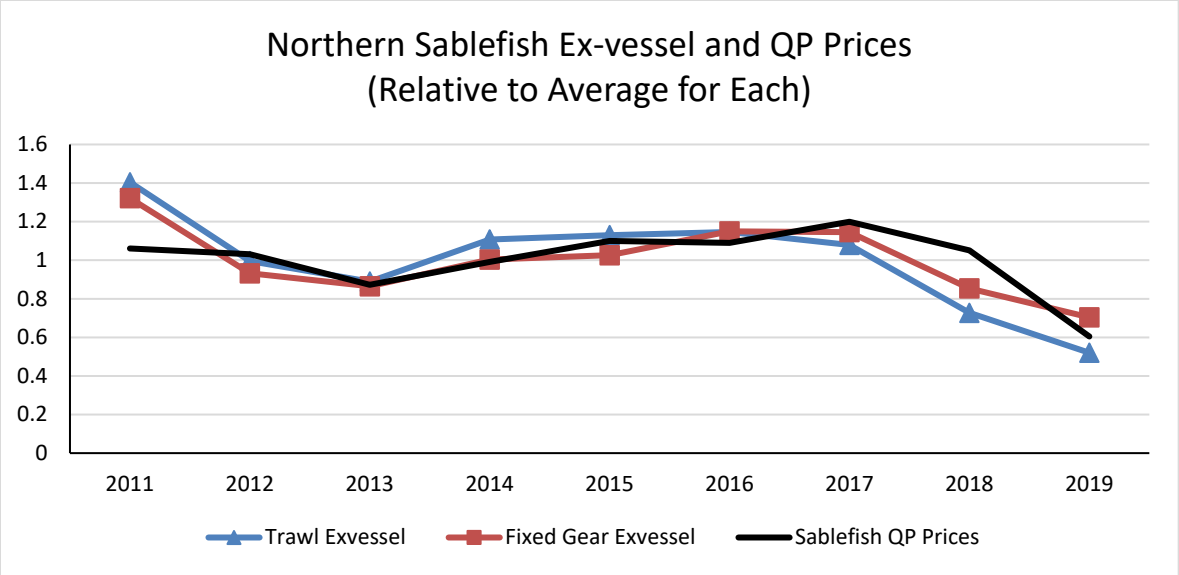


Figure 43. Indices of average annual northern sablefish exvessel values (by gear type) and QP prices per pound (2011-2019). (Source: PacFIN and Holland, 2020). Internal reference: Sablefish and QP Prices.xlsx.

Given the limited amount of total QP available, gear switching likely results in a higher price for QP than would be the case if there were no gear switching. Assuming that gear-switching vessels are using permits that would otherwise go unused (i.e., fixed gear vessels are supplementing rather than directly displacing trawl vessels) and are able to be profitable at a particular QP price, the amount of QP demanded at that price will be greater than if gear-switching vessels were not participating in the QP market. This will tend to move the QP prices higher. This expectation is based on just the observation of increased QP volume demanded and not whether or not fixed gear vessels are generating higher net revenue per pound than trawl vessels. To the degree that the QP would have been used by trawlers, participation by fixed gear vessels is likely increasing the QP prices to a degree just sufficient for some fixed gear vessels to out compete some trawlers for the northern sablefish QP.

If gear switching were reduced, there are two ways that trawlers might make use of the additional QP. They could increase their harvest of complexes in which sablefish is taken as co-occurring catch (e.g., DTS), thereby increasing attainment of trawl allocations to the degree markets are able to absorb[14] the increase; or they could increase the ratio of sablefish in the harvest complex without substantially increasing the amount of other species caught. In the latter case, vessels might achieve higher net revenue by reducing the time and effort spent trying to keep sablefish bycatch rates down (thereby reducing costs) and increasing the revenue per unit of harvest (replacing lower value species with the more valuable sablefish). If sablefish made available through a limitation

[14] A market is not able to absorb additional production if volume cannot increase without a substantial reduction in price.

on gear switching can be utilized by trawlers in one of these ways then, a reduction in gear switching may cause some but not a substantial decline in northern sablefish QP prices.

However, to the degree that fixed gear vessels are using a substantial amount of QP that would otherwise go unused, their participation may be maintaining QP prices that might otherwise decline significantly. QP that are not needed for harvest have no alternative use and thus have low or zero value. The impact on QP prices from demand by fixed gear vessels is of concern both with respect to its effect on profitability of trawl operations (adversely impacted by higher sablefish QP prices) and the revenue earned by those that rely on selling their trawl QP (positively impacted by higher sablefish QP prices).

6.3 Latent and Unutilized Permits

Section Summary: Whether or not current levels of gear switching are a constraint on trawl harvest opportunities, throughout the SaMTAAC process, concern has been expressed that unlimited expansion of gear switching could adversely affect fishery management objectives. This section looks at the opportunity for expansion of gear switching through new entry by fixed gear vessels accessing limited entry trawl permits that are latent or inactive. A few of the highlights are:

- *The average number of trawl permits unregistered to a vessel ("latent") for an entire year has increased from an average of 22 permits per year between 2011-2014 to an average of 32 permits per year between 2015-2019. Overall, there have been 54 different trawl permits that have been unregistered to a vessel ("latent") for an entire year from 2011-2019, with five being latent the entire period.*
- *The number of trawl permits that have been registered to a vessel but not used for IFQ landings for an entire year ("inactive") from 2011-2019 has been relatively stable at an average of 34 permits. There have been 90 different trawl permits that have been inactive for a year, with six being inactive the entire period.*

While the total number of gear-switching entities per year has stabilized to around 16 vessels/permits (see Table 9), new vessels interesting in gear switching in the trawl fishery can enter through acquisition of a trawl permit by purchase or lease. Figure 44 shows the number of permits that were used for IFQ landings[15] compared to those that were inactive (i.e. registered to a vessel but had no associated IFQ landings) or latent (i.e. were unregistered to a vessel) for the entirety of the fishing year from 2011 to 2019. Of the 165 trawl endorsed permits, over the last four years, 89 permits were either latent or inactive for at least one year, with 45 being latent or inactive for the entire four-year period. These permits therefore could be seen as "available" to interested entities without impacting current operations.

[15] Those trawl endorsed permits that were also used in the MS sector only as a catcher vessel were also included in this category as they were not considered potentially "available" to new entrants.

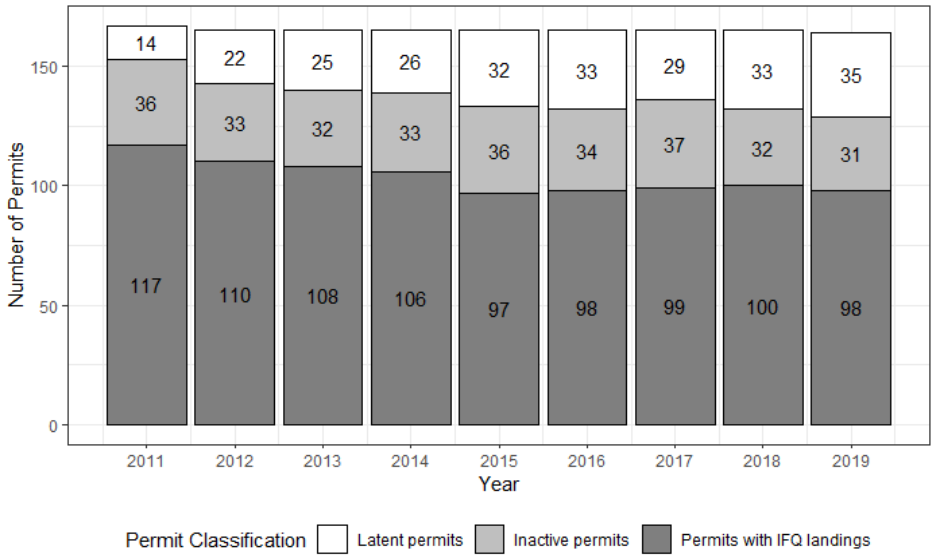


Figure 44. Number of trawl endorsed permits with associated IFQ landings and number of permits that were inactive (assigned to vessel but no IFQ landings recorded) or latent (unregistered to a vessel) for the entirety of the year.

6.4 Cross-Over Fisheries

Section Summary: The previous section establishes that there are latent and inactive permits that may be available for new entrants. This section looks at the fisheries that might be most likely to contribute new entrants to gear switching.

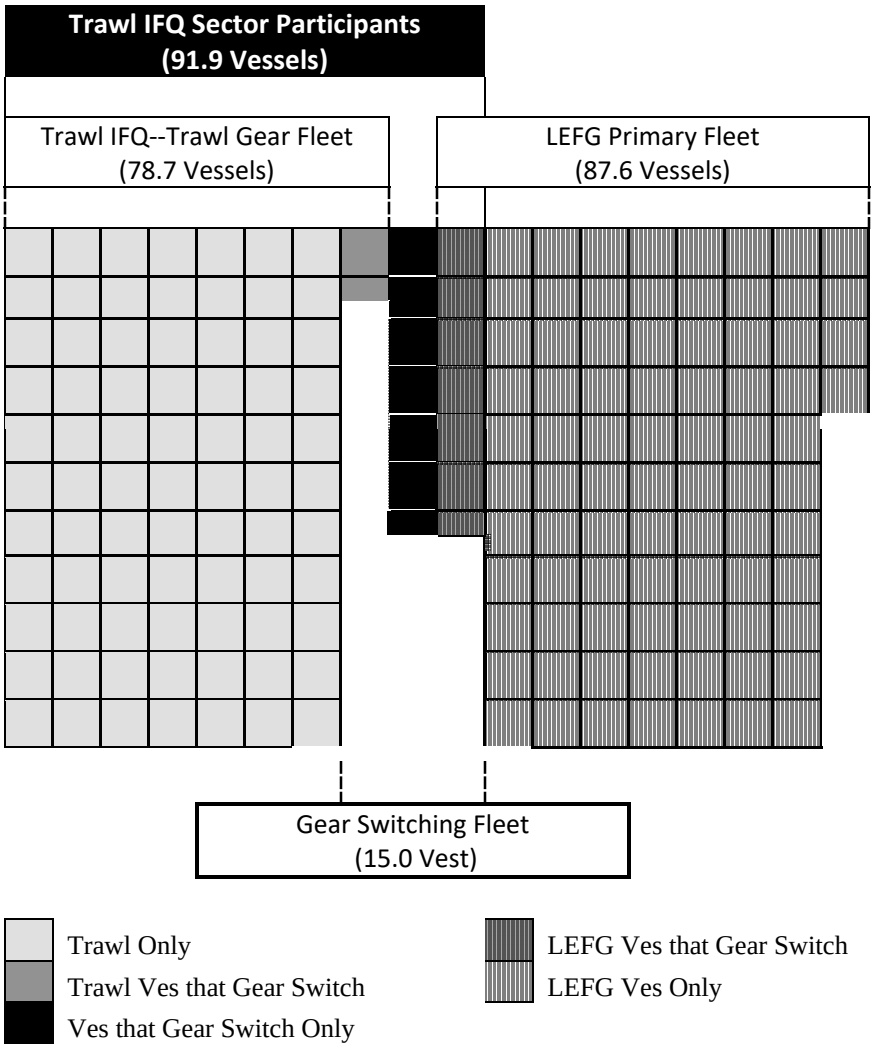
- *Based on existing cross-over patterns, the two primary sources of new participants appear to be existing fixed gear fisheries: the LEFG primary fishery and the Dungeness crab fishery.*
- *Approximately half of the IFQ gear-switching vessels in a given year also participate in the LEFG fishery.*
- *Of those that crossover from the LEFG sector, 56 percent of their total groundfish revenue and 41.1 percent of their total revenue on average comes from IFQ sablefish north compared to 76 percent and* 38.2 *percent respectively for those vessels that only gear switch in the IFQ program.*
- *One motivation for crossing over from the LEFG primary fishery may be the constraints imposed by the three-permit stacking limit. From 2016 to 2019, all but one vessel that crossed over from the LEFG fishery (an average of six) had stacked their maximum number of LEFG permits (three). At the same time, there were an average of 20 LEFG vessels with three stacked permits that did not crossover.*
- *The highest crossover rate from the Dungeness crab fishery is to the sablefish fixed gear fisheries (IFQ, LEFG and OA, 21.2 percent of the crab fleet) followed by trawl IFQ (five percent) and the fixed gear IFQ fishery alone (two percent).*

- *No significant levels of cross over into the existing gear-switching fishery were found among other fisheries (e.g. pink shrimp).*

While total gear-switching numbers have leveled off in recent years (16 permits/vessels a year taking about 33 percentage of the total available pounds from 2016 to 2019; Table 2), at the same time, there have been nine new entrants, replacing vessels standing down from the fishery. While the amount of gear switching and number of participants has been relatively level over the last three years, relative to the early years of the program, the number of participants is generally down while the amount of gear switching is up. One concern motivating consideration of gear-switching limitations is that new entrants could further expand the gear-switching fleet, leading to a greater proportion of the sablefish north allocation being taken with fixed gear.

Based on current cross-fishery participation patterns, the most likely source for potential crossover into the trawl fishery as gear switchers would be those vessels that currently participate in the LEFG fishery. Prior to the implementation of the trawl IFQ program, while trawl permitted vessels were allowed to use fixed gear to fish against trawl allocations, virtually all vessels using fixed gear did so in the LEFG and OA fisheries against the respective allocations for each of these sectors. The LEFG allocation is available to those vessels participating in the primary/tier fishery and the LE daily trip limit (DTL) fishery. Vessels must have a sablefish endorsed fixed gear (longline or pot) LE permit to fish in the primary/tier program. Vessels with or without a sablefish endorsement permit can fish in the LE DTL fishery.

Figure 45 below shows a graphic representation of the average amount of participation and crossover between the primary tier and IFQ fleet. There are 93 vessels on average that harvest sablefish north in the IFQ fishery, with 16 using fixed gear and 79 using trawl gear. Two vessels on average fish the IFQ fishery with both fixed and trawl gear. The primary sablefish fishery typically has 88 vessels participating, with seven also participating with fixed gear in the IFQ fishery. Of the 16 gear-switching vessels, seven used fixed gear to harvest sablefish north only in the IFQ fishery.



Note: Vessels might also participate in non-IFQ/non-LEFG fisheries. 172.8 vessels are represented in this graphic.

Figure 45. Waffle plot of the average number of IFQ vessels harvesting sablefish north with trawl gear (left panel) and average number of vessels participating in the LEFG primary fishery (right panel) with the numbers of vessels that "crossover" from both fisheries into gear switching compared to those that only gear switch (middle panel). Internal Reference: Waffle Diagram & InfraStructure.xlsx

Overall, there have been 14 distinct vessels that have participated in both the fixed gear IFQ and LEFG fisheries between 2011-2019. In most years, approximately half of the IFQ gear-switching vessels also participate in the LEFG fishery (Table 13). None of the vessels that crossed over from the LEFG fishery to gear switch in the IFQ program also trawled for sablefish north. Those vessels that participate in both LEFG and IFQ fixed gear account for an average of 56.5 percent of all gear switched landings, yet account for 43 percent on average of the gear-switching fleet.

Table 13. Number of vessels that landed in the LEFG primary fishery, participated in both the IFQ and LEFG fishery, number of gear-switching vessels, percent of total gear-switched landings and total groundfish revenue from gear-switched sablefish taken by vessels that participate in both LEFG and IFQ fisheries, and total IFQ vessels landing northern sablefish, 2011-2019.

Year	Primary Sablefish Fishery LEFG Vessels		Total Number of Gear-Switching Vessels a/	For the Primary Sablefish Fishery LEFG Vessels that Also Gear Switch		Total IFQ Vessels Landing Northern Sablefish
	Total Number	Number Also Gear Switching		Their Share of All IFQ Gear-Switching Vessels' Sablefish North Landings	Avg. Percent of Their Groundfish Revenue from Gear Switched Sablefish North	
2011	98	5	17	41.1%	59.0%	100
2012	95	8	20	57.5%	58.8%	99
2013	89	5	11	58.9%	64.2%	91
2014	84	7	15	63.6%	50.2%	92
2015	86	6	14	59.7%	57.0%	88
2016	85	7	16	57.9%	53.9%	85
2017	85	5	16	43.4%	56.4%	93
2018	85	7	15	53.8%	49.6%	93
2019	83	10	15	73.0%	53.6%	90
Avg.	88	7	15	56.5%	55.4%	92

a/ Gear-switching vessels include those vessels that used only fixed gear to land sablefish north and those that used both trawl and fixed gear in a given year to land sablefish north.

In terms of dependence, on average, those LEFG vessels that participate in the IFQ sector get at least half of their groundfish revenue from gear switching, as shown above in Table 13. Comparatively, those vessels that only gear switch and do not also participate in the LEFG fishery receive an even higher percentage from sablefish north gear-switched landings of their total groundfish revenue (77 percent). However, in terms of overall revenue, those vessels that participate in both LEFG and IFQ gear switching have a larger proportion of their revenue coming from gear-switched sablefish (41.1 percent) compared to those that only gear switch (38.5 percent). If the Council were to adopt an alternative that restricted gear switching in the IFQ fishery, gear-switching vessels might be noticeably impacted given their reliance on that revenue. At the same

time, with potential revenue available in the IFQ fishery for those vessels currently participating in the LEFG fishery, there is the risk of having additional participants join in gear switching.

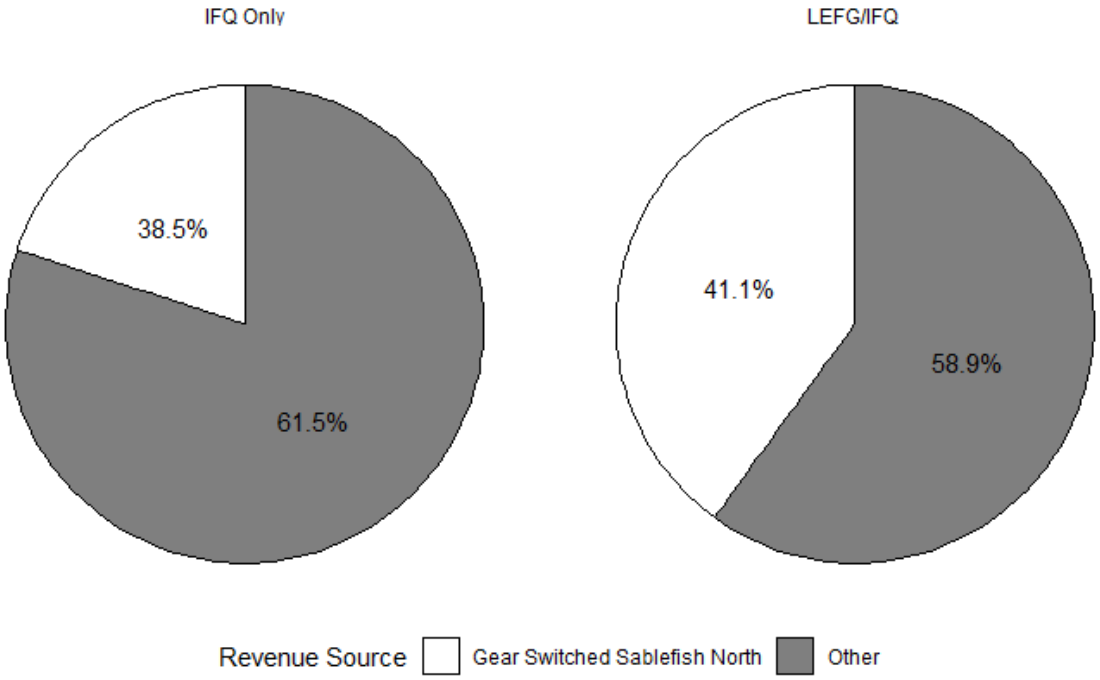


Figure 46. (UPDATED) Average percent of revenue from gear-switched sablefish north and all other species, 2011-2019, for those gear-switching vessels that also participated in the LEFG fishery compared to those that only participated in IFQ.

Vessels cross over into the trawl IFQ fishery despite the greater costs for participating in the IFQ fishery (at-sea monitoring, cost recovery, and quota required to cover catch rather than landings). One motivation for crossing over from the LEFG to gear switching in the IFQ fishery may be the permit stacking limits imposed on the LEFG sector, which impede individual vessels from further expanding business operations, possibly to more efficient levels.

In the LEFG primary fishery, each permit is assigned to one of three cumulative landing limit levels (Tiers 1, 2 or 3). The cumulative limits are poundages that can be landed during the primary season (April through October). The ratio of the cumulative limits among tiers is 3.85:1.75:1, for Tiers 1, 2 and 3, respectively. Vessels are permitted to stack up to three LEFG permits at a time. Under the tier program in 2020, the maximum cumulative limit a vessel can harvest is 145,929 lbs (three Tier 1 permits at 48,643 lbs each). Comparatively, in the IFQ fishery, the 4.5 percent annual vessel limit for sablefish north comes out to 261,592 lbs for 2020. At the 2016-2019 average fixed gear sablefish price, a vessel participating in both fisheries could take up to a maximum of over 407,000 lbs of northern area sablefish worth $1.13 million in exvessel revenue, 180 percent more than the maximum opportunity provided in the LEFG fishery alone.

Those vessels that participated in both LEFG and the trawl IFQ program in the same year have taken an average of 92.8 percent of their tier limits for the last four years (2016-2019). This is slightly over the average attainment of those vessels that do not crossover, who have averaged 90.8 percent in the same time period. For those vessels that crossover between both fisheries, they have taken 146,777 lbs and 60.2 percent of the annual vessel limit on average from 2016 to 2019 in the IFQ fishery, slightly more than could be harvested on average with three Tier-1 permits from 2016-2019 (138,654 lbs).

Table 14 shows the number of LEFG vessels that did and did not switch gear in the IFQ program, by year and number of stacked permits. Included in the counts of vessels that did not cross over are four vessels that are registered with trawl endorsed permits (in addition to their fixed gear endorsed permit(s)). If any of the vessels that did not cross over desired to expand their fixed gear harvest of sablefish, their choices are to try to acquire a higher tier permit, acquire another tier permit (or two; where allowed), or acquire a trawl permit to gear switch in the IFQ fishery.

Table 14. Number of tier vessels that did and did not cross over into the IFQ program, by year and number of stacked permits.

Number of Permits Stacked by Vessel	**Number of Vessels by Year**			
	2016	**2017**	**2018**	**2019**
	Vessels that Crossed Over and Gear Switched in IFQ Program			
1	-	-	-	-
2	-	-	-	10
3	7	5	7	
	Vessels that Did Not Cross Over			
1	33	35	36	36
2	26	22	18	19
3	19	23	22[a/]	18

a/ Fewer than three vessels were registered to four tier permits over the course of the year and were included in this category.

Fewer than three vessels that participated in both the primary fishery and the IFQ fishery between 2016 and 2019 did not stack their maximum (three LEFG tier permits; Table 14), and the majority had at least one Tier 1 permit . Fewer than three vessels had three Tier 1 permits stacked in a given year (depending on the year), while others had various combinations of three Tier 1, 2, and 3 permits. On the other hand, there have been 18 to 23 vessels that stacked three LEFG tier permits and did not cross over into the IFQ program (Table 14). In 2019, there were between eight and 12 vessels with at least one Tier 1 permit that did not crossover into the IFQ program (Table 15). For 2016 to 2019, fewer than three vessels with three stacked Tier 1 permits that in one year did not participate in the IFQ fishery.

Table 15. Range of number of vessels from 2016-2019 that crossed over into the IFQ fishery compared to those that only participated in the primary fishery by the number of stacked tier permits.

Number of			2016-2019 Annual Range in Vessels	
Tier 1 Permits	**Tier 2 Permits**	**Tier 3 Permits**	**Crossover[a/]**	**Primary Only**
2 or 3	0-1	0-1	3-5	3-6
1	1-2	0-1	2-3	2-3
	0	0-1		3
0	2-3	0-1	<3	4-6
	1	2		5-7
		1		3-4
		0		6-7
	0	3		5-6
		2		10-16
		1		25-29

Outside of the trawl and fixed gear sectors, the largest West Coast fishery from which vessels already crossover to the IFQ gear-switched sablefish fishery is the Dungeness crab fishery. Between 31 and 38 vessels participate in the crab fishery and participate in the IFQ fishery (Table 16). The cross-over rate from the crab fishery to trawling in the IFQ fishery (an average of five percent) is between the cross-over rates from Dungeness crab to the fixed gear fisheries (IFQ, LE or OA; 21.1 percent) and from Dungeness crab to gear switching in the IFQ fisheries (two percent). At the same time, approximately a quarter of trawl vessels that participate in the IFQ fishery (an average of 98) also participate in the Dungeness crab fishery, a lesser amount of cross-over from trawl to Dungeness crab than from gear switching to Dungeness crab (an average of 15 vessels gear switched, Table 13, of which an average of 10 crossed over into the crab fishery, Table 16). The small proportion of crab vessels that gear switch (two percent) compared to the large number of gear-switching vessels that crab (about 66 percent in recent years) might indicate that a decline in opportunities in the crab fishery could lead to more gear switching.

Table 16. Crossover between the Dungeness crab fishery and fisheries that harvest sablefish north, 2011-2019.

Season	Total Crab Vessels	Vessels that Harvested Only Dungeness Crab[a/]	Vessels that Harvested Dungeness Crab and...			
			Landed IFQ Sablefish	Gear-Switched Sablefish North	Landed Sablefish North with Trawl Gear	Landed Sablefish North with Fixed Gear[b/]
2010-2011	523	490	33	9	24	134
2011-2012	486	448	38	12	26	124
2012-2013	481	447	34	7	27	89
2013-2014	478	444	34	8	26	82
2014-2015	479	447	32	8	24	88
2015-2016	468	437	31	11	20	98
2016-2017	491	455	36	10	26	111
2017-2018	492	459	33	11	22	107
2018-2019	500	467	33	10	23	98

a/ Harvested Dungeness crab but not northern sablefish in the limited entry or open access sectors.
b/ Includes IFQ gear switching, LEFG and open access fisheries.

6.5 Trends in Northern Sablefish QS Acquisition by Gear-Switching Vessels

Summary: Regular gear-switching participants (participated in four of eight years from 2011-2018) have acquired an additional 3.0 percentage points of QS since the start of QS trading in 2014, bringing their total holdings to 11.5 percent as of the end of 2018. Gear switchers are probably acquiring about 20 percent of the trawl QP through leasing each year. Entities that have had some involvement in gear switching in at least one year (have owned a vessel that gear switched or leased a trawl permit to a gear-switching vessel on at least one occasion from 2011 through 2018) own about 32 percent of the northern sablefish QS.

The annual average amount of northern sablefish QS owned by vessel owners engaged in gear switching is about 10 percent (Table 17). 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. The amounts shown in Table 17 are affected by which vessels participate in a given year and acquisition of quota over time by individual owners. Just as the number of participants has stabilized in recent years, so too has the amount of northern sablefish QS owned by the vessels that gear switch in a particular year.

As of the end of 2018, 12.2 percent of the northern sablefish QS was owned by the nine businesses with vessels that gear switched in more than one year during the program.[16,17] Of these entities, three acquired additional northern sablefish QS after trading started in 2014 (acquiring a total of 3.0 percent) and one had divested itself of QS. Two additional QS owners that also owned gear-switching vessels divested themselves of quota, but those two owners gear switched in only one year. As of end of 2018, the northern sablefish QS net divestments by those three entities was 3.2 percent.

Because 10 percent of the QS is set aside for the Adaptive Management Program, the QS owned by gear switchers represent about 11 percent more QP than the nominal QS percentage. Thus, 12.2 percent of QS owned by entities owning gear switching vessels, translates to about 13.6 percent in terms of the QP equivalent. Given that for 2018 the total amount of gear switching was 32.5 percent of the allocation, gear switchers acquire roughly 20 percent of the trawl allocation through the lease of QP gear each year (32.5 percent (amount taken by gear switchers)—13.6 percent owned by gear switchers = 18.9 percent leased).

The group of those vessel and permit owners with at least some passing involvement in gear switching own about 32 percent of the northern QS (Table 18). This includes entities that have owned a vessel that gear switched on at least one occasion or leased a trawl permit to a gear-switching vessel on at least one occasion from 2011 through 2018. Note that the group of QS owners included in this table does not vary from year to year, therefore for the first years of the program, before QS trading started, the value does not change from year to year.

Table 17. Amount of northern sablefish QS owned by owners of vessels active in gear switching at the end of the indicated year. Source: WCR IFQ Data and PacFIN.

Year	2011	2012	2013	2014	2015	2016	2017	2018	Average
Northern Sablefish QS	4.4%	13.7%	7.7%	9.4%	10.8%	12.0%	12.1%	12.9%	10.4%

Internal reference: Permits_Public_Jan 25 2019R:QS_Ownership_Update

Table 18. End of year amount of northern sablefish QS owned by owners of vessels gear switching in at least one year during the period or that leased a permit to a gear-switching vessel in at least one year during the period (2011-2018). Source: WCR IFQ Accounts Data and PacFIN.

Year	2011	2012	2013	2014	2015	2016	2017	2018	Average
Northern Sablefish QS	32.4%	32.4%	32.4%	33.4%	31.0%	30.7%	30.8%	31.2%	31.8%

Internal reference: Permits_Public_Jan 25 2019R:QS_Ownership_Update

[16] These nine also comprise the group of all entities that gear switched in at least two years of the last four years, 2015-2018.

[17] Common ownership between the QS account was determined based on an investigation of publicly available records, including names and addresses, as well as exploration of public corporate records where the name and address comparison indicated the possibility of a linkage.

7.0 Qualifiers and non-Qualifiers: Dependence, Historic, and Recent Participation

This section is intended to provide the Council with the preliminary results on the number of entities that would qualify for gear-switching privileges based on the range of alternatives recommended by the SaMTAAC for consideration and, for those entities, their past levels of participation. Additionally, there is a preliminary impact analysis on those entities that would not qualify for gear-switching privileges. A comprehensive analysis will be developed if the Council decides to move a set of alternatives ahead for analysis.

7.1 Who Receives the Gear-Switching Privilege: The Permit or Vessel Owner

One of the central decisions for any allocation based on historic participation is determination of the entity for which the history will be evaluated in making the allocation. The history of the Council's deliberations for other programs and SaMTAAC rationale for considering vessel or permit history is provided in Section B.2.1 of the final SaMTAAC report (May 2020). Alternatives 1 and 2 would allocate gear-switching privileges based on gear-switching history of the permit, while Alternative 3 would allocate based on the vessel. Where the permit and vessel remain continuously together under the common ownership (including being transferred together to new owners), there would not be an effective difference between the two with respect to which received the allocation. Where a permit is leased or where the permit and vessel are transferred separately from each other, different individuals will benefit from the initial allocations depending on whether the allocation is given to the permit owner or vessel owner. This section provides information related to these issues.

Gear-switching vessels tend to rely more heavily on leasing permits than vessels using trawl gear. Between 2011 and 2019, roughly half of gear-switching vessels (including those that both gear switched and trawled in the same year) leased their trawl permits (Table 19). Comparatively, trawl vessels that landed sablefish north had an average lease rate of 6.4 percent. For trawlers, the last four years had the highest proportion of leased permits at an average of 10.6 percent, ranging from 7 percent in 2016 to 13 percent in 2017 and 2019.

Table 19. Percentage[a/] of gear-switched [b/] and trawl vessels by year that used leased permits versus those that owned permits.

Gear	Permit Used	2011	2012	2013	2014	2015	2016	2017	2018	2019
Gear Switched	Leased	53%	55%	36%	53%	43%	38%	38%	47%	67%
	Owned	47%	50%	64%	47%	57%	63%	63%	53%	40%
Trawl	Leased	4%	1%	3%	3%	5%	7%	13%	9%	13%
	Owned	98%	99%	98%	97%	97%	97%	91%	91%	87%

a/ Values can add up to greater than 100% based on vessels using more than one permit type in a year and rounding.
b/ Vessels that used both trawl and fixed gear in a single year are in the "gear switched" category.

There have been 40 distinct vessels and permits associated with making landings of gear-switched sablefish north between 2011 and 2019. For most of these vessels, only one LE permit was used to gear switch during this nine-year period (Table 20). Eight of the 40 vessels used more than one permit to harvest sablefish north with fixed gear. In fewer than three instances, vessels used multiple LE permits within a single year.

Table 20. Number of vessels by number of LE trawl permits they have been registered to while using fixed gear in the IFQ fishery, 2011-2019

Number of Vessels Using Only 1 Permit	32
Number of Vessels Using 2 Permits	5
Number of Vessels Using 3 Permits	3

While the table above shows that 32 vessels used only one permit, in a few cases, a single permit was used by more than one vessel. Of the trawl endorsed permits used for gear switching since 2011, 30 have been used on only one vessel while ten have been used on more than one (Table 21). This implies that two of the 32 vessels that used only one permit shared those permits with at least one other vessel.

Table 21. Number of LE Permits by number of vessels they have been used with to land fixed gear sablefish north in the IFQ fishery, 2011-2019

Number of Permits Registered to only 1 Vessel	30
Number of Permits Registered to 2-3 Vessels	10

Overall, there have been 51 distinct combinations of vessels and permits landing sablefish north with fixed gear from 2011-2019. While there have been four vessels that have landed sablefish north with fixed gear in all nine years, no permits were used for gear switching in all nine years. Thus, none of the four vessels maintained the same permit for the entire period (2011-2019; Table 22). There are six vessel/permit combinations that were used for seven or eight years from 2011-2019. Of those six vessels and permits making up those combinations, fewer than three vessels have landed sablefish north in all nine years.

Table 22. Number of distinct permit-vessel combinations and duration of use in gear-switched landings, 2011-2019.

	Number of Years								
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Permit-Vessel Combination	23	10	5	3		4	6		0

7.2 Alternative 1

Section Summary: Alternative 1 would create gear specific QPs, and each QS account would receive a specific portion of trawl-only and unrestricted (i.e. status quo) QPs. Under one option, the Council could choose to allow permit owners with a history of gear-switched sablefish landings to "opt out" a QS account which would then receive all of its QPs as unrestricted. In summary:

- *Based on the amounts of QS in existing QS accounts, the average vessel in 2018-2019 with some gear-switched landings would not be able to cover its average landings from a single QS account under either gear-specific QP option in terms of initial QP distribution (without leasing QP, the inclusion of a mid-year conversion of all QP to unrestricted, or the inclusion of a QS account opt-out option).*
- *Between 26 and 38 permits would qualify for an opt-out under the current options, with 21 qualifying under all four options.*

Non-Opt-Out QS Accounts: Amounts of Unrestricted Gear QP

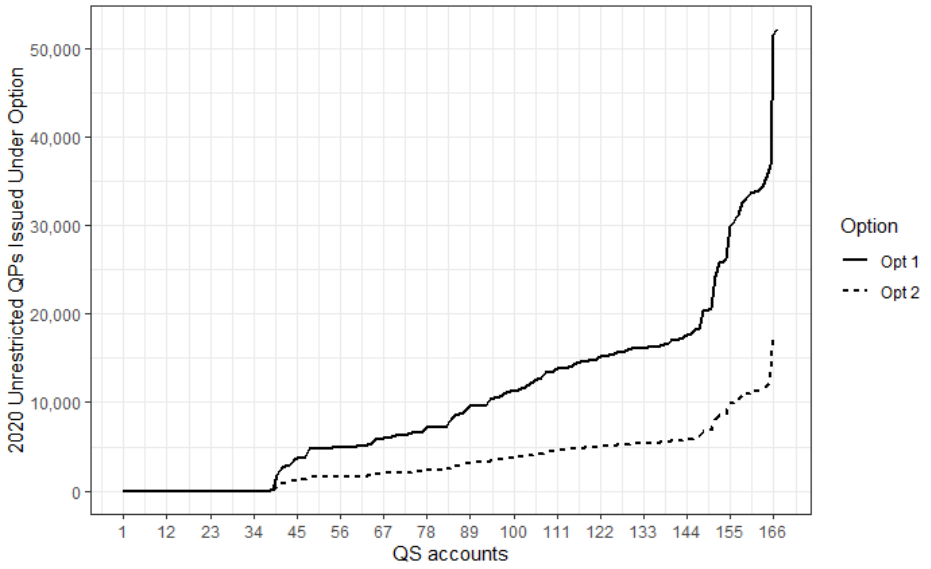
Alternative 1 would create gear specific QPs. Each QS account would receive a specific percentage of QPs as trawl-only, with the remainder as unrestricted (the proportions determined based on the options selected, as show in Table 23). If the Council chooses, there would be an option for qualified permit holders with a history of gear switching to "opt-out" a QS account which could then receive all of its QPs as unrestricted. This section focuses on the amounts of unrestricted gear QP that would be issued to QS accounts that are not opted out (either because an opt-out provision was not included, the account did not qualify, or the qualifying entity chose to not opt-out), assuming the amounts of QS currently in accounts and applying the 2020 QP allocations. The SaMTAAC recommendations specify that under Alternative 1 if Gear Specific QP Percentage Option 2 (90 percent trawl/10 any gear) is selected the opt-out option should also be provided, because 10 percent was not viewed as providing an adequate amount for gear switching. If Option 1 is selected (70 percent trawl/30 any gear), then the SaMTAAC recommended alternative specifies a choice on whether or not the opt-out option would be included as part of the alternative.

Table 23. Alternative 1 gear specific percentage options and if an opt-out option is provided.

	Percentage of QP Issued	
Gear Specific QP Percentage Options	**Trawl Percentage**	**Any Gear**
Option 1	70	30
Option 2 ***(Option 2 is only available if the opt-out provision is selected)***	90	10

Using current 2020 QS ownership information, Figure 47 below shows the distribution of the amount of unrestricted QPs each QS account would receive under each Gear Specific QP Percentage Option, assuming no opt-out (i.e. all QS accounts receive their QPs at the designated proportions). Thirty-eight QS accounts, or approximately 25 percent of QS owners, own no sablefish north of 36° N. lat. QS as of February 18, 2020. Under Option 1, approximately two-thirds of the QS accounts (108) would receive more than 5,000 unrestricted QP (more than approximately 0.1 percent of the QP). Under Option 2, only 46 QS accounts (about 25 percent of all accounts) would receive more than 5,000 unrestricted QP. Thus, relative to Option 1, Option 2 would potentially require harvesters interested in gear switching larger amounts to engage in

contracts drawing unrestricted QP from a greater number of QS accounts in order to accumulate an adequate amount of unrestricted QP. This is one reason the SaMTAAC recommended that the 90/10 option not be selected unless there is also an opt-out provision. However, even under Option 1, the most unrestricted QP going to any single account would be just over 52,000 lbs (under Option 2 the most would be about 17,000 lbs, Figure 47). These maximum values reflect close to the maximum amounts of northern sablefish QS that can be in an account (given the 3 percent control limit) applied to the 2020 trawl allocations. Given that for 2018-2019 the average vessel with some fixed gear IFQ sablefish landings caught 113,870 lbs, in the absence of opt-out accounts most vessels would likely need to acquire unrestricted QP from multiple QS accounts to maintain their past gear-switching levels—based on the 2020 allocation level and assuming there is not a mid-year conversion of all trawl-only QP to unrestricted. Additionally, given that in recent years gear switchers have taken more than 30 percent of the trawl QP, unless an opt-out or a mid-year conversion of trawl-only QP to unrestricted QP,[18] neither of the Gear Specific QP Percentage Options are likely to allow gear switching to continue at recent levels.



Note: QS accounts are ordered on the x-axis from least (left) to most (right) sablefish north QS owned as of February 18, 2020.

Figure 47. Amount of 2020 QPs that would be issued under the Alternative 1 Gear Specific QP Percentage Options assuming no opt-out is provided.

Opt-out Qualifier Analysis

If the opt-out provision is included under this alternative, qualification for the opt-out would need to be determined. Table 24 shows the four options for permit qualification, the number of permits that would qualify or not qualify under each option and across all options, and the resulting

[18] Options are provided that would allow mid-year conversions to occur on August 1 or September 1.

percentage of the 38 permits with some gear-switching history from 2011-2018. As shown, between 26 and 38 permits would qualify under the different options with the same 22 permits qualifying under all four options. Table 24 also provides the percent of the 2020 trawl allocation harvested by qualifying or non-qualifying permits based on the average poundage of catch for the qualified permits from 2011-2018. Note that this is not a projection, but rather a metric to provide a sense of their historical participation relative to the total amount of gear switching, which has averaged 34.2 percent of the allocation from 2016-2019.

Of the 38 permits with some gear-switched landings from 2011-2018, there are two that would not qualify under Sub-Options B, C, or D, as they had less than 10,000 total fixed gear sablefish north landings over the entire 2011-2018 period. While Sub-Option A qualify all 38 permits as it would only require a single landing, beyond the time series, there have been two additional permits enter the gear-switching fishery in 2019 which would not qualify. Sub-Options B and C have the same minimum landings requirement, but the qualification period is different. There are 23 permits that would qualify under Sub-Option B or C with 10,000 lbs landed either between 2011 and the control date or between 2014-2018. Sub-Option C, which focuses solely on the more recent 2014-2018 period in which total participation has stabilized, would qualify the least number of permits and therefore may have the most impact in terms of non-qualifiers (13 total non-qualifying permits). Three of the Sub-Option C non-qualifiers would not qualify under any option except A, while the other ten Sub-Option C non-qualifying permits would qualify under either Sub-Option B or D. With respect to those ten, after the first three years of the program five appear to have exited the IFQ fishery (the permits became latent) while the other five appear to have tested out fixed gear in a single year early in the program and then become trawl-only for some or all of the rest of the time series. Therefore, for permits screened out by Sub-Option C, the actual impacts of not being able to opt-out may be low, since their fishing operations have either changed in that the permit became latent or they switched to fishing only trawl gear. There are three permits that would not qualify under Sub-Option B but would qualify under the latter period provided by Sub-Option C. These permits accumulated their first 10,000 lbs/year gear-switching after the control date in 2017 or 2018. While they could be considered active participants, there is consideration of the notice of the control date and understanding that activity after that point might not be used in determining privileges. Finally, Sub-Option D increases the landings levels by 20,000 lbs compared to Sub-Options B and C. Two permits that would qualify under either Sub-Options B or C would not qualify under Sub-Option D as they did not have 30,000 lbs in either of the Sub-Option D qualifying periods.

A comparison of the total permits qualifying or not qualifying under each option, as shown in Table 25, does not fully reveal total number of permits that would become non-qualifiers in moving from one qualifying option to another. Table 25 below provides two-way comparisons of pairs of qualification criteria options, including the difference in total number of permits and the number qualifying under the first option listed and not the second (and vice versa). It also shows total number of permits that would be affected by this decision, or in other words, how many permits would get the opt-out opportunity under only one of the two options. For example, the last row shows the comparison between Sub-Options C and D. There is an eight-permit difference in the number of qualifiers between these sub-options. Only two permits would qualify under Sub-Option C and not Sub-Option D; however, ten permits would qualify under Sub-Option D and not

Sub-Option C. Although the landings requirement is higher under Sub-Option D (30,000 lbs compared to 10,000 lbs under C), the Sub-Option C qualifying period would not include earlier years (2011-2013) and therefore eliminate more qualifiers. Overall, there would be 12 permits potentially affected by the decision (and 24 permits that would be qualified under either option).

Table 24. (UPDATED) Number of trawl permits that would qualify or non-qualify under Alternative 1 sub-options, percentage of permits of those with gear switching history (2011-2018), and percent of 2020 allocation caught by permits based on average catch from 2011-2018 (all years).

		Qualifying Permits				Non-Qualifying Permits			
Sub-Option	**Qualification**	**Number of Permits**	**Number Qualifying Under All Options**	**Percentage of Permits with Gear-Switching History**	**% of 2020 Allocation based on Average Catch 2011-2018[b/]**	**Number of Permits**	**Number Not Qualifying Under All Options Except A**	**Percentage of Permits with Gear-Switching History (2011-2018)**	**% of 2020 Allocation based on Average Catch 2011-2018 [b/]**
A	Between 1/1/11 and 12/31/18, one fixed gear sablefish landing	38	22	100%	27.16%	0	2	0%	0%
B	Between 1/1/11-9/15/17, a minimum of 10,000 lbs of fixed gear sablefish landings	33[a/]		86.8%	26.87%	5		13.2%	0.30%
C	Between 1/1/14-12/31/18, a minimum of 10,000 lbs of fixed gear sablefish landings	26 [a/]		68.4%	24.19%	12		31.6%	3.08%
D	Between 1/1/11-9/15/17 or between 1/1/14-12/31/18, a minimum of 30,000 lbs of fixed gear sablefish landings	34 (21 under either period, 10 only under the early Period and 3 only under the later period)		89.5%	27.06%	4		10.5%	0.10%

a/ 23 permits would qualify under both Sub-Option B and C

b/ Note that this is not a projection, but rather a metric to provide a sense of their historical participation relative to the total amount of gear switching, which has averaged 34.2 percent of the allocation from 2016-2019.

Table 25. Comparison of number of permits qualifying between two Sub-Options under Alternative 1.

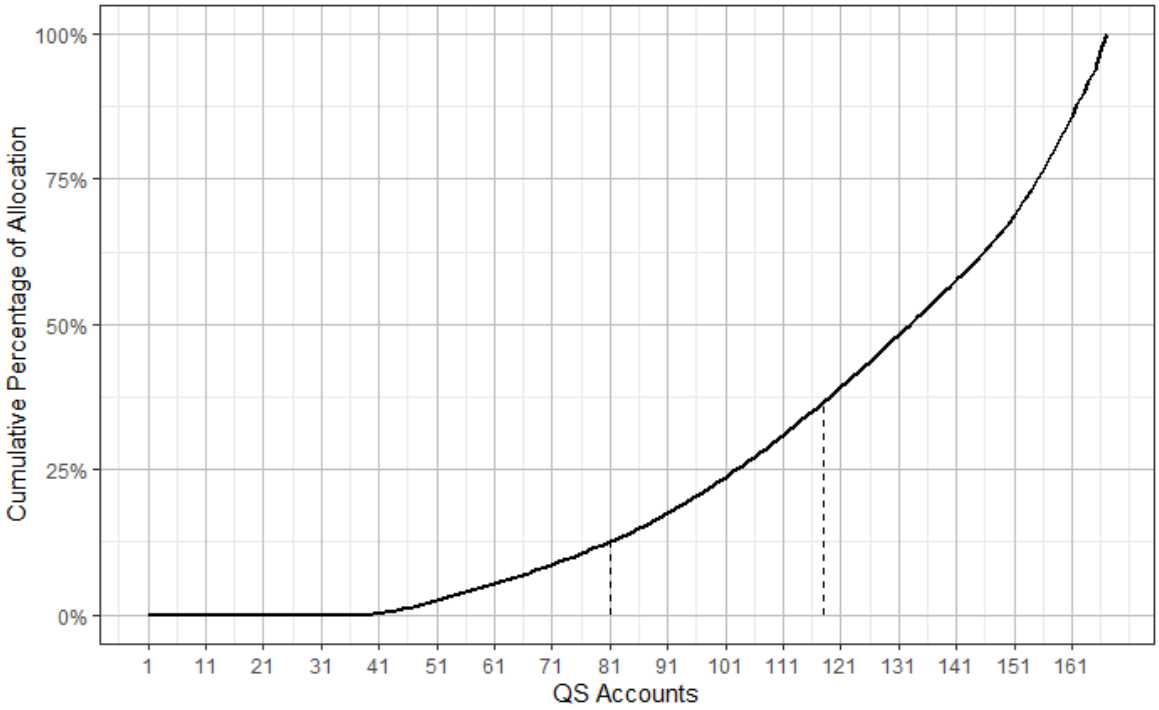
Comparison of Sub-Options	Difference in Total Number of Permits Qualifying	Number of Permits That Affected by Decision	Number Qualifying under First Option and Not Second Option	Number Qualifying under Second Option Not First Option	Number Qualifying Under both Sub-Options
A vs. B	5	5	5	0	33
A vs. C	12	12	12	0	26
A vs. D	4	4	4	0	34
B vs. C	7	13	10	3	23
B vs. D	1	3	1	2	32
C vs. D	8	12	2	10	24

Opt-out Accounts: Amounts of Unrestricted QPs

Under this alternative's opt-out provision, all permit owners that qualify under one of the sub-options described above would select a QS account to be designated as opted out. Qualifiers could select their own account (either one that already has QS in it or a newly created account) or an account that is not under their ownership. Many gear switchers lease at least a portion of the QP they gear switch and so, even with an opt-out, may not have enough QS in their own account to support their past levels of gear switching. However, once an opt-out account is designated, additional northern sablefish QS can be added to it, up to the three percent control cap, and all the QS added will also have opt-out status. If a qualified permit owner does not opt-out their own account (or does not own or create an account), it is likely that they would select a QS account that they have a business relationship with that could provide the necessary QPs for fishing. To maintain past gear-switching levels and fulfill their business strategy (particularly levels that are greater than three percent), permits (and the corresponding vessels) with their own opt-out accounts may also need to find additional QPs from non-opt-out QS accounts that would receive their QPs as unrestricted, 10 or 30 percent depending on the option.

While it is impossible to determine which QS account a permit holder without a QS account may choose (or if they would create a QS account instead), Figure 48 below shows the distribution of the percentage of allocation that each QS account at the start of 2020 received. As described above, about 25 percent of all QS accounts have no sablefish north quota. Of the remaining QS accounts, the corresponding percentage of allocation they would receive would range from 0.01 to 2.99 percent in terms of QP (i.e., after taking into account the AMP distributions). The top 38 QS

accounts own approximately 53.6 percent of the quota. It seems unlikely that all of the top 38 accounts would be designated for opt-out, particularly given the opportunity to add more QS to the account and receive the associated QP as unrestricted. As an example, to give a further feel for possible initial outcomes, one can pick 38 permits from the middle of the range (say QS accounts 81 to 118 as shown by the dashed lines in the figure below) and see that the permits in that range accounted for around 24.5 percent of the allocation.



Note: QS accounts are ordered on the x-axis from least (left) to most (right) sablefish north QS owned as of February 18, 2020.

Figure 48. Cumulative percentage of sablefish north allocation issued across QS accounts.

If a permit was unable to qualify for an opt-out, in order to gear switch, they would be reliant on the QPs issued to their QS account as unrestricted (if they have a QS account), or reliant on other non-opt accounts and opt-out accounts willing to sell QP. Or, if a mid-year conversion date is included, then any sablefish QPs could be used for gear switching later in the year.

7.3 Alternative 2

Section summary: Alternative 2 would establish a gear-switching endorsement for trawl permits that would have separate limits for endorsed and non-endorsed permits. Overall,

- *Between 10 and 15 permits would qualify under the current options, with 10 permits qualifying under all options.*
- *Under Endorsement Limit Option 1 (average of landings in active gear-switching years as percentage of trawl allocation), three of the 10-15 permits would receive a limit of above three percent.*

- *With respect to Endorsement Limit Option 2 (4.5 percent of the trawl allocation, i.e., the vessel annual vessel limit), a permit would not be constrained to fish below its past gear-switching levels unless it was sharing a permit with another gear-switching vessel (such that the other vessel used part of the limit). Only six permits that would qualify under all options have caught more than four percent of the trawl allocation in at least one year between 2011-2018.*
- *For the permits with some gear-switching history that would not qualify for an endorsement under any option, approximately two-thirds of those permits' average active gear-switching catch would exceed 0.5 percent limit proposed for such.*

Alternative 2 would establish a gear-switching endorsement for qualified limited entry trawl permits. Endorsed permits would provide a sablefish north gear-switching limit for the vessel(s)[19] attached to the permit. Non-endorsed permits would have a smaller gear-switching limit (0.5 percent).

Permit Endorsement Qualifier Analysis

Between 10 and 15 permits would qualify under the different options with the same 10 permits qualifying under all options (Table 26). For historical reference (but not as a projection), these qualifiers gear-switched amounts that would be equivalent to between 17 to just over 19 percent the 2020 allocation. Of those permits with some history of gear switching, between 25 and 29 would not qualify for an endorsement, depending on the qualifying option. As with Alternative 1, there are two permits that had gear-switching history after 2018 that would not be awarded an endorsement or included in the population of gear-switching permits in the table.

A comparison of the total permits qualifying under each option, as shown in Table 26, does not fully reveal total number of permits that would become non-qualifiers in moving from one qualifying option to another. Table 27 below provides a comparison of the qualification criteria, including the difference in total number of permits and the number qualifying under the first option listed and not the second (and vice versa). It also shows total number of permits that would be affected by this decision, or in other words, how many permits would get the opt-out opportunity under only one of the two options. For example, the last row shows the comparison between Options 2 and 3. There is a two-permit difference in the number of qualifiers between these sub-options. Only one permit would qualify under Option 2 and not Option 3; however, three permits would qualify under Option 3 and not Option 2. Thus, overall, there would be four permits potentially affected by the decision between these two options (and 10 permits that would be qualified under either option).

[19] More than one vessel might fish the same permit during the year but the permit limit would apply across all vessels, i.e. would have to be shared between the vessels.

Table 26. (UPDATED) Number of limited entry trawl permits that would qualify or not qualify under each qualification option for Alternative 2, the corresponding percentage of permits with gear-switching landing history from 2011-2018, and percent of the 2020 allocation based on average catch (2011-2018; all years).

		Qualifying Permits				Non-Qualifying Permits			
Option	**Qualification Criteria**	**Number of Permits**	**Number Qualifying Under All Options**	**% of Permits with Gear-Switching History**	**% 2020 Allocation based on Average Catch 2011-2018**	**Number of Permits**	**Number Not Qualifying Under All Options**	**% of Permits with Gear-Switching History (2011-2018)**	**% 2020 Allocation based on Average Catch 2011-2018**
1	10,000 lbs per year in at least three years between January 1, 2011 and September 15, 2017	15	10	39%	19.22%	23	22	61%	7.95%
	… and participated in at least one year between 2016 through 2018	14		36%	18.42%	24		63%	8.74%
2	30,000 lbs per year in at least three years between January 1, 2011 and September 15, 2017	11		28%	17.85%	27		71%	9.31%
	… and participated in at least one year between 2016 through 2018	10		26%	17.05%	28		74%	10.11%
3	30,000 lbs per year in at least three years between January 1, 2011 and September 15, 2017 and participated in at least one year between 2016 through 2018 or caught 90,000 lbs of north sablefish cumulatively across three years from 2014 to 2018, with at least one gear-switched landing in each of those three years.	13		33%	18.78%	25		66%	8.38%

Table 27. (UPDATED) Comparison of the number of permits qualifying under Alternative 2 Qualification Options.

Comparison of Options	Difference in Total Number of Permits Qualifying	Number of Permits That Affected by Decision	Number Qualifying under First Option and Not Second Option	Number Qualifying under Second Option Not First Option	Number Qualifying Under both Option
1 vs. 2	4	4	4	0	11
1 vs. 3	2	6	4	2	11
2 vs. 3	2	4	1	3	10

Endorsement Limit Analysis

For each of the permits that would qualify, there are two endorsement limit options under consideration: Endorsement Limit Option 1, which would grant each qualifying permit the average percent of the sablefish north trawl allocation caught with fixed gear for years fished through the control date (i.e., does not include years with zero activity in gear switching) and Endorsement Limit Option 2, which would be 4.5 percent of the trawl allocation (i.e. same as the current vessel limit). Since Endorsement Limit Option 1 is individualized to each permit based on an average, vessels might not be able to maintain their previous gear-switching levels since their average will be lowered by the elimination of the opportunity to harvest at levels comparable to their historic above average years. Since Endorsement Limit Option 2 is the maximum amount of QP a vessel is able to land, any vessel fishing under an endorsed permit should be able to gear switch in amounts equal to or above its gear-switching history, unless that permit is being shared with another vessel (if such sharing is allowed under the final alternative).

Figure 49 shows the number of permits that would qualify under each Qualification Option by the approximate size of the gear-switching limit that each would be granted under Endorsement Limit Option 1 (grouped to preserve confidentiality). All five Qualification Options (three main options with two recent participation sub-options) would have three permits receiving more than a three percent gear-switching limit. Option 1 (with and without the sub-option) would qualify the greatest number of permits at an endorsement limit of less than 1.5 percent.

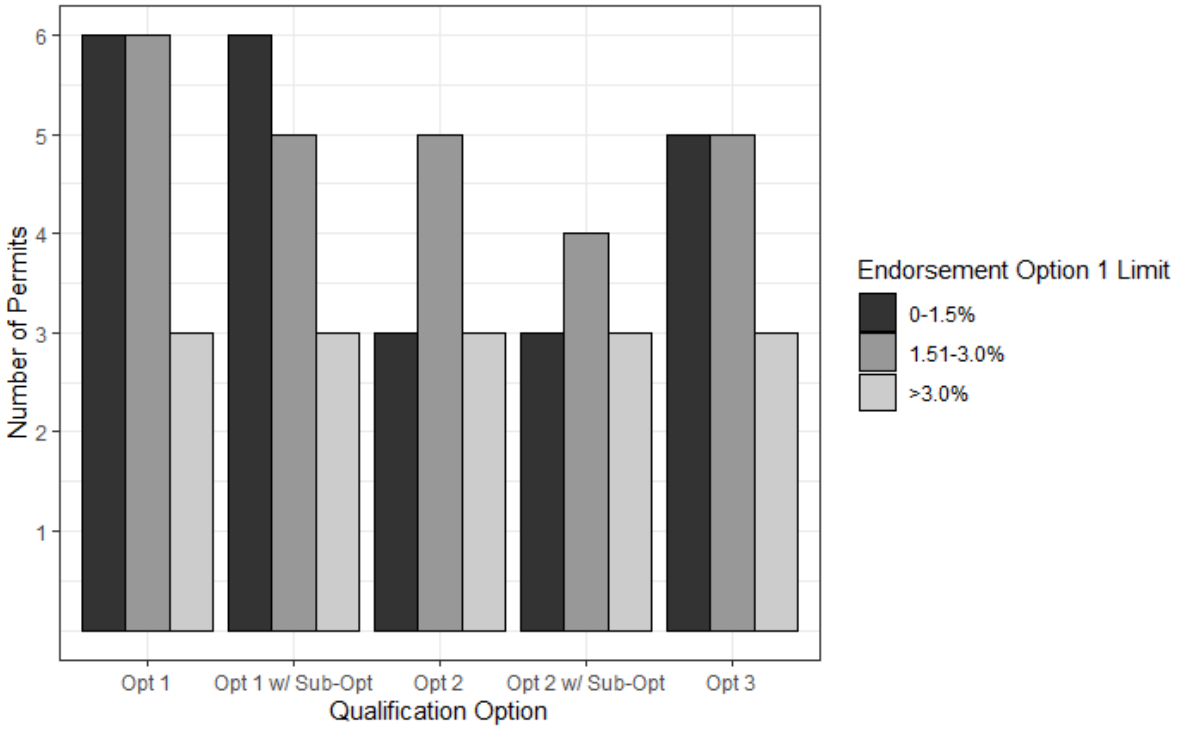


Figure 49. Number of permits by Qualification Option and the range of gear-switching limits that would be granted under Endorsement Option 1 (average of active gear-switching years)

Looking historically, Table 28 below hindcasts the number of permit/year combinations, by qualifying option (and sub-option), for which permits would have exceeded or been within the Endorsement Limit Option 1 limit for each permit, compared to the total number of permit/year combinations that the endorsed permits have fished. It appears that some very low permit/year combinations pull down the averages on which the endorsement limits would be based, such that the median trips are above the average on which the Option 1 limits would be based and there are more permit/year combinations that would be constrained by the Option 1 limit than accommodated by it. Between 52 and 59 percent of the permit/year combinations would not be fully accommodated and, generally, the more vessels that qualify the greater the proportion of permit/year combinations that would not be accommodated by Option 1 limit.

Table 28. Hindcast of the number of permit/year combinations that would be above Endorsement Limit Option 1 (average gear-switching amount for years fished), (2011-2018).

Option	Qualification	Total Qualifiers	Number of Permit/Year Combinations from 2011-2018…		
			Total (2011-2018)	Within the Endorsement Limit Option 1 Gear-Switching Limit	Exceeding the Option 1 limit per vessel
1	10,000 lbs per year in at least three years between January 1, 2011 and September 15, 2017	15	120	49	71
	… and participated in at least one year between 2016 through 2018	14	112	47	65
2	30,000 lbs per year in at least three years between January 1, 2011 and September 15, 2017	11	88	40	48
	… and participated in at least one year between 2016 through 2018	10	80	38	42
3	30,000 lbs per year in at least three years between January 1, 2011 and September 15, 2017 and participated in at least one year between 2016 through 2018 or caught 90,000 lbs of north sablefish cumulatively across three years from 2014 to 2018, with at least one gear-switched landing in each of those three years.	13	104	43	61

While Endorsement Limit Option 2 would allow a permit to be used to catch up to 4.5 percent of the trawl allocation (the same as the current vessel limit), there have actually been few permits historically that have been used to catch more than four percent of the trawl allocation in any year with trawl or fixed gear. Overall, there have been 15 instances from seven permits that have caught more than four percent of the trawl allocation between 2011-2018. Of these seven permits, all but one would qualify for an endorsement under all four qualification options shown in Table 26. The permit that would not qualify has been mostly latent from 2011-2019. Figure 50 below shows a histogram of the number of permit/year combinations of those permits that would qualify under at least one of the options above (total of 17 permits) by percentage of the trawl allocation caught.

Based on these trends, while there are some permits that would qualify for an endorsement that may catch close to 4.5 percent, it is likely that each permit would catch less than the full 4.5 percent of the trawl allocation proposed under Endorsement Limit Option 2. However, as the gear-switching limits apply to the endorsed permits (rather than the vessel) and if permits can be transferred between vessels, some vessels that want to do more gear switching than can be accommodated by the limit for non-endorsed vessels (0.5 percent) might be able to lease an endorsed permit from a vessel that is not fully utilizing it. Whether a vessel would be able to expand its gear-switching opportunity by sequentially fishing under multiple gear-switching endorsed permits is a question the SaMTAAC left open for further deliberation. Related to that determination is whether a single endorsed permit might be fished sequentially on several vessels.

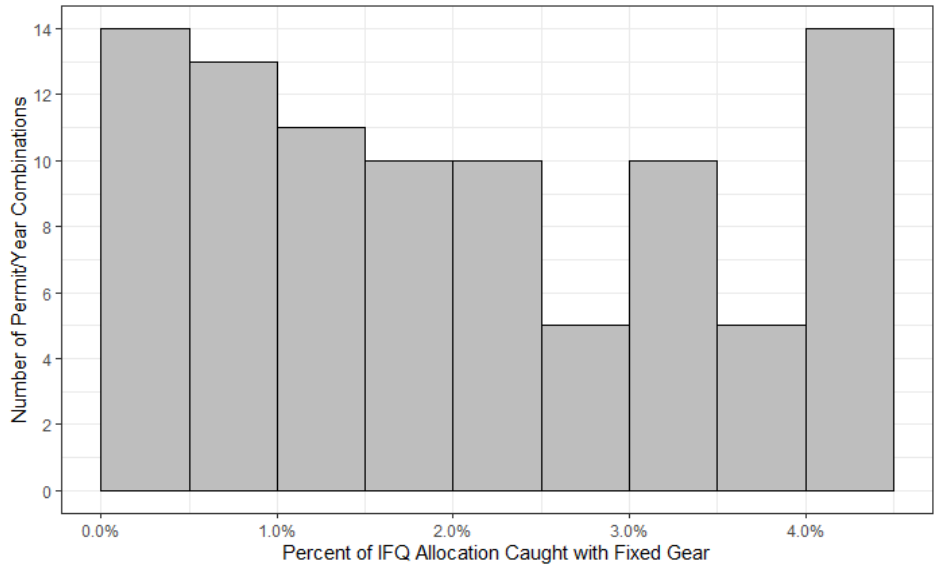


Figure 50. For permits that would qualify under any options (or sub-option), number of permit/year combinations by the percent of sablefish north IFQ allocation caught with fixed gear, 2011-2018.

For those permits that would not qualify for an endorsement, each would have a gear-switching limit of 0.5 percent of the trawl allocation. Table 29 also shows the number of permits whose

average active catch (i.e. does not include years without activity) would be above or below the 0.5 percent limit of the 2020 allocation (29,066 lbs). As shown, on average among all the Options less than 25 percent of permits would have been within the 0.5 percent limit.

Table 29. (UPDATED) Number of permits whose average catch in active gear-switching years would be within the 0.5 percent proposed limit (29,066 lbs based on the 2020 allocation) for non-endorsed permits.

Option	Qualification	Number of Permits whose Active Average Catch is…	
		Within 0.5 Percent Limit	Exceeds 0.5 percent limit
1	10,000 lbs per year in at least three years between January 1, 2011 and September 15, 2017	4	19
	… and participated in at least one year between 2016 through 2018	4	20
2	30,000 lbs per year in at least three years between January 1, 2011 and September 15, 2017	7	20
	… and participated in at least one year between 2016 through 2018	7	21
3	30,000 lbs per year in at least three years between January 1, 2011 and September 15, 2017 and participated in at least one year between 2016 through 2018 or caught 90,000 lbs of north sablefish cumulatively across three years from 2014 to 2018, with at least one gear-switched landing in each of those three years.	6	19

7.4 Alternative 3

Section Summary: Alternative 3 would allow gear-switched landings of sablefish north by vessels that qualify for an active trawler designation or through an exemption to the requirement for such a designation based on a permit's gear-switching history and attached to an LE trawl permit. Vessels fishing under an exempted permit could gear switch the greater of 0.6 percent of the trawl allocation or the amount of QS owned as of and since the control date. The following summarizes a few highlights from this section:

- *An average of 86 percent of vessels using trawl gear to make IFQ landings north of 36° N. lat. would have received an active trawler designation in any one year from 2011-2019.*
- *Between 11 and 12 vessels have gear-switching history that would qualify them to designate a permit that would receive the exemption.*
- *Of the vessel owners receiving an exemption for a permit, four would meet the QS account ownership criteria and so be able to gear switch their own northern sablefish QS.*
- *Based on the proposed limits, the allowed gear-switching amount for vessels exempted from the active trawl requirement would likely be between 8.85 and 9.45 percent depending on the option selected.*
- *Of those vessels with some gear-switching history that would not receive an exemption, few have historically trawled and so would not likely qualify as an active trawler, unless they shifted more strongly into the fishery with trawl gear.*

Under Alternative 3, vessels could harvest sablefish north with fixed gear by meeting the criteria for the active trawler designation or by receiving an exemption for a permit based on vessel gear-switching history.

Qualifiers for Active Trawler Designation

For the active trawler designation, vessels would receive the designation as soon as they met the landings requirement, and the designation would last for the remainder of that year and the entirety of the following year. To qualify, a vessel would have to use trawl gear to land at least six catch share landings that meet at least one of the two qualifying criteria:

a. In the area north of 40° 10' N. lat., 18,000 lbs of any IFQ species
b. In the area between 36° N. lat. and 40° 10' N. lat., 9,000 lbs of any IFQ species.

Based on those qualifications, the vast majority of vessels with shorebased IFQ trawl landings would qualify each year as shown in Figure 51 below. On average, 86 percent of vessels with an IFQ landing from north of 36° N. lat. would qualify in a given year (making them also eligible in the following year). Vessels would be able to gear switch up to one percent of the trawl allocation, however, the vessel limit could be adjusted downwards if the total gear-switched catch exceeded 10 percent in a year (a "backstop percentage" for trawl vessels).

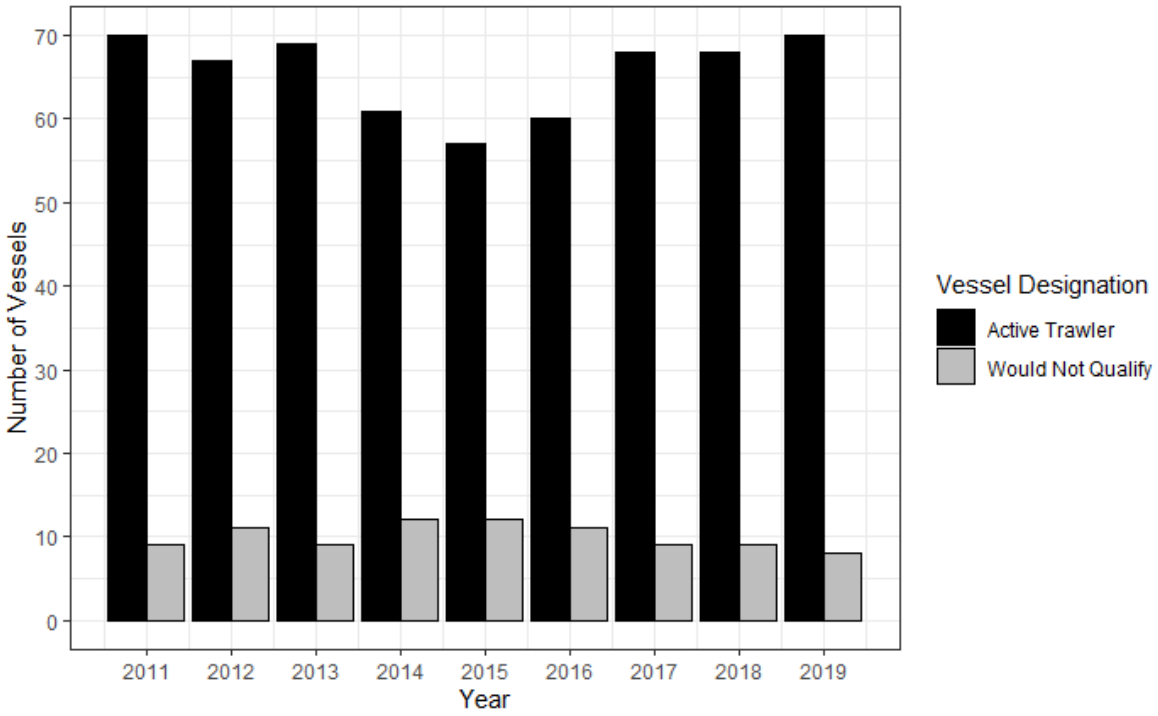


Figure 51. Number of vessels that would or would not have qualified as an active trawler in a year, 2011-2019.

Qualifiers for Exemption to Active Trawler Requirement

Vessels with gear-switching history could qualify an LE permit for an exemption from the active trawler requirement. Table 30 below shows the number of vessels that would qualify under each option. Eleven vessels would qualify under both proposed options. Under Option 2, which includes Option 1 but would add an opportunity to qualify based on more recent cumulative catch, one additional vessel would qualify. Similar to the tables provided for qualifiers under the other alternatives, the average catch as a percentage of the 2020 allocation is provided to show historical participation levels. Additionally, there were two vessels that first entered the fishery in 2019 that would not qualify for an exemption.

Under the exemption, vessels could use fixed gear to take the greater of 0.6 percent of the northern sablefish allocation or the percent of northern sablefish QS the vessel owner has owned as of and since the control date (there must be 50 percent common ownership between the vessel and the account). Using 2019 vessel account information for each vessel, under both qualification options, there are four vessel owners that own QS; however, in some cases, the amount they own would

not allow them to gear switch at levels above 0.6 percent. The total amount of QS owned by the owners of all four of those vessels is 4.65 percent.[20]

Under Alternative 3, there is also a "backstop percentage" of 10 percent for exempted vessels, which is the greatest amount of the IFQ sablefish north allocation that could be taken with fixed gear by vessels with an exemption. The 0.6 percent value may be adjusted downward if, prior to finalization of this alternative, it appears that exempted vessel landings with fixed gear will greater than 10 percent. In this case, the 0.6 percent limit, combined with the 4.65 percent for vessel owners that would be limited by the amount in their QS account, would keep the group of exempted vessels under the 10 percent cap and a need for a downward adjustment is not anticipated.

[20] This amount could go down over time if any of these owners divest themselves of QS. Additionally, there is a small possibility that there are undetected ownership relationships that would qualify some allow some additional owners to receive limits based on their QS holdings

Table 30. (UPDATED) Number of vessels that qualify or not qualify under each exemption option for Alternative 3, the percentage of vessels with gear-switching landing history from 2011-2018, and percent of the 2020 allocation based on average catch (2011-2018; all years).

Option	Qualification	Qualifying Vessels				Non-Qualifying Vessels			
		Number of Vessels	Number Qualifying Under All Options	% of Vessels with Gear-Switching History	% of 2020 Allocation based on Average Catch 2011-2018	Number of Vessels	Number Not Qualifying Under All Options	% of Vessels with Gear-Switching History	% of 2020 Allocation based on Average Catch 2011-2018
1	30,000 lbs of northern sablefish trawl QPs per year in at least three years between January 1, 2011 and September 15, 2017.	11	11	28.9%	20.3%	27	26	71.1%	6.9%
2	30,000 lbs of northern sablefish trawl QPs per year in at least three years between January 1, 2011 and September 15, 2017 or 90,000 lbs cumulatively across three years from 2014 to 2018, with at least one gear-switched landing in each of the three years.	12		31.6%	20.5%	26		68.4%	6.6%

While there would be an impact to the exempted vessels overall with the proposed limit (for qualifying vessels, the exempted vessel limits are expected to total 8.85 percent for Option 1 and 9.45 percent for Option 2) compared to what these vessels averaged historically, the impact to each individual vessel would vary. Of the 79 distinct combinations of landing year and exempt vessels fishing IFQ sablefish north, there are only nine vessel-year combinations where the actual take (i.e. total mortality) of fixed gear sablefish was below the proposed limit for the exempted vessel (either 0.6 percent or the QS limit). Six of the 12 vessels that could receive an exemption under at least one of the options would have exceeded the proposed limit (the 0.6 percent limit or the QS based limit applying to the vessel) in each year that they participated in gear switching. Of the remaining six vessels, three had one year of participation where the total would have been covered by the proposed limit while the other three had two years, accounting for all nine instances of harvest that would be accommodated by the proposed limit. Overall, there is only one qualifying vessel whose average gear-switching activity in active gear-switching years between 2011-2018 would be covered by the proposed limit (the 0.6 percent limit or the QS based limit applying to the vessel). All of the other vessels' averages exceed the proposed limit by 0.32 to 3.4 percentage points. Based on the 2020 allocation, on a per vessel basis, the proposed limits would result in landings between 18,000 and almost 200,000 pounds lower than the vessel's average gear-switched landings and an associated exvessel revenue of between $51,000 and over $553,000 lower (using average fixed gear price for sablefish north from 2011-2018). In aggregate, for Options 1 and 2 respectively, between 1.6 percent and 2 percent of the historic catch of vessels that qualify for the exemption would be accommodated by the limits provided under this alternative when applied to the 2020 allocation.

For those 18 gear switching vessels that did not have any history of trawling from 2011-2019 (i.e. only gear switched) and would not receive an exemption, each would need to purchase and re-outfit their vessel with trawl gear or most likely would be forced out of gear switching in the IFQ fishery. Table 31 below shows the number of vessels that would not qualify for an exemption under either option and have never historically trawled by average amount of fixed gear sablefish landings and number of years of participation from 2011-2019.

Table 31. Average pounds landed (and corresponding percentage of the 2020 allocation) and number of years of participation for those vessels that would not qualify for an exemption under Alternative 3 (either option).

Years Participating	**Average Lbs Landed (Corresponding % of 2020 allocation)**	
	0-34,879 lbs (0-0.6%)	**+34,880 lbs (+0.6%)**
1	5	3
2	<3	3
3+	3	

Active Trawl Exemption Non-Qualifiers: Status as Active Trawlers

For those vessels that would not qualify for an exemption, the only avenue for gear switching would be to lease an exempted permit or qualify as an active trawler. Only ten vessels between 2011-2019 have historically used fixed gear and trawl gear to harvest sablefish north in the same year with only three gear switching in multiple years (Table 32). These ten vessels have had eighteen instances (year/vessel combination) of fixed gear harvest of sablefish north from 2011-

2019, with fourteen of the eighteen instances occurring in years the vessels used both trawl and fixed gear. Of those eighteen occurrences, nine vessel/year combinations (from five vessels) would have been in excess of the one percent limit provided for exempted trawlers.

Eight of those ten vessels would have qualified as an active trawler in at least one year between 2011-2019, with two qualifying as an active trawler in each year. However, only five have used fixed gear to catch sablefish in the year they would have qualified as an active trawler. All five would have qualified in the previous year and thus have been eligible to gear switch in the entirety of the year in which they did gear switch (vessels which qualify as an active trawler are able to gear switch through the remainder of the year in which they qualify and all of the following year). Of those five, three landed more than the one percent gear-switching allowance proposed for active trawlers under Alternative 3 in at least one of years they gear switched. Of the remaining three of the eight vessels that would have qualified as an active trawler in at least one year, each would have qualified as an active trawler in at least one year but not for the year in which they gear switched.

Table 32. Summary of data on vessels that used trawl gear and gear switched (2011-2019) with respect to their ability to qualify as active trawlers and whether their historic participation would be accommodated by the one percent limit for active trawlers.

Vessels Using Both Fixed Gear and Trawl	**Count**
Total Vessels	10
Total Using Both in Only 1 year	7
Total Using Both in More than One Year	3
Vessels Using Both that Would Qualify as an Active Trawler	
Total in At Least 1 year	8
Total Qualifying in Every Year	2
Total Qualifying ***for*** the Year that Both Gears Were Used	5
Total that Exceeded the 1% Limit in the Year they Qualified	3
Total Vessels Exceeding 1% Exempted Trawl Limit in At Least 1 year	5
Total Instances: Year/Vessel Combination in Which Both Were Used) (a single vessel could have multiple instances)	18
Total Instances in Excess of the 1% Exempted Trawl Limit	9

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