

INITIAL ANALYSIS OF THE GEAR SWITCHING ALTERNATIVES

Initial analysis of the range of gear-switching alternatives adopted by the Council at its June 2022 meeting.

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List of Acronyms and Other Abbreviations

ACL – Annual Catch Limit
AMP – Adaptive Management Program
CD – Control Date
COVID –
CPEL – Coastal Pelagics
DTS – Dover sole/Thornyheads/Sablefish
EA – Environmental Assessment
EDC – Economic Data Collection Program
EFP – Exempted Fishing Permits
FISHEyE – Fisheries Economic Explorer
FMP – Fishery Management Plan
FR – First Receiver
GAP – Groundfish Advisory Subpanel
GESW – Groundfish Endangered Species Workgroup
GS – Gear Switching
HMS – Highly Migratory Species
IFQ – Individual Fish Quota
LAPP – Limited Access Privilege Program
LLC – Limited Liability Corporatoin
LEFG – Limited Entry Fixed Gear
LEP – Limited Entry Permit
MSA – Magnuson Stevens Fishery Management and Conservation Act
NMFS – National Marine Fisheries Service
NOAA – National Atmospheric and Atmospheric Administration
NPFMC – North Pacific Fishery Management Council
NWFSC – Northwest Fisheries Science Center
OFS – Overfished Species
OY – Optimum Yield
PacFIN – Pacific Fisheries Information Network
POP – Pacific Ocean Perch
RCA – Rockfish Conservation Area
SAMN – Salmon
SFFT – Selective Flatfish Trawl
QP – Quota Pound
QS – Quota Share
SaMTAAC – Sablefish Management and Trawl Allocation Attainment Committee
TCNR – Total Cost Net Revenue
VCNR – Variable Cost Net Revenue
WCGOP – West Coast Groundfish Observer Program

Glossary of Terms

Control Date: Control dates are published as an “advanced notice of proposed rulemaking” in the Federal Register. Gear switching control date September 15, 2017. [83 FR 18259, April 26, 2018](#). “The Council may or may not provide credit for any gear switching related activities after the control date in any decision setting limits on gear switching.”

Entity: Individual or group of individuals joined together as a single legal entity.

Individual: An individual human being

Individual Entity: An individual human being or trust.

Person: Individual or group of individuals joined together as a single legal entity.

Executive Summary

ES-1.0 WHY IS A GEAR SWITCHING LIMITATION BEING CONSIDERED?

Individual fishing quotas (IFQs) are a type of catch share program. At their core, catch share programs (also termed limited access privilege programs or LAPPs) use species and stock catch limits to meet conservation objectives, allocate the limits as quota to individuals or groups, and then rely on market mechanisms to sort out allocations among competing users. However, at the same time, the Magnuson-Stevens Fishery Management and Conservation Act (MSA) national standards and Section 303A mandates, along with groundfish Fishery Management Plan (FMP) goals and objectives, sometimes require the Council to balance conflicting policy objectives. In response to those multiple mandates, provisions are sometimes included or added to catch share programs that interfere with market mechanisms in order to prevent or respond to undesirable outcomes that would affect achievement of other important objectives (for further discussion see Section 1.0 of the main text).

The Council has undertaken a process to determine whether or not to propose an action that would limit the degree of gear switching in the West Coast shoreside groundfish trawl IFQ program.

The purpose of this action would be to “keep northern sablefish gear switching from impeding the attainment of northern IFQ allocations with trawl gear, while considering impacts on current operations and investments.” At the same time, the purpose and need statement (Section 1.2 of the main text) also acknowledges a variety of different factors that could be limiting attainment of northern IFQ allocations, other than or in addition to gear switching.

ES-2.0 WHAT HAS THE PROCESS LOOKED LIKE?

Gear switching was identified as an issue of concern in workshops prior to and then during the first review of the trawl catch share program (completed in 2017). Following on that process, the Council appointed the Sablefish Management and Trawl Allocation Attainment Committee (SaMTAAC) in April 2018 which met six times over the next two years.

The Committee’s final report was issued in June 2020 and considered by the Council at its September 2020 meeting. At that time, the Council adopted a purpose and need and decided to proceed with consideration of a range of alternatives, including status quo. In November 2020, the Council decided to first set a tentative policy for the maximum amount of gear switching to be allowed, with the idea that this would further guide development of the action alternatives. At its April 2021 meeting, the Council set 29 percent as a maximum gear switching level for use in development of the range of action alternatives. The range, including a no action alternative, was adopted at its September 2021 meeting but then expanded at its June 2022 meeting (see Section 1.4 of the main text for further description and Table 6 for links to key documents).

ES-3.0 WHAT ALTERNATIVES ARE BEING CONSIDERED?

Relative to no action, the action alternatives would limit gear switching only with respect to sablefish north of 36° N. lat.

No Action: Under No Action, the regulatory regime would not change in connection with this deliberation, but the fishery will continue to change in response to changing environmental, economic, and social conditions, as well as other regulatory actions.

Alternative 1 - Gear Specific Quota Shares (QS): Northern sablefish QS will be converted to trawl-only and any-gear QS and each year, trawl-only and any-gear quota pounds (QP) will be issued for each type of gear specific QS, respectively. The proportion of an owner's QS that is converted to any-gear QS will be affected by their history of gear switching and QS ownership on the control date. The amount of QS designated as any-gear QS will be 26.1 percent or less (to which 29 percent or less of the QP would be allocated).

Alternative 2 - Gear Specific Quota Pound (QP): A ratio of trawl-only to any-gear northern sablefish QP will be designated for each QS Account. Each year, trawl-only and any-gear QP will be issued to each account in the ratio designated for the account. The ratio of trawl-only and any-gear QS provided to a QS Account will be affected by the account owner's history of gear switching and QS ownership on the control date. The amount of annually issued any-gear QP issued will be 29 percent or less.

Alternative 3 – Gear Switching Endorsements- Permit Qualifier: In the area north of 36° N. lat., a vessel's gear-switching activity will be restricted to a standardized relatively low annual gear switching limit except for vessels fishing under trawl limited entry permit (LEP) with a gear switching endorsement. Vessel fishing under endorsed trawl LEPs will have higher limits. Endorsements will be issued to permit owners based on a history of gear switching and the limits for each permit individualized based on gear-switching history, QS ownership, or a mix of the two. The total amount of gear switching for endorsed permits will not exceed 29 percent.

Alternative 4- Gear Switching Endorsements- Vessel Qualifier: This alternative is identical to Alternative 3, except that qualification for a gear switching endorsement will be based on ownership of a vessel meeting the minimum qualification criteria for gear switching history (rather than the permit, as specified for Alternative 3). Vessel owners would then designate a permit to which the endorsement would be attached.

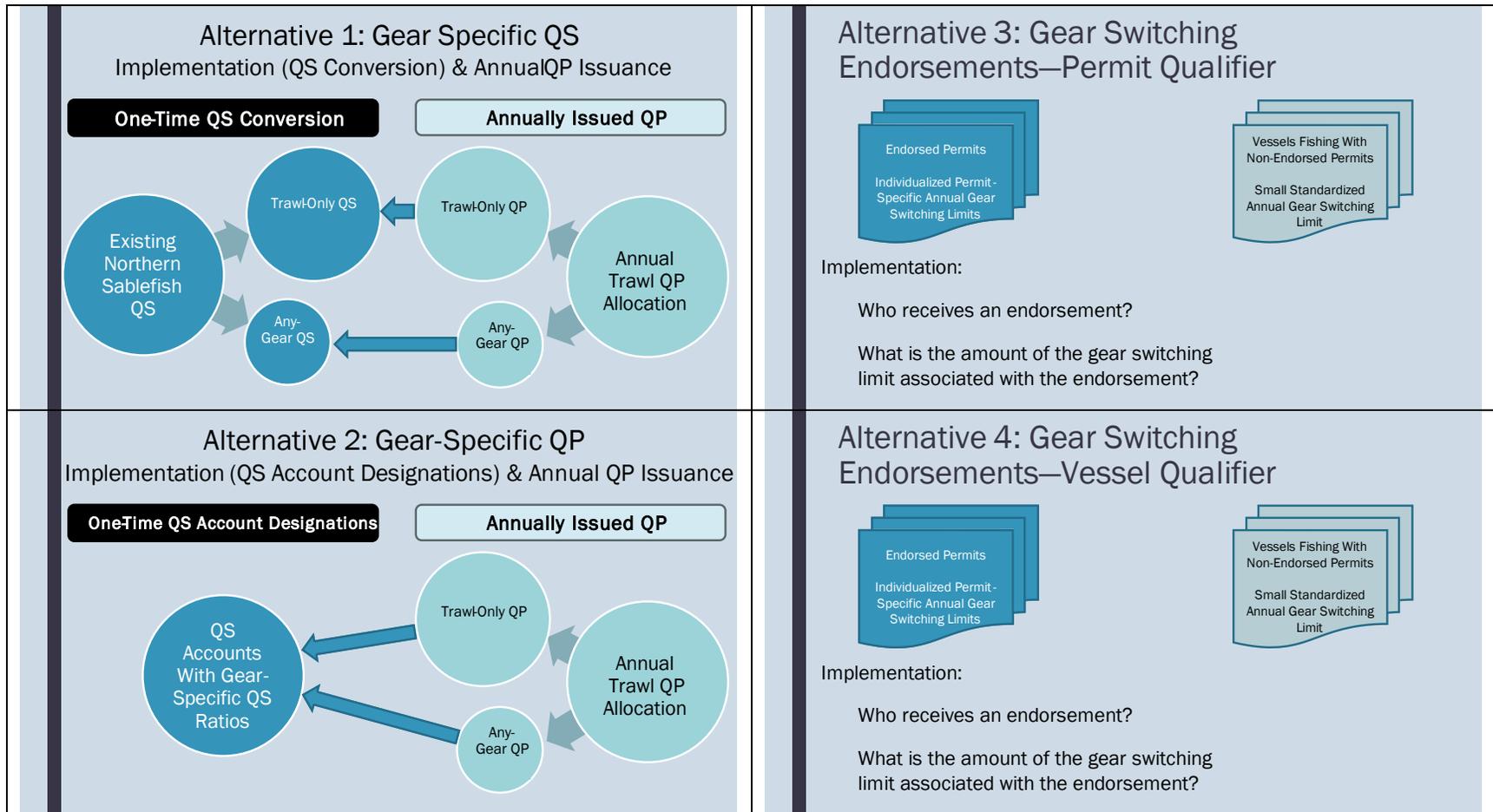


Figure 1. Schematics for action alternatives.

ES-4.0 WHAT INDICATES THERE IS A PROBLEM?

ES-4.1 History of Trawl Under Attainment

It is difficult to completely assess how the catch share program has impacted non-whiting trawl attainment for many species because there were not trawl/non-trawl allocations except for sablefish prior to 2011. The 2015 trawl catch share review included two assessments for selected species looking at data up through 2015 (one looking back to 1995 and the other to 2009, see Section 3.2 of the main text). The first assessment indicated the possibility of a long-term decreasing trend in attainment of Dover sole and lingcod that continued into the catch share program era. For other species evaluated, there were indications of increasing trend during the catch share period. The second assessment looked at a different set of species and, among the species evaluated, the strongest under attainment patterns were for thornyheads and Dover sole (both of which showed decreasing harvests and stable or increasing allocations). In more recent years, trawl catch has also expanded with the rebuilding of many midwater rockfish stocks.

A predominant concern in the discussions of trawl under attainment has been with respect to Dover sole attainment, which is predominantly harvested as part of the Dover sole, thornyhead, sablefish (DTS) complex. With IFQ attainment of Dover sole averaging 20 percent, it suggests a strong opportunity for expansion of harvest. The analysis provided here has borne out that among the trawl complexes, trawlers targeting on this complex are most likely to be challenged in competing with gear switchers for sablefish QP. Further, their sablefish QP access may become more difficult if other trawl strategies begin requiring more sablefish (see Section 3.3.5 of the main text).

ES-4.2 Potential Causes of Trawl Allocation Under Attainment

In addition to gear switching, a number of other potential causes of under attainment have been discussed, some of which are mentioned in the purpose and need statement. One of the main focuses of under attainment has been the Dover sole stock. The analysis suggests that

- It is unlikely that fewer participating vessels is a cause of under attainment of the trawl allocations. (Section 3.3.1 of the main text)
- Markets could be limiting Dover sole attainment, but that is uncertain because:
 - in the past (2008-2010) an expansion of Dover landings appears to have increased the amount of Dover that was frozen (reducing vessel prices and suggesting a market limitation);
 - however, at the start of the program vessels started decreasing the ratio of sablefish in their catch, indicating either that they were losing money on sablefish or trying to maximize their catch of the DTS complex in the face of a limited supply of sablefish QP;
 - additionally, currently investments are underway to take advantage of the frozen market for Dover sole. (Section 3.3.2 of the main text)

- While there may be a need for an expansion of infrastructure, there has not been a substantial reduction since implementation of the trawl program. (Section 3.3.3 of the main text);
- A negative impact of the QS ownership limits could be a downward influence on major new investments in processing that might improve attainment. (Section 3.3.4 of the main text)
- Competing needs for sablefish QP (including gear switching as well as other trawl strategies) could be constraining trawl attainment of allocations taken in the DTS complex (Section 3.3.5 of the main text).
 - Taking into account exvessel prices, QP prices, and fishing costs per pound, trawl profits per pound of sablefish caught (excluding co-occurring catch) appears to be comparable to that of fixed gear vessels but there are likely some fixed gear vessels that have substantially greater profit per pound than some trawl vessels and vice versa. These vessel differences likely contribute to the balance of usage of sablefish between trawl and gear-switching strategies.

ES-4.3 Gear Switching

ES-4.3.1 History of Gear Switching

Gear switching (using non-trawl gear to fish against trawl allocations) has been possible since the inception of the groundfish limited entry system in 1994, however, the structure of the program, permit markets, and fishing regulations resulted in little if any gear switching activity. When the IFQ program was designed the Council debated whether or not to continue to allow gear switching, and even whether to make any gear switching that occurred “permanent”. Ultimately, the Council decided to allow gear switching to both help trawl fishermen access their quota (in years of surplus sablefish) and allow fixed gear participants to acquire trawl permits and quota (potentially reducing the amount of trawling).

For many, the amount of gear switching that has occurred has been an unanticipated consequence of the program. Since the start of the IFQ program (2011-2021), gear switchers have taken between 19 percent and 35.3 percent of the sablefish north trawl allocation, leveling off in the latter part of the last decade and declining over the last few years (possibly due to pandemic related disruptions; Figure 2). There is almost no gear switching targeting on other species. (See Section 3.3.5 for additional details on the history of gear switching in the fishery).

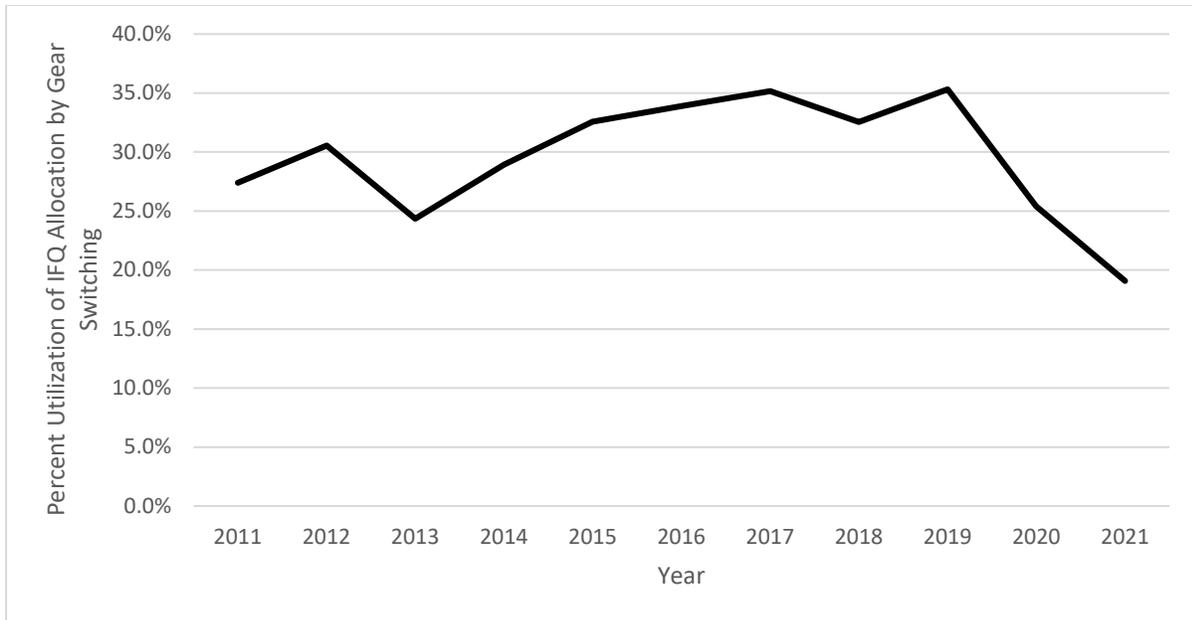


Figure 2. Percent utilization of sablefish north IFQ allocation by fixed gear, 2011-2021. Source: West Coast Groundfish Observer Program Groundfish Mortality Report

ES-4.3.2 Factors Influencing Gear Switching in the Future

While the analysis indicates past levels of gear switching might or might not have contributed to under attainment of trawl allocations, it is possible that a future expansion of gear switching could exacerbate under attainment. The following is a summary of the assessment of factors that may influence gear-switching levels in the future.

- There is a possibility that even if conditions in the fishery are relatively stable, gear switching may increase or decrease to some degree due to normal variation in the fishery. (Section 3.4.1 of the main text)
- As sablefish biomass changes in concert with management changes, the degree to which sablefish north QP is available and needed by various trawl sector strategies may change. (Section 3.4.2 of the main text)
- Future exvessel prices, QP prices, and fishing costs fluctuations and differentials between gears may be greater than experienced in the past and consequently could result in levels of gear switching greater or less than seen in the past. (Section 3.4.3 of the main text)
- Opportunities present in other fisheries, both on the West Coast and Alaska, may impact the level of gear switching in the IFQ sector. (Section 3.4.4 of the main text)
- Limited entry trawl permits that are latent (i.e., unregistered to a vessel) or inactive (i.e., registered to a vessel but not used for IFQ landings), provide an avenue by which gear switching could expand through new entry by vessels. (Section 3.4.5 of the main text)
- A strong new entry trend might indicate a continued expansion of gear switching. There has not been a strong trend of newly entering gear switching participants, though there seem to be a few new entrants to the gear switching fishery each year (while other vessels exit, such that total numbers of participants have been stable). (Section 3.4.5 of the main text)

- A strong trend in the acquisition of QS by gear switchers might indicate continued expansion of gear switching. There has not been a strong trend in gear switchers acquiring additional QS. There was some acquisition by gear switching participants when QS trading began in 2014, but since that time recent participants have acquired just under one percent since 2015. (Section 3.4.7 of the main text)

ES-5.0 WHAT IS THE APPROACH FOR THE ANALYSIS

The analysis starts with an in-depth evaluation of the problem being addressed (Section 3.0 of the main text), including the origin of the gear switching policy as part of the Amendment 6 license limitation program and the decision to continue that policy as part of the Amendment 20 catch share program. Also included is an assessment of the levels of trawl under attainment, a review of a number of different potential causes of that under attainment, and an assessment of factors that influence future changes in gear switching levels (increase or decrease).

As appropriate to the particular element of the analysis, outcomes are evaluated under assumptions in which gear-switching is and is not constraining and in which trawlers do and do not adjust strategies to modify the mix of species in their catches. Long and short term impacts are also considered.

Historical periods used for comparison include 2013 (year of the lowest allocation of northern sablefish QP); 2019 (most recent year of data prior to the influence of the COVID pandemic and the year of the highest total pounds of gear switching); and 2021 (year of the highest northern sablefish allocation—19 percent above the previous year and 33 percent above the 2011-2020 average). Additionally, multiyear averages are included, as appropriate for a particular element of the analysis. The average most often used is 2016-2019, a four-year period during which allocations, levels of gear switching, and number of vessels and permits gear switching were relatively stable and prior to the influence of the COVID pandemic.

The main impact analysis focuses on comparison of the alternatives (Section 4.0 of the main text). Appendix A provides analysis and discussion of overarching that applies to the action alternatives in general (e.g., control dates and the Council decision to use a maximum gear-switching amount of 29 percent in guiding the development of the alternatives); and analysis of particular provisions of the individual action alternatives (e.g., participation and qualifying requirements). Appendix B **will provide** an assessment of how the preferred alternative addresses policy mandates and considerations, relative to no action. Appendix C is intended to provide more in-depth background analysis that informs analysis provided in Sections 3.0 and 4.0 of the main document.

ES-6.0 OVERVIEW OF ANALYSIS AND THE IMPACTS OF THE ALTERNATIVES

The analysis provides a thorough documentation of the impacts of the action alternatives compared to no action. Here we provide a summary of some of the major impacts.

ES-6.1 Consideration of Current and Historic Participation

Participants in the IFQ fishery include vessel, permit, and QS owners, captain and crew members, processors, and the communities that support these operations. The Council often allocates fishing privileges to the owners of the assets whose values and operations would be most impacted by not receiving a fishing privilege. Council consideration of current and historical information is reflected in Council discussions, the analysis provided, and the final Council decisions and rationale.

Each of the Action Alternatives demonstrate consideration of historical participation and investment when they allocate more opportunity to continue to gear switch to those who have invested in gear switching through criteria such as ownership of sablefish north QS or ownership of a gear switching vessel or permit (as compared to the opportunities provided to those who do not demonstrate such participation). The required combinations of assets that must be owned and timing of that ownership vary by alternative. While in all cases the qualifying gear switching activity must have occurred before the control date (September 15, 2017), in some cases, it is only required that at the time of implementation the qualifier be the owner of the asset that has that history (e.g., currently own the vessel with gear switching history). In other cases, ownership interests must have been in place on or prior to the control date (i.e., a heavier weight is placed on historical participation by the current owner). Each approach strikes a different balance between consideration of current and historical participation. So while the Action Alternatives focus on fishing activity through the control date, information is provided in the analysis to allow the Council to consider impacts to those investing in and entering the fishery after the control date.

Under Alternatives 1 and 2, one of the key qualifiers for allocation based on current and historical participation is ownership of northern sablefish QS both at the time of implementation and as of the control date (Table 1). An individual that meets that qualifier must also have owned a vessel when it made the qualifying gear switching landings prior to the control date. Thus, the individual must have historic participation as a gear switching vessel owner and owner of QS as of the control date and current participation as a QS owner.

Alternatives 3 and 4 allocate based on permit and vessel gear switching history, respectively. The first qualifying option under each of these alternatives would allocate gear switching endorsements to the current owner of a permit or vessel. Thus, someone who invests in a qualifying permit or vessel any time prior to implementation would receive a gear switching endorsement. Current ownership (participation) of the asset with history is all that is required. In contrast, the second and third qualifying options under each of these alternatives requires ownership of the qualifying permit or vessel as of and since the control date (i.e., both current and historical ownership). Unlike Alternatives 1 and 2, ownership of the permit or vessel while the gear switching is conducted is not required. The second option also requires ownership of QS as of and since the control date. And the third option requires that all three be owned as of and since the control date (a permit, vessel, and QS). Thus, under the second and third qualification options, if any qualifying permit (Alternative 3) or vessel (Alternative 4) is transferred to a new owner between the control date and implementation, that permit or vessel would no longer qualify the owner for an gear switching endorsement.

Table 1. Participation required of the applicant in order to qualify for the opportunity to continue to gear switch under each action alternative.

	Alt 1 and Alt 2	Alt 3 and Alt 4		
		Option 1	Option 2	Option 3
Historical Participation	Own QS on the control date. Own a vessel at the time it made qualifying gear switching landings (current ownership of the vessel not required)	No requirement.	Own a Permit (Alt 3) or Vessel (Alt 4) and QS as of the control date.	Own a Permit (Alt 3) or Vessel (Alt 4) and QS and a gear switching vessel (Alt 3) or trawl permit (Alt 4) as of the control date.
Current Participation	At time of implementation own QS.	At the time of implementation own a permit (Alt 1) or vessel (Alt 2) with qualifying history.	At time of implementation and continuously since the control date, own all of the above.	

ES-6.2 Impact of Alternative Design on Likelihood that Gear Switching Reaches 29 Percent

The Council established a policy for designing the draft alternatives such that there would not be more than 29 percent of the trawl allocation gear switched. Recent gear switching levels from 2016-2019 (i.e., prior to the pandemic) have averaged just over 34 percent; however, levels have ranged down to 19 percent. Market conditions, annual catch limit (ACL) levels, opportunities in other fisheries, QP availability and other factors will ultimately impact the level of gear switching (see Section 3.4) under status quo.

Each action alternative has a different mechanism for limiting gear switched catch within the proposed 29 percent limit. Those mechanisms (i.e., any gear QPs and endorsement limits) in combination with the factors that affect gear switching under status quo will affect the likelihood of reaching 29 percent, assuming sufficient demand for fixed gear caught sablefish. For each alternative, Table 5 provides a summary the likelihood of gear switching reaching the 29 percent level. A more detailed summary is provided in Table A- 1 of Section A-1.2.

ES-6.3 Impact on New Entrants (Future Gear Switching Participants)

Under No Action, future participants or existing participants interested in gear switching would need to acquire access to a trawl LEP and QPs. Under Alternatives 1 and 2, in order to gear switch, vessels would need to accumulate any gear QPs, either through purchase of any gear QS (Alternative 1) and/or leasing of any gear QPs (Alternatives 1 and 2). A trawl LEP would still be required to gear switch. For Alternatives 3 and 4, participants interested in gear switching (at levels beyond the non-endorsed limit) would need to lease or purchase a trawl LEP with a gear switching endorsement. However, both Alternatives 3 and 4 include an option that would cause gear switching endorsements to expire when transferred to a new owner. Under the expiration

options, new entrants would be limited to the low level of gear switching allowed for non-endorsed vessels.

ES-6.4 Flexibility for Changing Gear Switching Levels in the Future (National Standard 6)

With changing climate conditions and the desire for additional flexibility in management, there may be situations in the future where the Council finds that it would be advantageous to further restrict or allow more gear switching. Each of the action alternatives could be modified in the future to expand or contract the level of gear switching—however, the impacts and costs of those changes vary amongst the alternatives. A discussion of these potential opportunities for change can be found in Table 25 of Section 4.11.3.

ES-6.5 Fairness and Equity and Excessive Shares (National Standard 4)

National Standard 4 of the MSA requires that allocation of fishing privileges be conducted in a fair and equitable manner and that acquisition of excessive shares be prevented. Because of varying views in our society on what constitutes fairness and equity, there are not widely accepted standards against which an objective analysis can conclude that one allocation decision is fairer and more equitable than another. There are not measuring sticks for fairness and equity that are like what is available for evaluating considerations such as efficiency. While one allocation may more equally distribute wealth, another allocation be considered fair if more total wealth is generated without severe distributional imbalances. At the same time the MSA requires that Councils consider certain specific factors that relate to fairness and equity, for example, the consideration of investments and recent and historical participation as well as opportunities for new entrants. Part of fairness and equity includes providing a well-articulated rationale for any action (such that it is not considered arbitrary and capricious).

Both National Standard 4 and MSA Section 303A on LAPP programs require the consideration of the accumulation of excessive shares. Among the Action Alternatives, there is substantial variation in the proportion of the gear switching opportunity that any single entity would be able to control. Under the trawl IFQ program, there is a 3.0 percent limit on the amount of sablefish north QS an entity can own or control, a 4.5 percent limit on the amount of QP that any vessel can use, and no limits on the number of trawl LEPs an entity can own. No additional limits have been proposed under the action alternatives. Under Alternative 1, an entity that acquires 3 percent any-gear QS would control 11.5 -12.8 percent of all the any-gear QS issued for QS holders.¹ Under Alternative 2, after all QSAs that were at least partially owned by gear switching participants expire, all remaining QSAs would receive the same standard split. For an entity that controls 3 percent of the QS, that standard split would be the equivalent of between 0.8 percent and 0.9 percent of all any-gear QP issued each year. Under Alternatives 3 and 4, no gear designations are added to the QS or QP (all sablefish north quota remains value for use with any gear). Under No Action, there is no limit on the number of LEPs a person can own, and Alternatives 3 and 4 do not impose any new limits on permit ownership. Further, once the endorsements are issued there is no required relationship between the gear switching endorsements and the amount of QS a person owns. Under Alternative 3 or 4, an individual

¹ The amount of any-gear QS in QSAs converted would be 26.1 percent under QP Split Option 1 and 23.4 percent under QP Split Option 2. Additional percentages of any-gear QS would be held as AMP QS.

could acquire as many gear-switching endorsed permits as desired, potentially controlling all of the gear switching opportunity. They would only be able to fish up to 4.5 percent of the QP on any one vessel under their ownership or control. However, if they owned multiple vessels, each of which had access to endorsements which allowed fishing up to the 4.5 percent limit, they could catch more than 4.5 percent in aggregate across vessels. Under the limited entry fixed gear (LEFG) permit stacking program (in which there are over 160 permits with tier endorsements), this situation is addressed by not allowing individuals to own or lease more than three permits.

Table 2. Maximum achievable share of gear switching opportunity achievable over time.

Alt 1 – Gear Specific QS	Alt 2 – Gear Specific QP	Alt 3/4 – Gear-Switching Limits
11.5%-12.8% ^a	0.8%-0.9% ^b	15.5% to 100% ^c
(with maximum acquisition of any-gear QS)	(with expiration of all gear-switcher owned QSAs all QSAs would receive the standard split)	(no limit on the number of LEPs that can be acquired)

^a Lower end of the range for QP Split Option 1 and higher end for QP Split Option 2 (assuming 2021 level ACL).

^b Lower end of the range for QP Split Option 2 (assuming 2021 level ACL) and higher end for QP Split Option 1.

^c Depends on qualification and endorsement limit options selected. There is no limit on the number of LEPs an entity can own.

ES-6.6 Summary of Key Performance Indicators for No Action and the Action Alternatives

This section provides a summary of some key information on:

- Differences between the individual and collective approaches to allocation (primarily applies to Alternatives 1 and 2, see Section A-1.4 for discussion of the issue);
- Gear switching levels under No Action and entry and investments that have occurred since the control date (September 15, 2017);
- Performance differences among the Action Alternatives.

ES-6.6.1 Individual vs. Collective Approach to Allocations

At its June 2022 meeting, the Council considered “individual” and “collective” approaches to the evaluation of qualification for gear switching opportunity. At that time, it decided to move ahead with an individual approach, but requested further analysis of the differences between the approaches in order to more fully understand the implications of the choice. Regardless of the approach, allocations would be made to existing ownership groups.

Under both approaches, individuals are evaluated to determine whether they meet qualification criteria. In situation where there is group ownership of a QSA, under the individual approach, if the individual meets the criteria, the resulting allocation of gear-switching opportunities applies only to the QS attributable to the individual (based on their share of ownership interest in the QSA). Under the collective approach, if an individual meets a set of criteria, the entire group is considered to have met the criteria and all QS owned by the group is evaluated on that basis. For Alternative 1, this would be the amount of any-gear QS allocation; for Alternative 2, the amount

of any-gear QPs; and for Alternatives 3 and 4 the size of the gear-switching endorsement under Endorsement Limit Options 2 and 3.

Table 3 below provides an overview of how gear switching participants under Alternative 1 would be affected by the choice of the individual approach versus the collective approach. While a majority of the QSAs owned by GS participants would not be affected, there are seven under GS Participation Option 1 and 3 under GS Participation Option 2 that would receive a lower amount of any-gear QS under the individual approach compared to the collective approach. These same QSAs would also be affected by Alternative 2 and by very similar amounts, however, the amount of any-gear QPs issued for gear switching participants would be slightly higher under Alternative 2, as any QS in excess of the control date would receive the standard ratio as opposed to being 100 percent trawl only as under Alternative 1.

Table 3. Impacts of ownership approaches on amount of QS and QPs that would be converted to any gear QS and numbers of QSAs (2021) affected—under each GS Participation Options for Alternative 1.

Ownership Approach	GS Participation Option 1		GS Participation Option 2	
	Percent of QS	Percent of QP	Percent of QS	Percent of QP
Individual	15.7	17.6	7.8	8.7
Collective	17.6	19.6	8.6	9.6
Difference	1.9	2.0	0.8	0.9
Number of QSAs (2021)				
Number of QS Accounts Owned by GS Participants	24		9	
Number of QS Accounts Affected by Ownership Approach ^a	7		3	

^a Of the 7 entities affected under Option 1, four involve complex ownership situations or many individual owners (more than 4). Of the 3 entities affected under Option 2, none involve complex ownership situations or many individuals.

For Alternatives 3 and 4, the Council also recommended the individual approach with an assessment of the impacts of the collective approach. For both alternative, there would be a single endorsement limit impacted by the choice of individual versus the collective approach. Additional details can be found in A-4.0 and A-5.0.

ES-6.6.2 No Action and Recent Entry and Investment

Past gear switching activity under No Action might indicate levels to be expected in the future, although changing circumstances could cause increases or decreases in gear switching relative to historical levels. No Action also tells us about recent entrants and investment. To provide a contrast to the gear switching and qualification levels listed for the Action Alternatives in the following section, Table 4 information on provides historic gear switching and participation levels. No Action also has a different impact on those who have entered the fishery and gear switched after the control date and consequently would not have an opportunity to receive an opportunity to gear switch based on their historic gear switching activity. Depending on their

activities and investments after the control date, they would essentially be treated as non-gear switching participants or new entrants (depending on the Action Alternative and options selected). Under No Action, they would be able to continue with their activities, impacted only by other changing conditions in the fishery and markets.

Table 4. Levels of gear switching and participation under no action plus new entry since the control date.

Time Period	Amount of Gear Switching	
	Average (Range)	
	Lbs	Percent of Trawl Allocation
2011-2021	1.57 mil. Lbs. (0.98-2.01)	29.5% (19.0%-35.3%)
2016-2019	1.87 mil lbs (1.8-2.01)	34.2% (32.5%-35.3%)
2020-2021	1.4 mil lbs (1.32-1.48)	22.2% (19.0%-25.4%)
	Gear Switching Vessels	
	Average Number (Range)	
2011-2021	42 (7-20)	
2016-2019	16 (15-16)	
2020-2021	8 (7-9)	
Since the Control Date (9/15/2017)	Number of New Gear Switchers	
	XX New Owners (without GS history) (to be provided) 6 Vessels 6 Permits	
	Acquisition of Sablefish North QS (All Owners)	
	45 Individual Entities Have Acquired QS QS Was Added to 20 Different QSAs 9.2 % Northern Sablefish QS was Acquired.	

ES-6.6.3 Performance Differences Among the Action Alternatives

Under No Action there are no limits on gear switching in the trawl IFQ fishery and consequently there are no limits on the redistribution of gear switching over time, complete flexibility with respect to the amount of gear switching, and no administrative costs or data systems elements associated with gear switching. Table 5 contrasts the performance of the Action Alternatives with respect to these and related factors (such as initial allocations).

Table 5. Summary of performance differences of action alternatives

	Alt 1 Gear-Specific QS	Alt 2 Gear-Specific QP	Alt 3 Endorsement- Permit Qualifier	Alt 4 Endorsement- Vessel Qualifier
Gear Switching Limitation Mechanism	Any-Gear QS	Any-Gear QP	Gear Switching Endorsement on Limited Entry Permit	
29 Percent Maximum (For Alt 1 and 2, this summary assumes QP split Option 1. QP Split Option 2 would result in a lesser percent of any-gear QS.)				
Is Maximum Attainable	Yes (Option for a smaller percentage ^a)	Yes (Option for a 1.8 million lbs cap ^b)	Maybe (Depends on Options Selected. Sum of maximums varies from 3.7% to 29.0%)	
Is it Likely	Challenge to Acquire All the Any-Gear QP (may diminish over time ^c)	Challenge to Acquire All the Any-Gear QP	Reasonably Likely to Attain Whatever Level is Provided	
Phase Out Over Time	No	No ^d	(Yes/No)	
History Based Opportunities Expire Over Time	No	Yes	(Yes/No)	
To Receive Gear Sw. History Based Opportunity (Qualifiers)				
<i>Minimum Requirement</i>				
QS Ownership	X	X		
Qualifying Permit Ownership			X – Current	
Qualifying Vessel Ownership	X- History ^e	X – History ^e		X - Current
<i>Optional Additional Criteria for History Based Oppty</i>				
QS Ownership			(CD+)	(CD+)
Permit Ownership				(CD+)
Vessel Ownership			(CD+)	
<i>Number of GS Participants Receiving History Based Opportunity</i>	13- 32 Individual Entities ^f 9 - 24 QSAs (Options)		6-11 Permits Qualify (Options)	4-11 Vessels Qualify ^g (Options)

	Alt 1 Gear-Specific QS	Alt 2 Gear-Specific QP	Alt 3 Endorsement- Permit Qualifier	Alt 4 Endorsement- Vessel Qualifier
<i>Determinants of Level of History- Based Opportunity Received</i>				
Amount of QS Owned	CD~	CD~	(CD+)	(CD+)
Amount of Gear Switching Conducted (History)			LEP History	Ves History
<i>Amount of Opportunity Initially Distributed Based on History</i>	7.8% - 15.7% QS (before adding AMP QP) (Options)	10.5-17.3% QP (Options)	6.5%-29% (Options)	3.7%-28.4% (Options)
Redistribution of History Based Opportunity Over Time	Through QS Trading Likely Become More Concentrated	As QSAs Expire, Standard Ratios Increase Eventually Distributed in Same Ratios to all QSAs	As permits transfer (entities might accumulate multiple permits that could be fished sequentially) OR Permits expire on transfer.	
Maximum achievable individual share of gear switching opportunity (over time)	11.5%-12.8%	0.8%-0.9%	15.5%-100%	
Flexibility to Modify Gear Switching Levels				
<i>Fishing Operation Scaling Flexibility: Scale GS Opportunity to Optimal Level (Including New Entrants)</i>				
Scale Any-Gear QS to Desired Gear Switching	X			
Scale Any-Gear QP to Desired Gear Switching	X	X		
Scale Endorsements to Desired Gear Switching			Challenging ^h	

	Alt 1 Gear-Specific QS	Alt 2 Gear-Specific QP	Alt 3 Endorsement- Permit Qualifier	Alt 4 Endorsement- Vessel Qualifier
<i>Fishery Manager Scaling Flexibility: Increase or Reduce Maximum Gear Switching Levels</i>				
Change Amounts of QP Issued for QS ⁱ OR Issue QP for One Gear Type to Owners of QS for the Other Gear Type	X			
Modify the Standard Any- Gear/Trawl-Only QP Ratio Issued to QS Accounts		X		
Scale Endorsement Limits Up or Down ^j				X
Data System Modifications Needed				
New QS/QP Categories to Track	X	X		
Ongoing Need to Monitor QSA Ownership Changes ^k		X		
New Endorsement Limits to Track				X
Need to Collect Data on and Monitor LEP Ownership Changes (Expiration Option Only)				(X)

(...) = Parentheses Indicate an Option

CD+ = as of and since the control date;

CD~ = as of the control date and at the time of implementation (not necessarily on a continuous basis)

Current = at time of implementation

X = applies/yes

^a The lesser of 29 percent and 1.8 million as a percentage of the trawl allocation in year of implementation.

^b This cap on any-gear QP would apply each, such that in some years the maximum might be 29 percent in in other years a lesser percentage based on the 1.8-million-pound cap. This which contrasts to Alt 1 in which the cap and related percentage of QS allocated as any-gaer is determined in the year of implementation and would not change after that. Using the 2021 trawl allocation the 1.8 million pound cap equates to 26.0 percent.

^c If gear-switchers acquire and consolidate any-gear QS, there will be less of an annual challenge to acquire all the any-gear QP.

^d A total of 29 percent of the QP will be issued as any-gear QP but the amounts issued to QSAs will shift over time as those which receive history based opportunities expire.

^e Requires a history of owning a vessel when it made the qualifying gear switching landings (prior to the control date). Ownership on the control date or at the time of implementation is not required.

^f Defined as an individual person or trust.

^g Endorsements go to designated permits

^h Gear switching endorsed permits could be “scaled” by partially using a permit’s gear switching limit (using less than allocated and transferring the remainder to someone else) or sequentially registering permits to a vessel (potentially gear switching up to the 4.5% limit). The number of gear switching endorsed permits available will be smaller than the number of vessels that typically participated prior to 2020.

ⁱ This would change the amount of QP that a person receives for their QS, relative to the amount of QP they would have received for the same amount of QS under no action.

^j Another approach might be to scale the limits for vessels using non-endorsed permits but finding little participation is expected at currently specified levels (thus there would be minimal opportunity to reduce gear switching through that mechanism) and finding a level that was enough to encourage some gear switching without getting more than desired would be difficult.

^k For accounts with QSA that receive a trawl-only/any-gear QP ratio based on at least partial ownership by a gear switching participant.

ES-7.0 KEY CHALLENGE AREAS FOR THE ANALYSIS

While a considerable amount of analysis has been and can be done to inform this action, there are areas in which the analysis will be limited. Each of the following present challenges which are discussed in more detail in Section 4.1.

- Predicting the amount of gear switching that will occur under No Action and the Action Alternatives
- Projecting redistribution of gear switching and trawl activities along the coast.
- Displaying activity and dependence on gear switching and trawl landings for specific ports.²
- Changes to QP prices (sablefish and other species) that might result from the Action Alternatives.

² Specific port level means, for example, Crescent City, rather than the Eureka port area or northern California, of which Crescent City is a part.

Decision Analysis

1.0 INTRODUCTION

Individual fishing quotas are a type of catch share program. At their core, catch share programs (also termed limited access privilege programs or LAPPs) use species and stock catch limits to meet conservation objectives, allocate the limits as quota to individuals or groups, and then rely on market mechanisms to sort out allocations among competing users. Thus, this management approach puts primacy on pursuit of the conservation objectives of National Standard 1 and the efficiency objectives of National Standard 5.

National Standards

- (1) Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.
- (5) Conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose.

However, at the same time, the MSA national standards and Section 303A mandates, along with FMP goals and objectives, sometimes require the Council to balance conflicting policy objectives. Further, the pursuit of optimum yield required under National Standard 1 includes consideration of more than just conservation. Optimum yield is "...the amount of fish that will provide the greatest overall benefit to the Nation, particularly with respect to food production and recreational opportunities..." (600.310(e)(3)(i)(A)). Greatest benefits to the nation include "The benefits of food production derived from providing seafood to consumers; maintaining an economically viable fishery together with its attendant contributions to the national, regional, and local economies; and utilizing the capacity of the Nation's fishery resources to meet nutritional needs" (600.310(e)(3)(iii)(A)(I)).³ In response to multiple mandates that go beyond those described here, provisions are sometimes included or added to catch share program that interfere with market mechanisms in order to prevent or respond to undesirable outcomes that would inhibit achievement of these other objectives.

1.1 Proposed Action

The trawl fishery includes an at-sea component, managed with co-ops, and a shorebased component, managed with Individual Fishing Quota (IFQ), the latter of which is the focus of this action. If an alternative to status quo is selected, the proposed action would be to limit the degree of gear switching in the West Coast shoreside groundfish trawl IFQ program.

³ As another example, National Standard 8 states that "Conservation and management measures shall, consistent with the conservation requirements of this Act ..., take into account the importance of fishery resources to fishing communities by utilizing economic and social data that meet the requirements of paragraph (2), in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities.

1.2 Purpose and Need

This action is needed because the Shorebased Individual Fishing Quota (IFQ) Program has under attained most of its allocations since the inception of the program in 2011. The under attainment for some northern stocks may be due to the allowance to use fixed gear to harvest shorebased IFQ, declining trawl vessel participation, and the lack of market and infrastructure. Specifically, participants engaging in gear switching are using northern sablefish quota that may otherwise be used by trawl gears; this may lead to uncertainty in trawl access to sablefish, thereby affecting the development of markets and infrastructure. Working within the guidance and authority provided by the MSA (§303A(c))2 and the Pacific Coast Groundfish Fishery Management Plan (FMP) goals and objectives, the purpose of this action would be to keep northern sablefish gear switching from impeding the attainment of northern IFQ allocations with trawl gear, while considering impacts on current operations and investments.

Under attainment results in the Shoreside IFQ Program being unable to meet Management Goals 2 and 3 of the FMP which respectively seek to maximize the value of the groundfish resource as a whole and to achieve the maximum biological yield of the overall groundfish fishery. Additionally, this action would seek to improve the program towards the goal of Amendment 20 to the FMP, which created the Shorebased IFQ Program, of providing for full utilization of the trawl sector allocation.

1.3 Analytical Requirements and Decisional Considerations

1.3.1 National Environmental Policy Act (NEPA)

The National Marine Fisheries Service (NMFS) has determined that the action alternatives would come under a categorical exclusion with respect to NEPA.

1.3.2 MSA and Groundfish FMP Related Considerations

All of the alternatives include options that would allocate fishing privileges. In addition to considering National Standards such as those covering the need for fairness and equity, the promotion of conservation and ensuring no single entity acquires an excessive share, the guidance also addresses needs to cover current and historical participation in the fishery, employment, and investment, among other factors.

There are a number of MSA requirements related to the allocation of fishing privileges including (but not limited to) National Standard 4, which requires

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

Determination of who is allowed to gear switch or not would likely be considered allocating an aspect of the catch share program (a Limited Access Privilege Program [LAPP]). When privileges related to a LAPP are allocated, the MSA requires the Council to consider

- (i) current and historical harvests;
- (ii) employment in the harvesting and processing sectors;
- (iii) investments in, and dependence upon, the fishery; and
- (iv) the current and historical participation of fishing communities;

MSA §303A,(c)(5)(A)

Other considerations include cultural and social framework (including small vessels, fishing communities, and excessive consolidation) and possible inclusion of measures to assist entry level and small vessel owner-operators, captains, crew and fishing communities. Finally, the program should

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

MSA §303A,(c)(5)

The initial allocations of the current program have been found to meet these requirements but as these fishing privileges are altered in a manner that affects different participants in different ways, this guidance continues to be relevant. Prior to final action, other MSA relevant analytical requirements will be developed (see Appendix B).

1.4 Public Process

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

Gear switching was identified as an issue of concern in workshops prior to and during the first review of the trawl catch share program (completed in 2017). Following on that process, the Council appointed the Sablefish Management and Trawl Allocation Attainment Committee (SaMTAAC) in April 2018 and gave it the following charge:

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

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

The Committee did its initial scoping work in 2018 that included investigation of up to 24 alternatives suggested during its deliberations (Supplemental Information Report 6, November 2018 and Information Report 2, June 2019).

As part of its deliberations, the Committee adopted the following principles (note: these principles were reported to but not formally adopted by the Council).

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

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

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

The Committee’s final report was issued in June 2020 and considered by the Council at its September 2020 meeting. At that time, the Council adopted a purpose and need and decided to proceed with consideration of a range of alternatives, including status quo. In November 2020, the Council decided to first set a tentative policy for the maximum amount of gear switching to be allowed, with the idea that this would further guide development of the action alternatives. The Council set 29 percent as a maximum gear switching level at its April 2021 meeting that would be used in development of the range of action alternatives. A range, including a no action alternative was adopted at the September Council meeting 2021 and at its June 2022 meeting the Council added a new alternative and split into two one of the previously adopted alternatives (see Table 6 for links to key documents).

Table 6. Steps in the consideration of the trawl allocation attainment and gear switching issues, within the Council forum.

Step/Action	Meeting & Agenda Item	Key Documents	Decision Summary
Community Advisory Board (CAB) First Recommends a Control Date for Gear Switching	June 2017 Agenda Item F.2	Agenda Item F.2.c , Supplemental CAB Report	Trawl Catch Shares Review Draft Report and Intersector Allocation Report
Adoption of Gear Switching Control Date and Guidance on Catch Share Review Follow-on Actions	September 2017 Agenda Item E.7	Control Date Federal Register Notice Agenda Item E.7.a , CAB Report 1: Community Advisory Board Report on Preliminary Range of Follow-on Actions Agenda Item E.7.a , Supplemental GAP Report 1	Adoption of Control Date and Other Actions/Guidance Related Follow-on Actions
Council Decides to Create a Committee to Address Issues Related to Gear Switching	March 2018 Agenda Item H.2	Agenda Item H.2, Attachment 1 : Gear Switching and Trawl Sablefish Area Management—Preliminary Data Agenda Item H.2, Supplemental Attachment 2 : Expanded Agenda Item H.2., Attachment 1 Tables	Trawl Catch Shares - Gear Switching and Trawl Sablefish Area Management

Step/Action	Meeting & Agenda Item	Key Documents	Decision Summary
Council Creates the SaMTAAC	April 2018 Agenda Item H.2	Agenda Item H.2, Attachment 1 : Creation of an ad hoc Committee on Issues Related to Trawl Allocation and Southern Sablefish Attainment	Membership Appointments and Council Operating Procedures
SaMTAAC Meets Six Times to Develop Alternatives	SaMTAAC Meetings June 2018; Oct 2018; May 2019 Oct 2019; Jan 2020; Apr 2020	Key documents	No related Council decisions.
Final SaMTAAC Report Provided	June 2020 Informational Reports	The SaMTAAC Final Report and an accompanying analysis were provide as informational reports 1 and 2. These informational reports were included in relation to Agenda Item D.1 at the September 2020 Council meeting (see next row).	No related Council decisions.
Council Decision on Whether to Continue SaMTAAC Related Deliberation and Adoption of Purpose and Need Statement	September 2020 Agenda Item D.1	D.1, Attachment 1 : Preliminary Assessment of Trawl Under-Attainment Issues and SaMTAAC Alternative Qualification Criteria (UPDATED), August 2020 D.1.a, SaMTAAC Report 1 Final Report to The Council	Gear Switching and Sablefish Area Management Scoping
Council Scheduled to Adopt Range of Alternatives for Analysis (Instead Decides to First Decide on a Level of Gear Switching)	November 2020 Agenda Item G.2	o Key documents were reproduced for the September 2021 briefing book (see below)	Gear Switching for Sablefish in the Trawl Catch Share Fishery
Council Decision on Gear Switching Level to Use in Developing Alternatives	April 2021 Agenda Item F.4	F.4, Attachment 1 : Analysis of Gear Switching Levels	Sablefish Gear Switching – Identify the Gear Switching Level to Use in Developing Alternatives
Council Selects Range of Alternatives Adopted for Analysis	September 2021 Agenda Item C.5	C.5, Attachment 1 : SaMTAAC Recommended Alternatives C.5, Attachment 3 : Preliminary Analysis of Gear-Switching Alternatives C.5, Attachment 4 : Supplement to Preliminary Analysis of Gear Switching Alternatives	Sablefish Gear Switching
Refine alternatives for analysis and provide on analysis, as needed.	June 2022 Agenda Item F.5	F.5 Attachment 2 : Range of Gear Switching Alternatives... F.5 Attachment 3 . Provisions on Which Council Guidance is Needed	Sablefish Gear Switching
Revised alternatives published	September 2022 Informational Report 1	Informational Report 1	No related Council decisions.
Selection of a PPA	November 2022	See agenda item.	

2.0 ALTERNATIVES (DESCRIPTION)

2.1 No Action

No Action is an alternative to each of the following action alternatives. Under No Action, the regulatory regime would not change in connection with this deliberation, but the fishery will continue to change in response to changing environmental, economic, and social conditions, as well as other regulatory actions. Attainment of the trawl allocations would continue to vary with changes in factors such as the level of trawl allocations, market conditions, the mix of co-occurring species, and prices for quota pounds (QP). These factors may influence and be influenced by the degree of gear switching (trawl-permitted vessel use of non-trawl gear to catch trawl QP; gear switch). Vessels with trawl limited entry permits (trawl LEPs) would be able to continue to use any gear to catch their sablefish north of 36° N. lat. QP, up to the annual vessel limit of 4.5 percent. The total amount of gear switching might decline, remain at recent levels, or increase.

2.2 Alternative 1 – Gear Specific Quota Shares (QS)

All northern sablefish quota share (QS) will be converted to either QS valid only for the use of trawl gear (“trawl-only QS”) or for the use of any gear (“any-gear QS”, i.e. QS that is the same as status quo QS with respect to gear usage). This one-time conversion will be carried out in a fashion such that it will not impact the total percentage of northern sablefish QP a QS owner receives in the first year after the conversion. The proportions of each type of QS a QS owner receives will be based on the owner’s history of owning a vessel that gear switched or trawled (their participation status), except that any QS an owner holds that is excess of the amount held as of the control date (September 15, 2017) will be converted entirely to trawl-only QS. The trawl allocation of northern sablefish QP issued each year will be split between trawl-only QS and any-gear QS. *See the alternatives attachment for a complete description.*

2.3 Alternative 2 – Gear Specific Quota Pounds (QP)

A gear-specific QP ratio (trawl-only QP to any-gear QP) will be established for each QS account. The ratio for each QS account will be based on the QS owner’s history of owning a vessel that gear switched. For a QS account owned entirely by gear switching participants, 100 percent any-gear QP would be issued up to the amount held on the control date. For all other QS, including QS accounts owned entirely by non-gear-switching participants or where the amount of QS is in excess of what was held on the control date, QP would be issued in a standard gear-specific ratio. This would result in three categories of QS accounts: 100 percent any gear, 100 percent standard ratio, and a blend of any gear and the standard ratio (i.e., QS account specific ratio). The standard ratio would be such that the total amount of any-gear QP issued to all QS accounts would be no more than 29 percent of the trawl allocation. *See the alternatives attachment for a complete description.*

2.4 Alternative 3 – Gear Switching Endorsements- Permit Qualifier

In the area north of 36° N. lat., a vessel’s gear-switching activity will be restricted to a standardized relatively low annual gear switching limit except for vessels fishing under trawl LEP with a gear switching endorsements. Vessel fishing under endorsed trawl LEPs will have

higher limits individualized for each permit based on gear-switching history, QS ownership, or a mix of the two. The amount of sablefish north gear switching allowed will be larger for gear-switching endorsed permits than for non-endorsed trawl permits. Gear-switching endorsements will be attached to trawl LEPs. Qualification for a gear switching endorsement will be based on ownership of a permit meeting the minimum qualification criteria for gear switching history. For some qualification options, as of and since the control date, the permit owners must have owned, the qualifying permit, northern sablefish QS, and possibly a gear switching vessel. The endorsement might or might not expire when the permit to which it is attached is transferred. If endorsements expire with permit transfer, the higher gear-switching limits associated with endorsed permits would eventually phase out and all vessels would be restricted to the lower-level gear-switching limit provided for vessels fishing trawl LEPs that do not have gear-switching endorsements. *See the alternatives attachment for a complete description.*

2.5 Alternative 4- Gear Switching Endorsements- Vessel Qualifier

This alternative is identical to Alternative 3, except that qualification for a gear switching endorsement will be based on ownership of a vessel meeting the minimum qualification criteria for gear switching history (rather than the permit, as specified for Alternative 3). Similarly, for some qualification options, as of and since the control date, the vessel owner must have owned the qualifying permit, northern sablefish QS, and possibly a trawl LEP. *See the alternatives attachment for a complete description.*

2.6 Alternatives Considered but Rejected

The main body and Section B.2 of the [SaMTAAC report to the Council](#) discusses alternatives and options considered but rejected early on by the SaMTAAC.

When the Council reviewed the SaMTAAC range of alternative at its September 2021 meeting, it dropped from the SaMTAAC range the “Active Trawler” alternative, which would have required vessels to meet trawl gear landing requirements on an ongoing basis in order to gear switch. It also replaced the SaMTAAC Alternative based on gear-specific QP with an alternative based on gear-specific QS. However, subsequently, at its June 2022 meeting, the Council reinstated an alternative based on gear-specific QP. **To be completed: Rationale for these changes to be added.**

3.0 ANALYSIS OF PROBLEM

The purpose and need for this action is provided in Section 1.2. The basic concern of the purpose and need is that gear switching might constrain attainment of the trawl allocation, either in the current fishery or at some time in the future, if for example, there is an expansion in the amount of gear switching. This section covers the following issues:

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

3.1 Origin of Gear Switching

Gear switching has been part of the limited entry (LE) program since it was first implemented in 1994 (Amendment 6). This program allowed vessels with trawl permits to use other gears but specified that any groundfish caught would be counted against trawl allocations (where such allocations were in place). Prior to 2011, the shoreside trawl fisheries were managed via cumulative landing limits (“trip limits”) and vessels simply discarded sablefish when they hit a limit for a designated period (e.g., bimonthly limits). While it was allowed prior to 2011, there was little if any use of fixed gear by trawl permitted vessels during that period (with the exception of vessels that also acquired an LE fixed gear permit or participated in The Nature Conservancy Exempted Fishing Permit, EFP). This could have been because the sablefish limits for the bimonthly period were not sufficiently high for fixed gear vessels to make the investments required in trawl permits, which were much more expensive prior to the implementation of the trawl catch share program.

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

Consequently, starting in 2011, when harvest control shifted from cumulative limits to IFQ vessels registered to trawl LEPs could utilize non-trawl gear types to target IFQ species. With the establishment of the IFQ program, the value of trawl permits declined and was absorbed by the value of the quota (QS and QP) making trawl permit acquisition by non-trawlers more affordable. For many, the amount of gear switching that has occurred as been an unanticipated consequence of the program. See Section 3.3.5 for information on the amounts of gear switching that have occurred and Section 3.4 for discussion of factors and trends that might impact gear switching in the future.

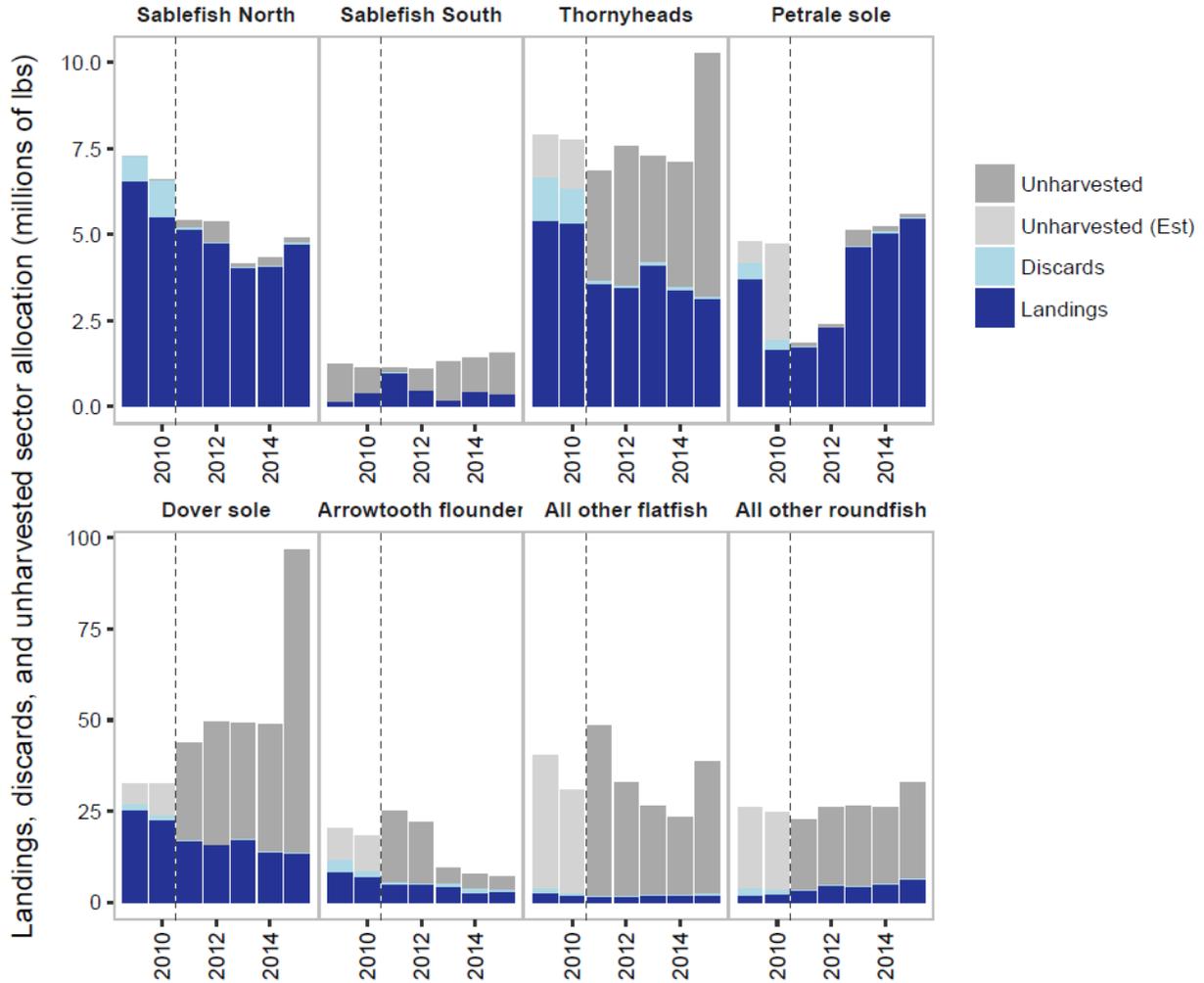
3.2 History of Trawl Under Attainment

There are a number of goals and objectives in the FMP which relate to the importance of fully utilizing fishery allocations. Prior to the IFQ program, the trawl sector was managed with trip limits, leading to large amounts of 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.

Assessing the change in trawl allocation attainment that occurred with the start of the catch share program is a challenge because for many species and species groups, there were no trawl/non-

trawl allocations prior to 2011. One assessment cited in the first trawl catch share review evaluated long term attainment trends (1995-2015) for eight species ([Matson, 2016](#)). None of the trends evaluated showed statistical significance. However, at non-statistically significant levels, Dover sole and lingcod showed a trend of decreasing attainment which continued into the years of the catch share program. For English sole, arrowtooth flounder, and two overfished rockfish species (widow rockfish and canary rockfish), it found long term trends of decreasing attainment but a trend of increases since implementation of the catch share program. For Petrale sole and sablefish north, it found long term trends of increasing attainment and that attainment levels were increasing since implementation (p. 14).

An assessment of pre-catch share and catch share attainment was also conducted as part of the first catch share review. This assessment looked only at the two years prior to implementation (years for which other economic data had also been collected) and evaluated sablefish north and south, thornyheads, Petrale sole, Dover sole, arrowtooth flounder, all other flatfish and all other roundfish, also using data through 2015 (Figure 3). Notable in this analysis was the increasing levels of under attainment for Dover sole and thornyheads, as catch declined while trawl allocations increased. **(To be updated with data through 2021.)**



A. Note: If carryover was made available for a specific quota category, the total weight was deducted from the original year and added to the following year. Except for sablefish, there was no trawl-specific quota in 2009 and 2010; for context, Unharvested (Est) (light grey) was calculated for 2009 and 2010 as the annual OY * (2011 Trawl Sector Allocation)/(2011 ACL) by stock or complex. Appendix B contains a longer time series of catch limits and landings for each individual species.

Figure 3. Landings (dark blue), discards (light blue), and unharvested (grey) trawl sector allocation of non-whiting groundfish species (millions of lbs). Source: Observer program mortality database, Somers et al. 2017c, IFQ Program database.

Figure 4 below shows the percent utilization of all non-whiting IFQ allocations⁴ from 2011 to 2021 and the overall amount of pounds caught versus those unharvested of the total non-whiting IFQ allocation. Since 2014, there has been a substantial expansion of the trawl allocation of a number of non-whiting species, and in more recent years, trawl catch has also expanded (Figure

⁴ While Pacific whiting is an IFQ species, it is removed from this figure as it is on a different scale (in any given year, about three times larger allocations than next highest species, Dover sole), is not considered a multispecies fishery, and the factors constraining whiting harvest are likely different than for the non-whiting species.

4).⁵ 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 EFP that allowed development of the non-whiting midwater trawl fishery for widow and yellowtail rockfish prior to the start of the primary whiting season, along with marketing initiatives by industry. In recent years, the list of species that usually reach full attainment includes Pacific whiting, Petrale sole, sablefish north, and widow rockfish (Table 7). The attainment level for most other species tends to be under attained (below 50 percent attainment), the primary exception being yellowtail rockfish. For these other species, attainment declined from a weighted average of 26 percent for 2011-2014 to 15 percent for 2015-2021 (with a downward shift occurring from 2014 to 2015, when there was a substantial increase in ACLs and a seven percent decline in catch). COVID impacted fully attained species more than the under attained species.

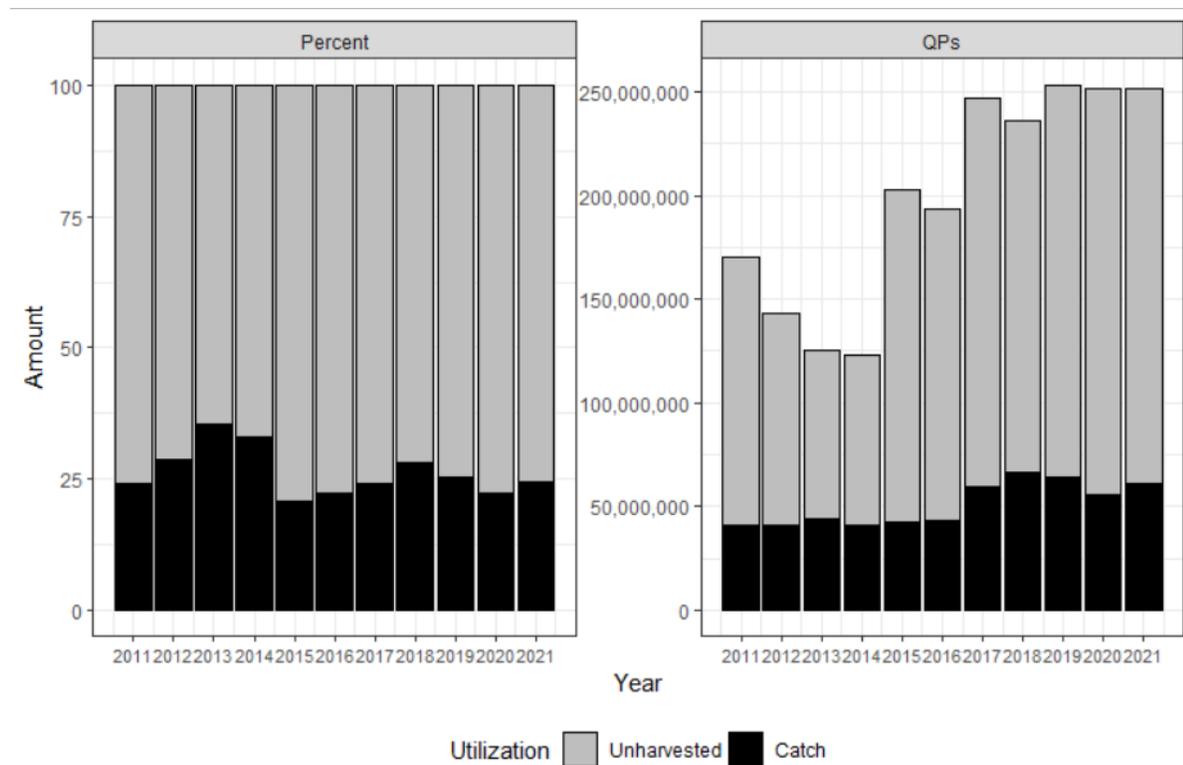


Figure 4. Shorebased IFQ utilization of non-whiting species, 2011-2021. Left panel: Percent of total allocations for all species caught and left unharvested. Right panel: Total amount of QPs caught and allocation QPs unharvested. Internal reference: June Analysis.rmd

⁵ In 2015, the Dover sole annual catch limit (ACL) increased from 25,000 to 50,000 mt (or over 55 million pounds) with 95 percent allocated to trawl fisheries. Since Dover sole landings did not increase proportionally to the allocation, the overall non-whiting trawl attainment decreased to about 21 percent. In 2016, there was a small increase in percentage utilization and usage. Then, in 2017, another 50 million plus QP were added to the IFQ allocations due to the rebuilding of canary rockfish (leading to 16 times greater canary ACLs compared to 2016), increases in the ACL for widow rockfish (over 6 times greater compared to 2016), and some other smaller ACL changes.

Table 7. Trawl sector attainment of annual QP allocations (values over 100 percent are covered with carry-over QP or deficit carry-overs).

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

A predominant concern in the discussions of trawl under attainment has been with respect to Dover sole attainment. The vast majority of Dover sole are taken with trawl gear such that the percentage of the available Dover taken by trawl gear is generally reflective of trawl attainment. Historically, from the early 1980s through 2010, trawl harvest of the available Dover sole has generally been in excess of 60 percent (Table 8 and Figure 5). Since the start of the IFQ era (2011), 90 percent of the Dover fishery harvest guideline has been explicitly allocated to the trawl sector. During that period, percentage attainment has declined by 75 percent relative to the period of the initial license limitation program (1994-2000) and the pre-catch shares stock rebuilding era (2001-2010). Increasing Dover sole harvest limits are a large cause of the decline in percentage attainment (Figure 5), but IFQ total landings are also down by about 15 percent relative to the 1994-2000 and 2001-2010 periods. While attainment and harvest amounts are both down, because of increasing prices, total Dover sole revenue in the IFQ era is down three percent relative to 1994-2000 and up three percent relative to 2001-2010, adjusting for inflation. Depending on changes in costs, net revenue associated with Dover may be up or down. Overall, the 20 percent attainment levels for Dover sole in the IFQ era indicate the potential for a strong opportunity for increased industry and community benefits, as well as the production of more seafood for consumers. This warrants a particular emphasis on the exploration of what might be preventing an expansion of trawl harvest of Dover sole.

Table 8. Comparison of trawl percentage of Dover sole harvest limits, landings, exvessel revenue (millions of dollars) and prices for 1981-1993, 1994-2000, 2001-2010, and 2011-2019. (Internal ref: TW SF&DVR-PriceStudy_1980-2020.xlsx; Weight (Figs&Table))

	Trawl Landings as Percent of Dover Sole Harvest Limits^{a/}	Dover Weights (mil. of lbs)	Dover Revenue (Nominal)	Dover Rev (Infl Adj)	Avg Price (Nominal)	Avg Price (Infl Adj)
Pre-License Limitation (1981-1993)	75% ^{b/}	39.4	10.3	18.0	0.26	0.46
Initial License Limitation (1994-2000)	86%	20.8	6.8	9.1	0.33	0.44
Fishery Disaster and Rebuilding Era (2001-2010)	78%	17.5	6.3	7.1	0.36	0.41
IFQ Era (2011-2019)	20%	14.8	6.6	6.1	0.44	0.42
		Relative to Initial License Limitation (1994-2000)				
Pre-License Limitation (<1994)	-13%	+89%	+53%	+97%	-19%	4%
Initial License Limitation (1994-2000)		-	-	-	-	-
Fishery Disaster and Rebuilding Era (2001-2010)	-9%	-16%	-7%	-22%	11%	-6%
IFQ Era (2011-2019)	-76%	-29%	-2%	-31%	36%	-3%
		Fishery Disaster & Rebuilding (2001-2010) Compared to IFQ				
IFQ Era (2011-2019)	-74%	-15%	5%	-11%	23%	3%

a/ Depending on the type of limit applied for a particular year: harvest guideline/total catch OY/landed catch OY/or ACL--ABCs prior to 1995.

b/ The average for attainment is 1983-1993).

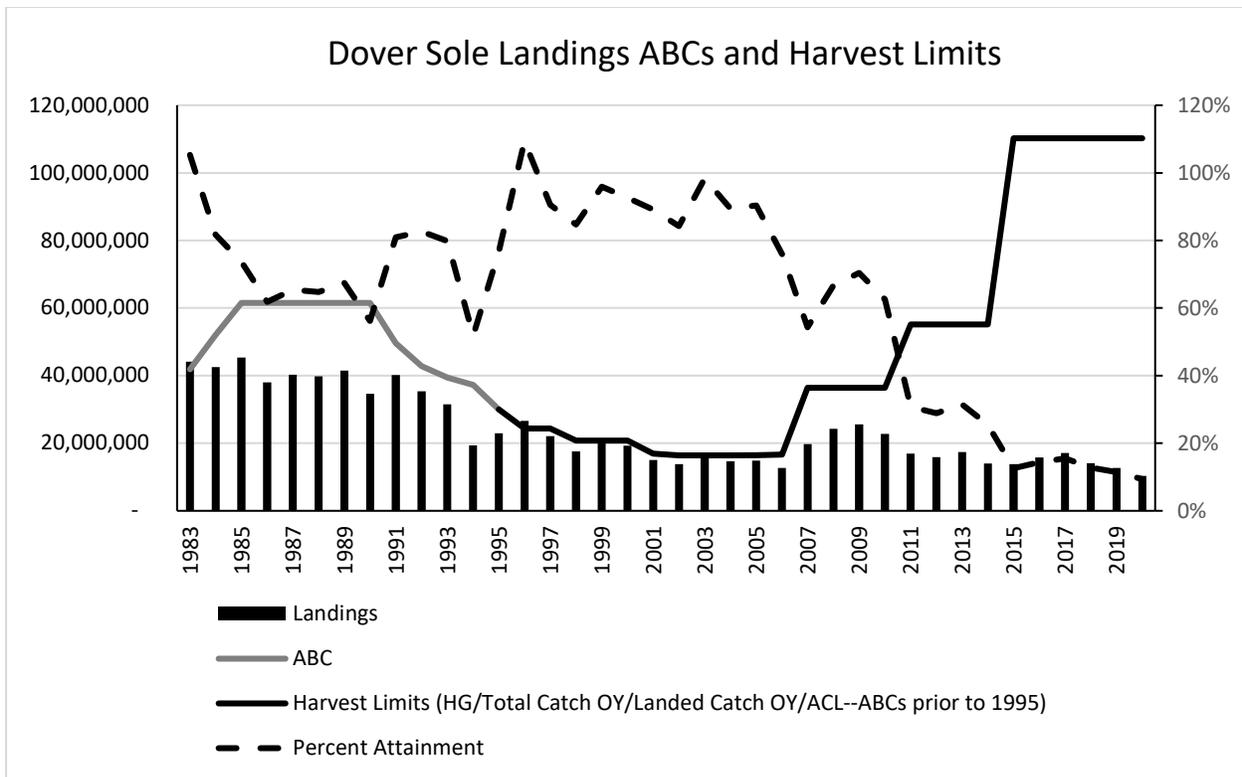


Figure 5. Trawl landings and percent attainment of Dover sole groundfish harvest limits, 1983-2020 (Source: Harvest Specifications and PacFIN Comprehensive Fish Ticket Database) Internal reference: LE TW SF&DVR-PriceStudy_1994-2020_Jan 3 2021.xlsx; Dover Harvest Limits-1983-2022.

3.3 Potential Causes of Trawl Allocation Under Attainment

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

The key questions these sections seek to address are:

- *What is the likelihood that something other than gear switcher use of sablefish QP might be contributing to under attainment?*
- *What are the indicators that gear switcher use of sablefish QP might be contributing to under attainment?*
- *Might the expansion of use of sablefish QP in some trawl strategies make it difficult for other trawl strategies to get the sablefish QP they need (even if sablefish QP usage by gear switchers stays unchanged)?*
- *What are the trends in factors that might cause gear switching to increase or decrease in the future?*

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

Summary(Agenda Item D.1, Attachment 1, [Section 2.1, text p. 12ff, September 2020](#)): 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.*

Declining levels of trawl vessel participation has been suggested as one explanation for low levels of trawl allocation attainment. When the IFQ program was implemented in 2011, the number of non-whiting vessels using trawl gear dropped from an average of 116 vessels from 2006-2010 down to an average of 67 in the first five years of the program and 65 in the last four years (Figure 6).

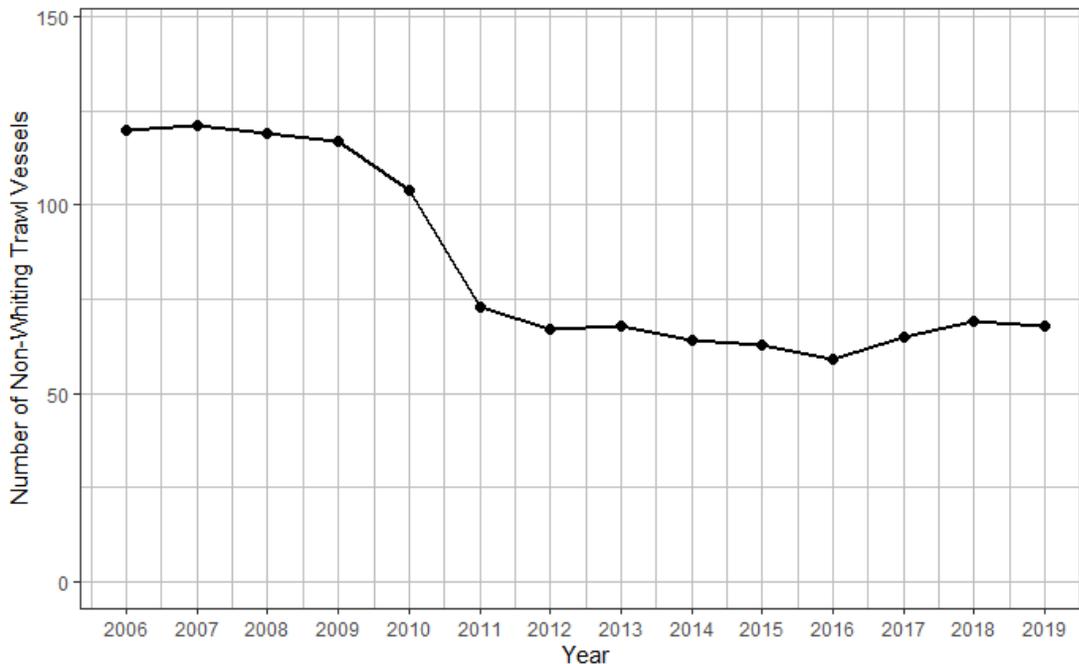


Figure 6. Number of non-whiting trawl vessels using trawl gear, 2006-2019.

One indicator of the capacity of the existing fleet is the harvest of those vessels that are “stable participants” relative to what they were harvesting prior to the IFQ program. For this evaluation,

the fleet was divided into four groups and landings evaluated for 2006-2010; 2011-2015; and 2016-2019:

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).⁶

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).

On average, as a group, stable participants have increased their landings and revenue with each period (Figure 7, shown in black) to the point that increases by these vessels alone led to harvest levels and revenue that reached very near the total pre-catch share level.

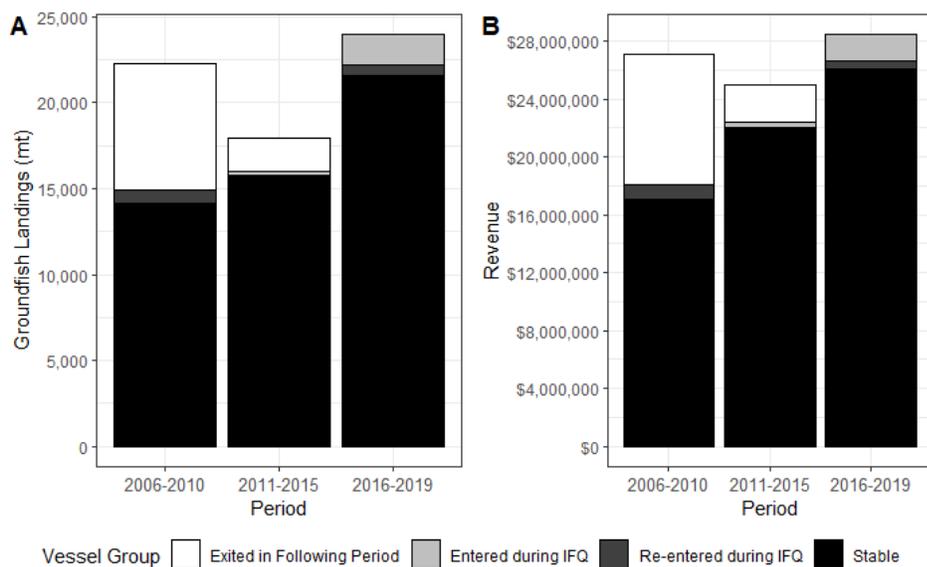


Figure 7. Average non-whiting trawl sector landings (mt; A) and revenue not adjusted for inflation (B) by period and vessel group (stable, re-entered fishery, entered fishery, or exited in following period).

While data on stable participants and their harvest levels indicate that the trawl catch share fleet likely had sufficient capacity to harvest at pre-catch share levels without even taking into account the new entrants, participation and attainment could still be constrained by low profitability. Summaries from the NMFS Economic Data Collection (EDC) program generally show that, while using trawl gear in non-whiting fisheries, vessels became more profitable after implementation of

⁶ 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.

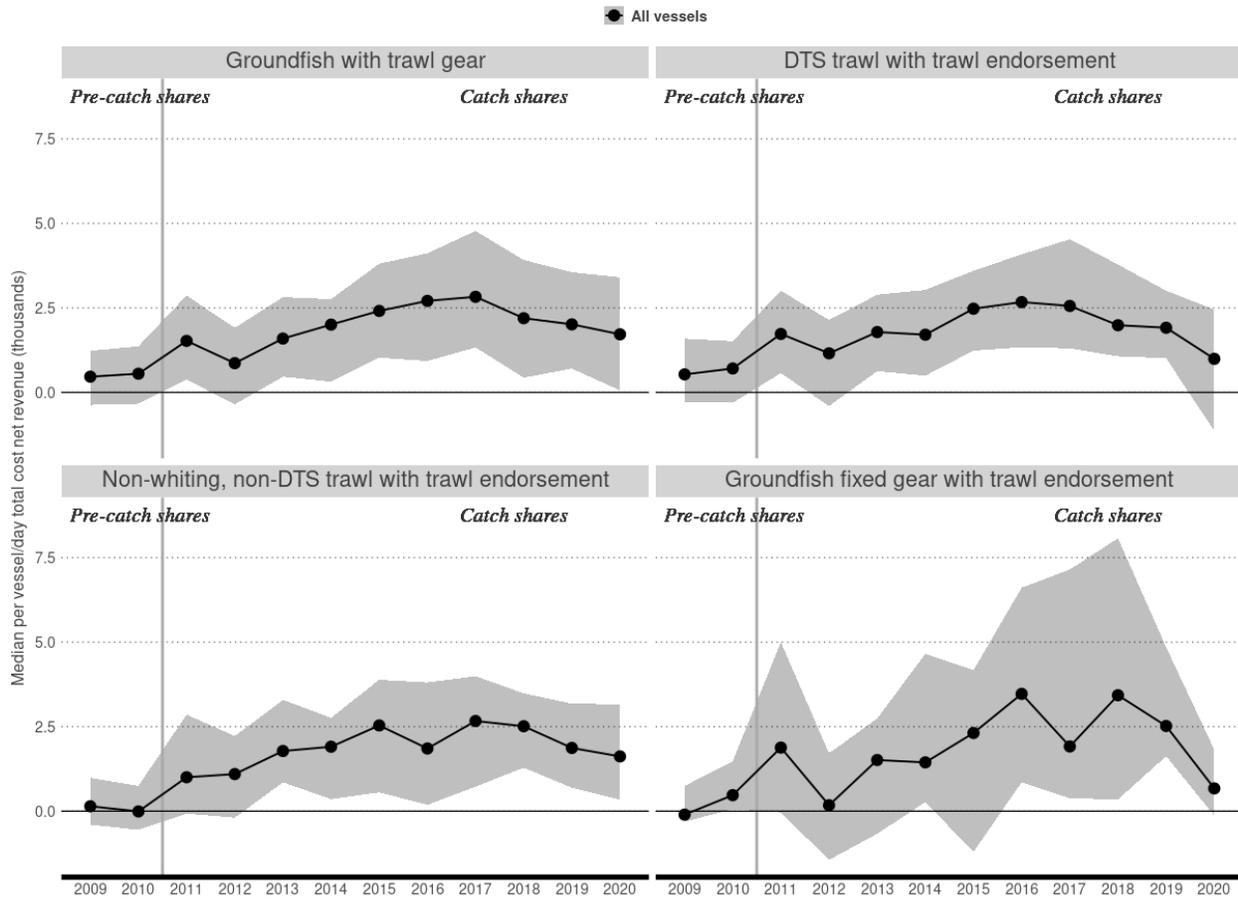
the catch share program—taking into account fixed⁷ and variable costs⁸ (total cost net revenue, TCNR). Since the start of the program, for vessels using trawl gear, the median vessel TCNR per vessel day has been nearly twice or more the pre-catch share levels (Figure 8) and TCNR per vessel for the year has also increased (Figure 9). However, fishing decisions within a year are generally driven more by profits as measured by variable costs alone (rather than both fixed and variable costs). Looking at variable costs alone, while using trawl gear in non-whiting fisheries (variable cost net revenue, VCNR) daily vessel profitability is generally up relative to the pre-catch share years (Figure 10) as is the annual profitability for these vessels (Figure 11). 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. Overall, vessel profitability while using trawl-gear under the catch share program does not appear to be constraining because the majority of vessels have positive total cost revenue per day while fishing these strategies.

However, incentive for using sablefish to target DTS might be waning in more recent years for other reasons such as changing relative profitability. TCNR for the median gear switching vessel (“Groundfish Fixed Gear with Trawl Endorsements”) had daily profits that were roughly comparable to vessels using trawl gear in most years of the catch share program (Figure 11). However, looking at VCNR, which tends to drive the daily fishing decisions, when gear switching the median vessel had greater daily profits than vessels when they used trawl gear in 2011 and 2015-2018. Further, in most years the more efficient vessels (75th percentile, top of shaded area) have had substantially greater daily profits when gear switching than when using trawl gear both in terms of TCNR and VCNR (Figure 8 and Figure 10). This variability could indicate that over time different sectors will experience different relative profit advantages the use of sablefish QP. This will be discussed further in Section 3.3.5.

⁷ E.g. fishing gear and on-board equipment

⁸ E.g., crew wages, fuel, monitoring costs, and cost recovery fees.

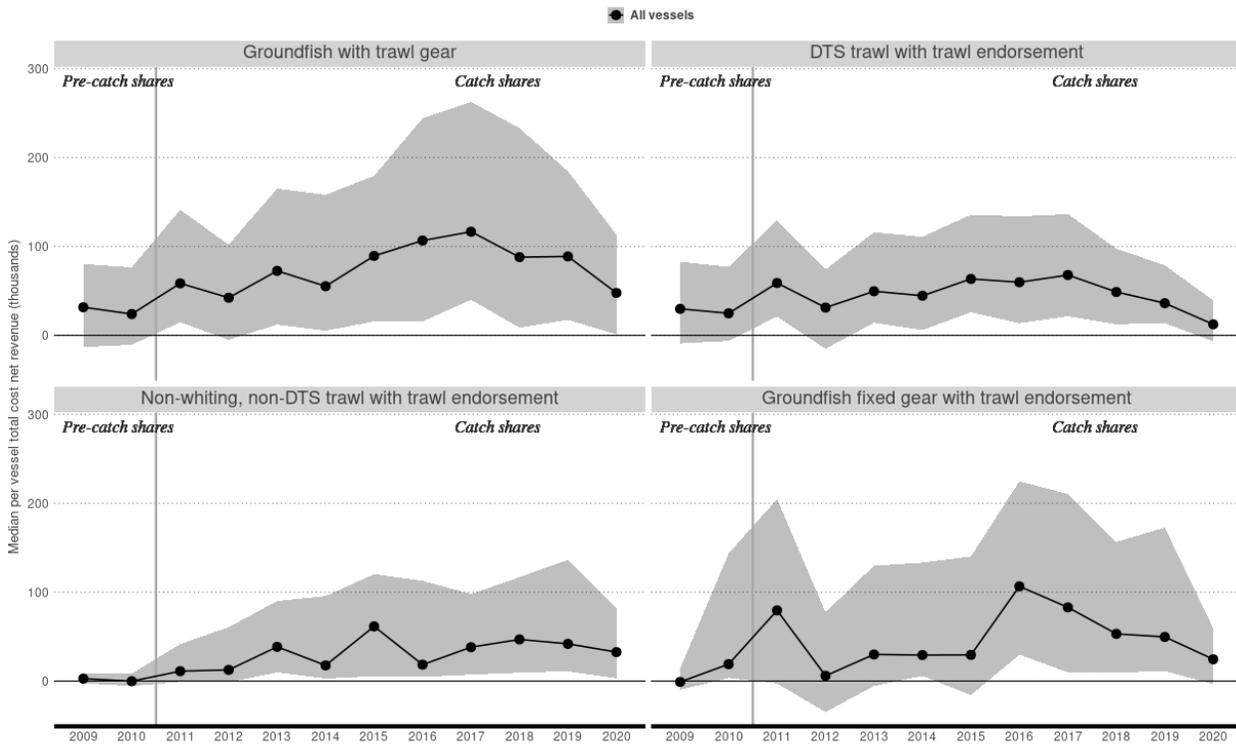
West Coast Catcher Vessels



B. 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 8. TCNR per day for vessels while fishing in non-whiting strategies or using fixed gear to gear switch, 2009 through 2020. Source: The FISHEyE application maintained by NOAA Fisheries, NWFSC on August 19, 2022.

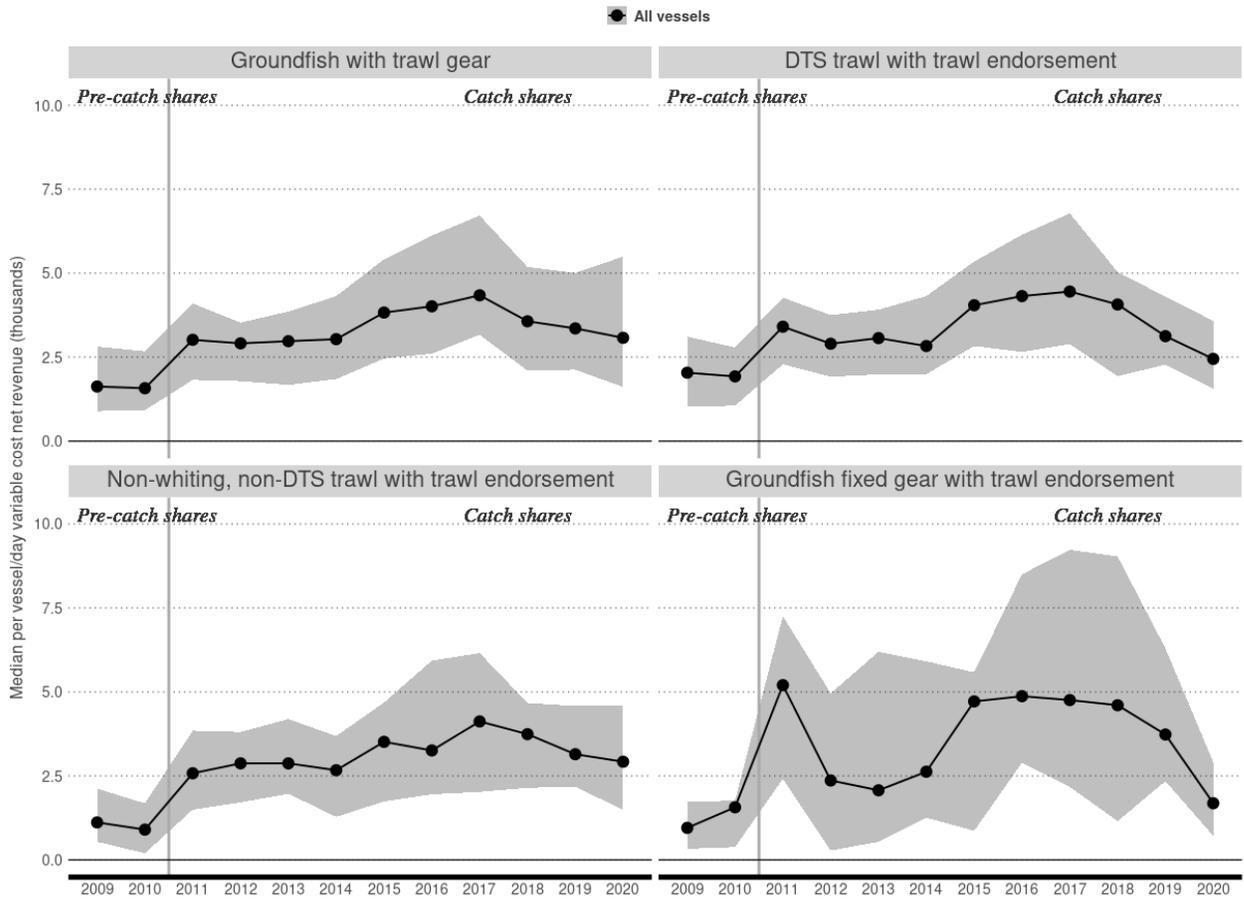
West Coast Catcher Vessels



C. 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 9. Annual TCNR for vessels while fishing in non-whiting strategies or using fixed gear to gear switch, 2009 through 2020. Source: The FISHEyE application maintained by NOAA Fisheries, NWFS on August 19, 2022.

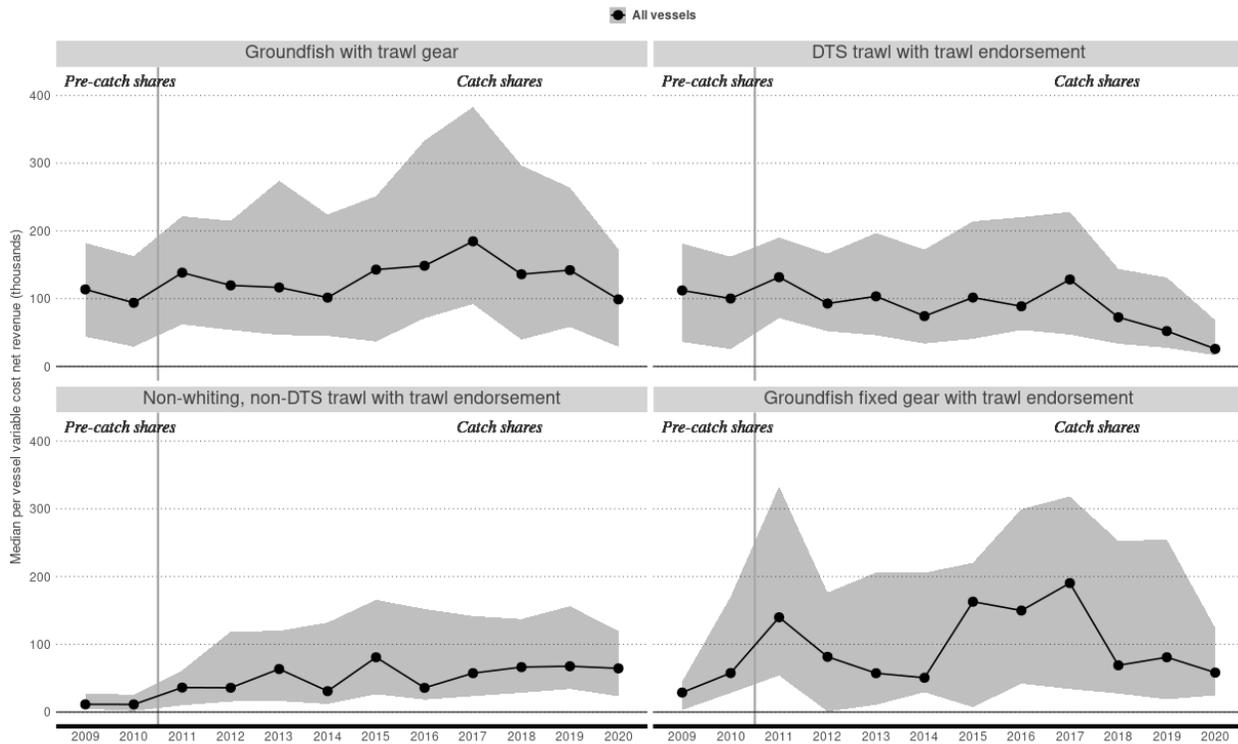
West Coast Catcher Vessels



- D.
- E. 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. VCNR per day for vessels while fishing in non-whiting strategies or using fixed gear to gear switch, 2009 through 2020. Source: The FISHEyE application maintained by NOAA Fisheries, NWFSC on August 19, 2022.

West Coast Catcher Vessels



F. 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. Annual VCNR for vessels while fishing in non-whiting strategies or using fixed gear to gear switch, 2009 through 2020. Source: The FISHEyE application maintained by NOAA Fisheries, NWFSO on August 19, 2022.

3.3.2 Market Limits – Domestic Markets and Competing Imports

This section explores information related to possibility that markets are or could constrain attainment of trawl allocations.

Summary:

- Increasing the attainment of trawl allocations for some species will likely require the development of markets—either through expansion of existing markets or displacement of products such as imports. Market development requires competitively priced product.
- 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.
- Previous expansions of Dover harvest appear to have been at least partially limited by markets. Other possible causes of the limitation include vessels having better opportunities in other fisheries and limited availability of sablefish QP.

- Even if markets are currently limiting the expansion of harvest of species like Dover sole, it is also possibly that uncertainty about availability of sablefish QP is limiting investments in equipment and marketing, indirectly contributing to trawl allocation under attainment.
- See Section 3.3.4 for a discussion of possible ways the catch share system design is impacting investment.

The proposed purpose and need statement identifies a lack of markets as another factor that could be constraining trawl allocation attainment. This is particularly a concern with respect to Dover sole. Section 3.3.5 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 improvement of price competitiveness through investments that increase efficiency and increased 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). International seafood markets are rapidly changing (Bjørndal & Guillen, 2016) and one challenge in marketing trawl caught fish markets is competition from imports, particularly with respect to commodified seafood products. 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 fish species and products (Asche et al., 2009). Commodification is associated with the stabilization of wild fish supply and management innovations such as IFQ (Anderson et al., 2018),⁹ as well as the expansion of aquaculture, products of which now compete with wild caught fish and across species categories (Asche et al., 2009, Asche and Zhang, 2013). This increasing commodification is likely to continue into the future as larger volumes of similar products become available year-round (Anderson et al., 2018). *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).*

Dover sole is one on the trawl caught species that has been a particular focus of concern with respect to trawl allocation under attainment. Based on studies (Norman-López and Asche, 2008 and Norman-López, 2009) and public comment, it appears likely that Dover sole compete across species categories with farmed tilapia and catfish (*Ictalurus*, *Silurus*, and *Pangasius*, the latter also known as swai) in the commodified whitefish market (see Agenda Item D.1, Attachment 1, September 2020 Council Briefing Book). U.S. imports of tilapia and catfish, fresh and frozen,

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).

have increased each year from 1994 to 2013 (Figure 12 and Figure 13). Overall, the amount of tilapia and catfish imports far outstrips the amount of Dover sole production, with the volume of processed imports¹⁰ 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). The large volumes of these imports may indicate both a competitive advantage for the imported product as well as market opportunities for domestic production, if imports can be displaced.

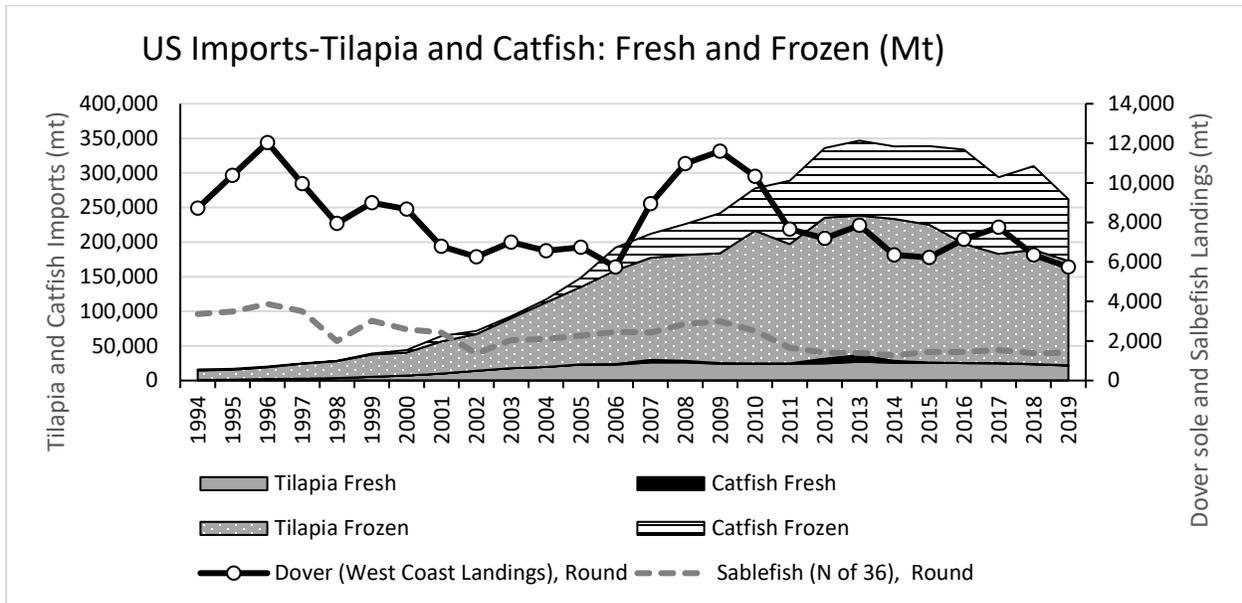


Figure 12. Import volume of processed fresh and frozen tilapia and catfish and limited entry trawl gear landings of Dover sole and northern sablefish (excluding gear switching). (Sources: NOAA Fisheries Foreign Trade Data and PacFIN Answers Database)

¹⁰ Close to 80 percent are reported as fillets (weighted annual average)

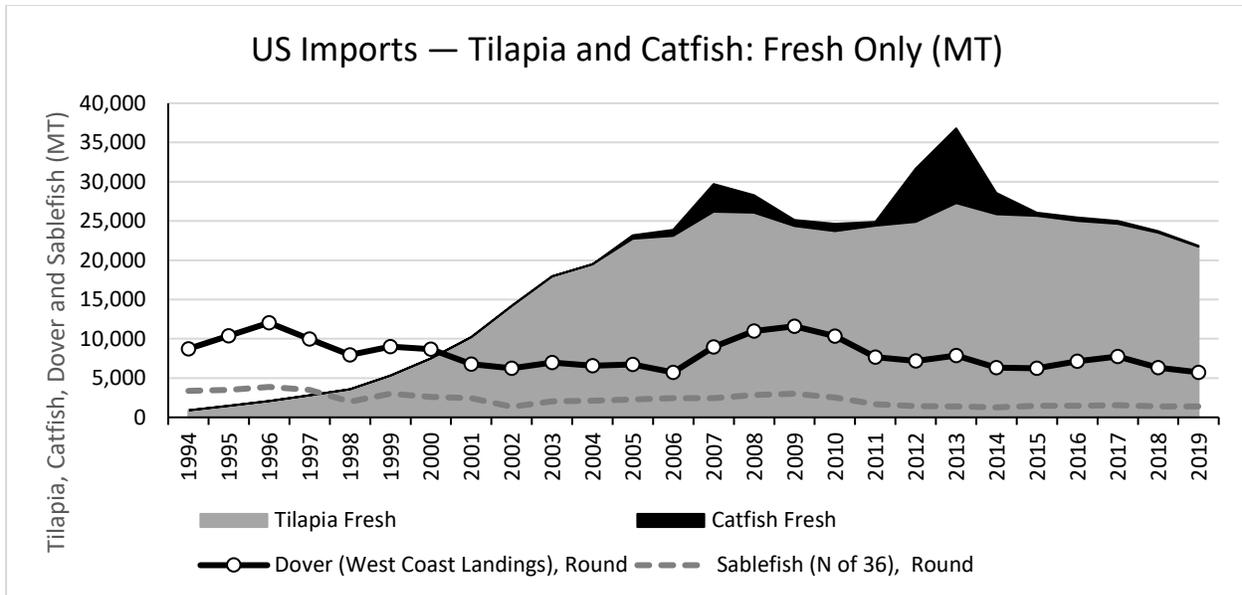


Figure 13. Import volume of processed fresh tilapia and catfish and limited entry trawl gear landings of Dover sole and northern sablefish (excluding gear switching). (Sources: NOAA Fisheries Foreign Trade Data and PacFIN Answers Database)

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). While ACLs have remained higher and increased even more (rising from less than 10,000 mt to 50,000 mt over eight years, Figure 5), the Dover sole landings increase was short lived, beginning to decline in 2010 and declining more substantially when the IFQ program was implemented. On the one hand, the expanded landings/purchases of Dover sole came in the midst of and despite a decade-long and ongoing ramp-up of tilapia imports. 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). On the other hand, the decline after a rapid increase could have been linked to the high levels of imports: the result of an information lag within the market and other sources of imperfect information about the amounts of Dover sole the market could absorb. Interactions between markets are often difficult to discern because of lagged effects. 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).

Changes in Dover sole exvessel prices provide information indicating a possibility that the Dover sole markets might have been limiting during harvest expansions. Since the start of the license limitation program, the peaks of two major expansions of Dover landings have been associated with drops in exvessel prices, with a further decline in price in the first year after the peak (e.g. 1996 and 1997, and 2009 and 2010, Figure 14). Focusing on the most recent expansion, the average prices received are a composite of the prices received for landings going to fresh markets and much lower, standard prices received for landings going to frozen markets. With respect to the 2007-2010 expansion, prices for landings going to the fresh market generally held steady at \$0.38-0.39 for 2007-2009 before dropping to the 0.33-0.35 range in 2010 and

rebounding to a higher range in 2011 (0.41-0.42), when production dropped further with the start of the IFQ program (Figure 15). Another possible indicator of a market struggling to absorb additional production during this expansion is the amount of fish being delivered at \$0.20 or \$0.30 per pound (fish generally believed to be destined for the frozen market). There was a substantial increase in these amounts in 2009 and a further increase in 2010 (Figure 15). In 2011, the amounts delivered for the frozen market declined to pre-expansion levels.

After the Dover sole production declined in 2011, price and profit conditions in the fishery appeared to be such that they would have been conducive to higher production levels, indicating other constraints may have been present. Starting in 2011, as the amounts of Dover declined substantially, the prices for fish for the fresh market increased first the 0.41-0.42 range (in 2011) subsequently to the 0.42-0.45 range that predominated from 2013 to 2017). At the same time there was a general increase in vessel profitability while participating in the DTS strategy (Figure 10). Despite these price and profit incentives, there was not a return to the strong Dover sole landings seen in the 2007-2010 period, indicating some other constraint on total landings. There are numerous possible explanations for the continued lower levels of Dover production including possibilities that processors had vessels on market limits, that vessels were drawn off into other more profitable fisheries (e.g. shrimp or crab, Figure 17), or that they were unable to gain sufficient access to sablefish QP.

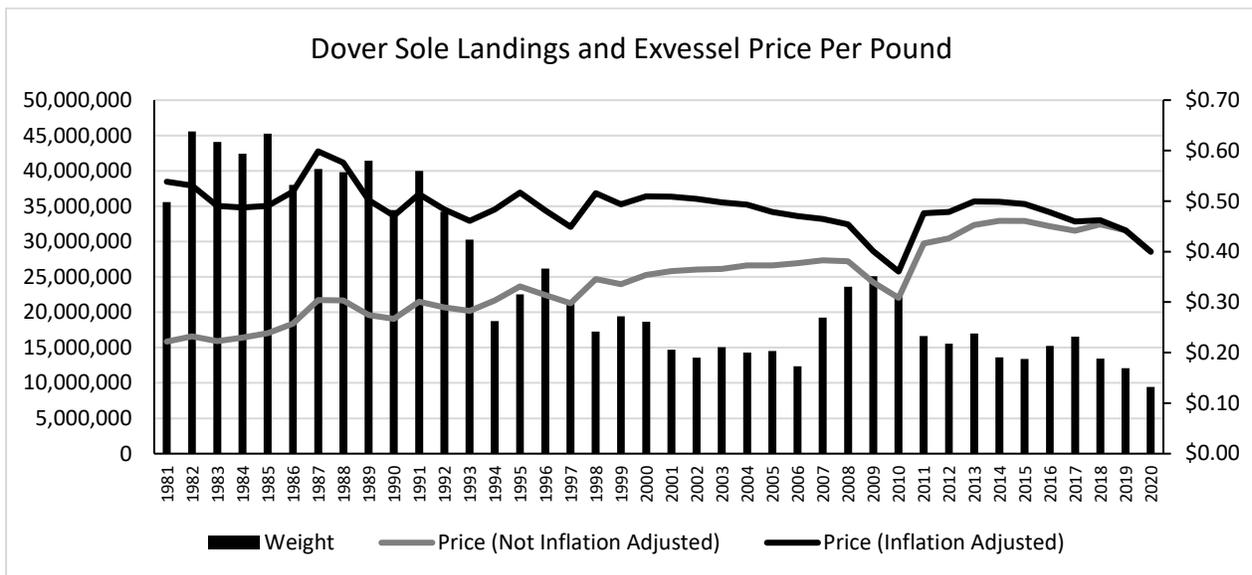


Figure 14. Dover sole landings and exvessel prices (1981-2020). (Source: PacFIN Comprehensive Fish Ticket Database). Internal reference: LE TW SF&DVR-PriceStudy_1994-2020_Jan 3 2021.xlsx;Average_Prices.

As mentioned above, limitations on what the market can absorb might be overcome with capital investments that increase efficiency (reducing production costs and increasing price competitiveness) and expansion of marketing efforts. During public comment, the Council has heard about substantial major investments that are being made in Dover sole processing capacity that is expected to produce product competitive in frozen markets while still offering fishermen good prices. While competition in commodified whitefish markets is a challenge, another response is to distinguish West Coast products from general whitefish commodities. 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). The Council has also seen examples of buyers and harvesters working together to provide a stable supply and expand markets, as was reported to be the case when widow rockfish was rebuilt and a midwater rockfish fishery re-established. Developing and maintaining premium markets requires a reliable supply. It has been argued in public comment that uncertainty about future availability of sablefish QP may be dampening the type of capital and successful marketing efforts needed to expand markets. See section 3.3.4 for a discussion of possible ways the catch share system design is impacting investment.

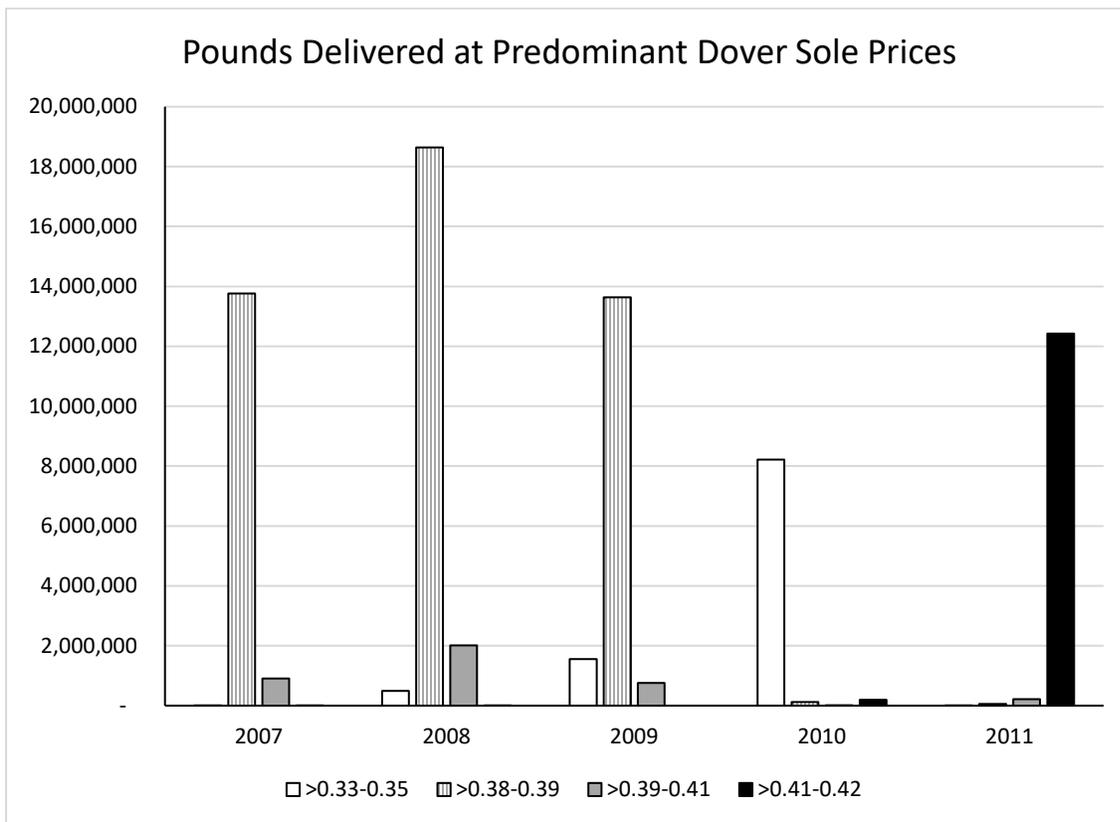


Figure 15. Pounds of Dover sole landed and exvessel prices for fish delivered for the fresh market (2007-2011). (Source: PacFIN Comprehensive Fish Ticket Database). Internal reference: LE TW SF&DVR-PriceStudy_1994-2020_Jan 3 2021.xlsx;Average_Prices.

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 developing markets and 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 3.3.5.

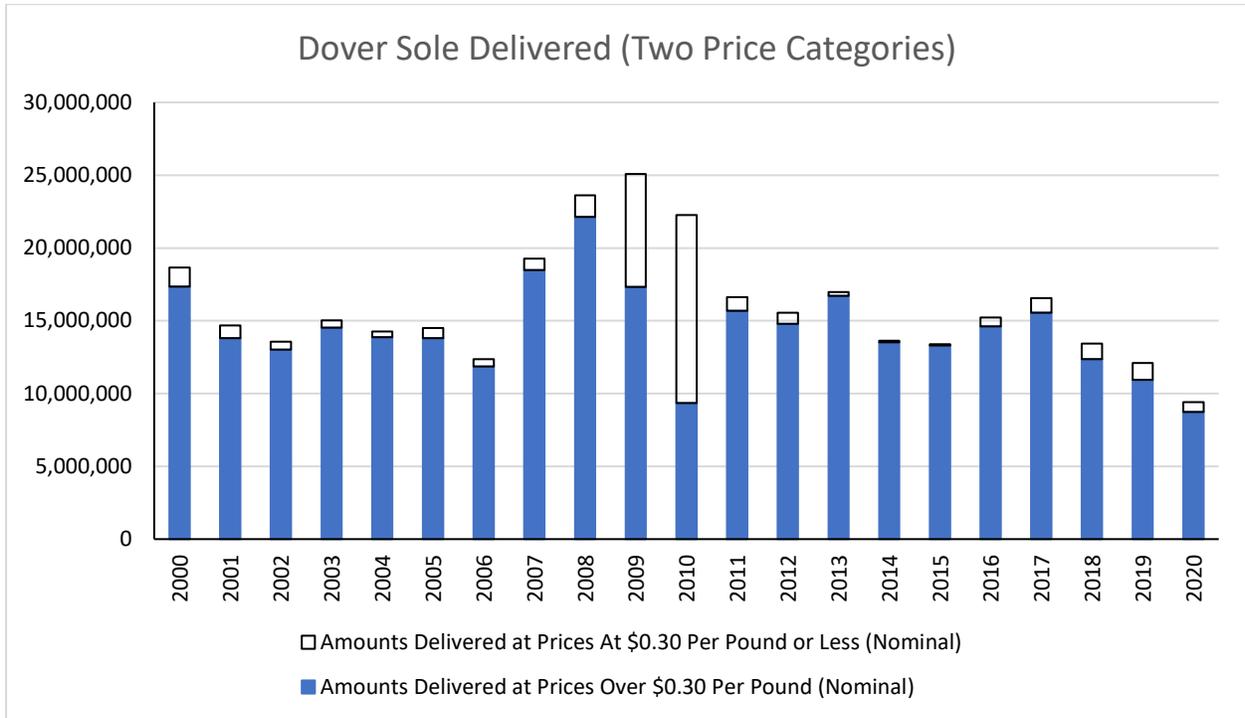


Figure 16. Pounds of Dover sole landed above \$0.30 per pound and at or below \$0.30 per pound (2001-2020). (Source: PacFIN Comprehensive Fish Ticket Database). Internal reference: LE TW SF&DVR-PriceStudy_1994-2020_Jan 3 2021.xlsx; Dover_Prices (non-confid).

Trawl Permitted Vessels -- Exvessel Revenue (Inflation Adjusted)

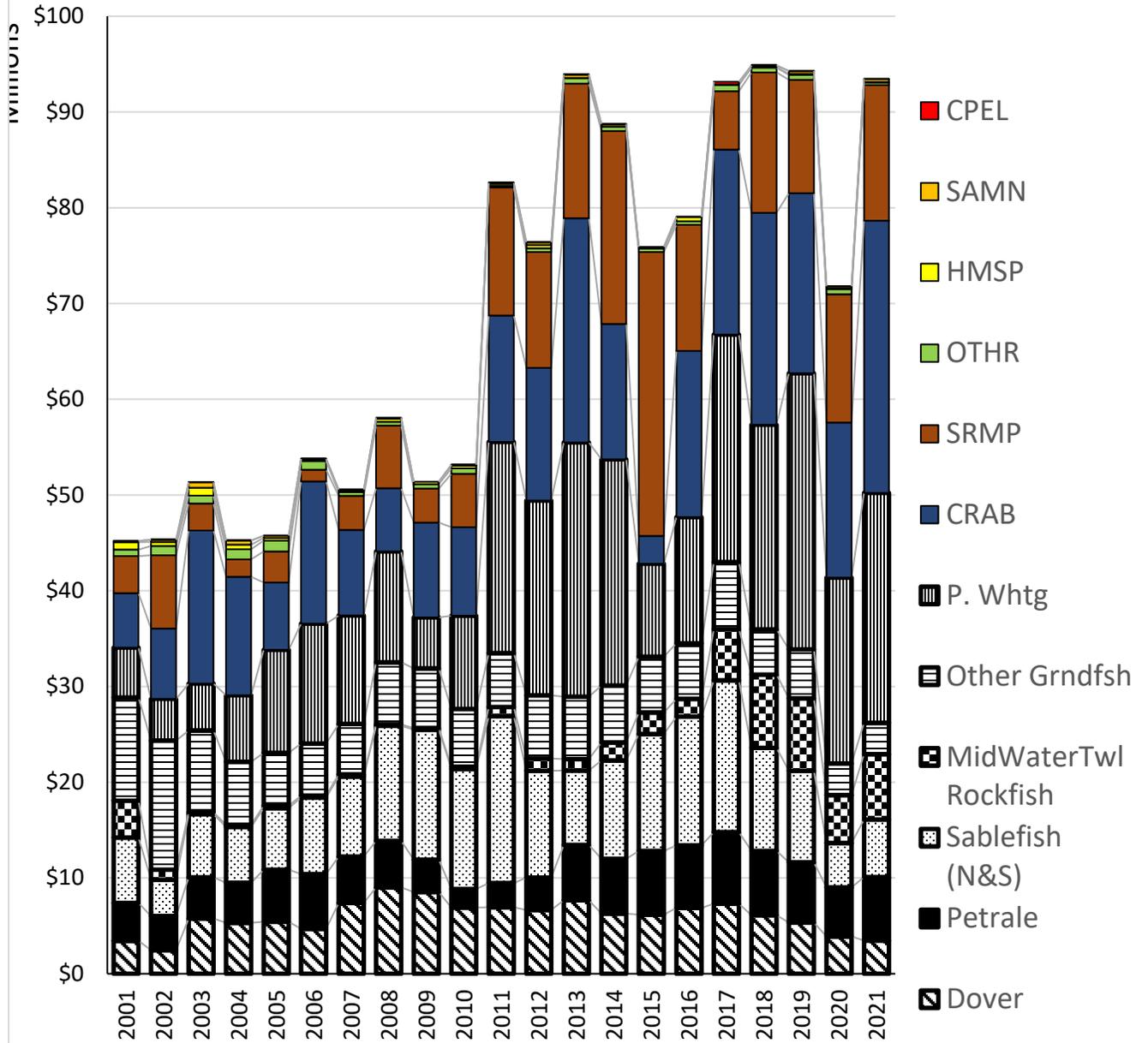


Figure 17. Exvessel revenue by vessels with trawl limited entry permits, 2001-2021. (Source: PacFIN Comprehensive Fish Ticket Database). Internal reference: FisheryMix_WSPP; PivotRev(AFI).

3.3.3 Infrastructure Limitations (Physical)

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

3.3.4 Catch Share System Design

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

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

QS control limits are recognized as balancing concerns about distribution of opportunity among individuals and communities with the potential for some reduction in efficiency. It could be that efficiency effects related to reduced incentives for investments (and consequent impacts on attainment) is a cost traded off for the distributional and other positive effects of control limits. For additional discussion, see the analysis presented at the September 2020 Council meeting ([Agenda Item F.4, Attachment 1, p. 29](#)).

3.3.5 Competing Uses for Sablefish QP, Including Gear Switching

In this section, we examine information related to whether gear-switching might be displacing trawl activity and causing under attainment of trawl allocations. It considers the different trawl sector harvest strategies that use sablefish QP (including gear switching) and some factors

influencing the relative competitiveness of those strategies. A central question under consideration is whether gear switchers are using sablefish QP that would: otherwise go unused, otherwise be used by trawl vessels to take more sablefish, or otherwise be used to take more of other species, thereby increasing overall attainment. The following are the main findings of this section. For further supporting information see Section 2.5 of the September 2020 analysis ([Agenda Item D.1, Attachment 1, September 2020](#)) and Section 2.1 of the April 2021 analysis ([Agenda Item F.4, Attachment 1, April 2021](#))

- Sablefish QP can basically be considered fully utilized (an average of 96.5 percent utilization of the annual allocation from 2011-2019).
- Gear switching attainment of the northern sablefish allocation averaged 34.2 percent from 2016-2019.
 - Gear switching operations primarily target sablefish with little to no additional retained harvest of other species.
 - Gear switching operation earned \$2,588 in exvessel revenue from all species, per 1,000 pounds of sablefish landed (2016-2019).
- Trawlers used 63 percent of the trawl allocation of northern sablefish QP in the 2016-2019 period.
 - In the IFQ fishery, the dominant usage of northern sablefish is in the bottom trawl fisheries, which caught about 59 percent of the allocation from 2016-2019.
 - Based on 2016-2019 revenues, DTS is probably the trawl strategy most vulnerable to competition with gear switchers.
 - DTS operations earned \$5,834 in exvessel revenue from all species, per 1,000 pounds of sablefish landed:
 - at least 45 percent less than any other trawl strategy, but
 - more than twice that earned in gear switching.
 - Trends in the mixed shelf and mixed slope fishery indicate that they may also be becoming vulnerable to competition with gear switchers for sablefish QP.
- Prices mediate the competition among different strategies for sablefish QP.
- Gear switching vessels likely help bid up the price of sablefish QP.
- The more profit trawlers earn on the species they land with sablefish, the more they will be willing to pay for sablefish QP (even if sablefish QP result in a loss with respect to sablefish caught) and vice versa. Trawlers will likely be the least willing to pay for sablefish QP to support the DTS strategy (assuming comparable costs among the trawl strategies).
- Amounts of sablefish needed by various trawl strategies may vary over time due to changing regulations (e.g. Rockfish Conservation Area, RCA, restrictions), species rebuilding (e.g. widow and canary), and changes in encounter rates (e.g. due to strong recruitment classes). Increasing sablefish QP demand by other trawl strategies could put additional pressure on sablefish QP prices.
- Taking into account QP prices, together with the sablefish exvessel price and operating cost differences between trawl and fixed gear vessels, on average, there appears to be relative similarity in the profit per pound of sablefish for each gear group as a whole.

- However, there are substantial cost differences when comparing individual trawl vessels with fixed gear vessels such that some trawl vessels generate and substantially more profit per sablefish pound than many fixed gear vessels and vice versa.
- As long as exvessel prices and QP and harvest costs are such that catching additional sablefish generates a:
 - *profit*, trawl vessels will try to catch as much sablefish as possible while taking the available amounts of species that co-occur in their target strategy.
 - *loss*, trawl vessels will try to reduce the rate at which they encounter sablefish in their catch in order to catch the co-occurring species for which they are able to make a profit. This reduction will likely occur up to the point
 - the vessels encounter a technical limit (the rate cannot be further reduced), or
 - the additional amount of other species that would be caught cannot be marketed (i.e. the ratio of sablefish in the catch could be further reduced but there is no reason to do so because of a market limitation).
- If there is surplus sablefish QP, QP prices would likely drop until the harvest of that sablefish QP becomes profitable for either some trawlers or some gear switchers.
- The increase in ratios of Dover to sablefish that occurred with the start of the program and has generally been maintained since indicates that at least some DTS trawlers are trying to reduce the rate at which they encounter sablefish.

In general, the trawl allocation of sablefish is fully utilized, creating competition among different strategies for the available sablefish QP. On average, 96.5 percent of the trawl sablefish QP issued for each year was caught from 2011-2019. Attainment was much lower in 2020 and 2021, likely due to COVID. Some of the 3.5 percent of the trawl allocation that was not utilized in one year may have been held in reserve in vessel accounts, against the possibility of running short in a following year (i.e. carryover). In LAPP programs, it is not unusual for there to be some quota left unused, even though markets and prices provide sufficient incentive for full harvest. For example, the Pacific Coast LEFG sablefish fishery averaged 93.0 percent attainment over the same period, the NPFMC halibut IFQ fishery averaged 97.3 percent attainment and the NPFMC sablefish IFQ fishery averaged 89.5 percent from 2011 to 2015 (most recent program review. NPFMC, 2016).

Sablefish is utilized to some degree by all IFQ program fishing strategies, from fixed gear (gear switchers) to bottom trawl to whiting. Over the course of the IFQ program, gear switching has averaged 29.6 percent of each year's trawl allocation (Table 9). In the first two years of the program, there were the greatest number of gear-switching vessels and permits. It is thought that some participants "tested out" gear switching for sablefish. While the number of participants has declined since then, the level of gear switching has increased. For 2016-2019, the level of gear switching ranged from 32.5 percent to 35.3 percent of the allocation and numbers of participating vessels and permits varied between 15 and 16. Gear switching has declined in more recent years, possibly due to the COVID pandemic.

Table 9. Sablefish north of 36° N. lat. total catch by year and gear type (millions of lbs.) compared to the allocation and total available pounds (allocation plus surplus carryover) and number of gear switching vessels and permits, 2011-2021. Source: catch from 2011-2021 GEMM; participants from PacFIN.

Landing Year		2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2011-2021 Avg
Total Catch		5.29	4.92	4.07	4.13	4.82	5.02	5.56	5.08	5.62	4.09	5.04	4.88
Catch by Gear ^{a/}	Trawl	3.75	3.26	3.09	2.86	3.24	3.22	3.69	3.27	3.61	2.61	3.72	3.30
	Fixed Gear	1.54	1.66	0.98	1.27	1.58	1.80	1.87	1.81	2.01	1.48	1.32	1.57
Allocation Lbs		5.61	5.44	4.03	4.38	4.85	5.32	5.33	5.56	5.69	5.81	6.92	5.36
Percentage by Utilization	Trawl	66.8%	59.9%	76.7%	65.3%	66.8%	60.5%	69.2%	58.8%	63.4%	44.9%	53.8%	62.4%
	FG	27.4%	30.5%	24.3%	28.9%	32.6%	33.9%	35.1%	32.5%	35.3%	25.4%	19.1%	29.6% ^{b/}
	Unharvested	5.8%	9.6%	-1.1%	5.7%	0.6%	5.6%	-4.4%	8.7%	1.3%	29.7%	27.1%	8.1%
Available Lbs		5.61	5.44	4.29	4.52	5.05	5.46	5.64	5.67	5.94	6.00	6.92	5.50
Percentage by Utilization ^{c/}	Trawl	66.8%	59.9%	72.1%	63.3%	64.2%	58.9%	65.4%	57.7%	60.7%	43.5%	53.8%	60.6%
	FG ^{d/}	27.4%	30.5%	22.9%	28.0%	31.3%	33.0%	33.2%	31.9%	33.8%	24.6%	19.1%	28.7% ^{c/ d/}
	Unharvested	5.8%	9.6%	5.0%	8.7%	4.5%	8.1%	2.4%	10.4%	5.5%	31.9%	27.1%	10.7%
Gear Switching Participants	Vessels	17	20	11	15	14	16	16	15	15	9	7	14
	Permits	17	21	11	14	14	16	16	15	15	10	7	14

a/ Catch from 2011-2018 does not include discard mortality rates. Starting in 2019, IFQ vessel accounts were debited for total mortality (landings plus dead discards) instead of total catch.

b/2016-2019 average is 34.2%.

c/2011-2016 average shown in shaded cells is 29 percent (28.85 rounded up). This value was used in the Council's April 2021 motion.

d/2016-2019 average is 33.0%.

Where gear switching operations primarily target sablefish with little to no additional retained harvest of other species¹¹, vessels using trawl gear use a variety of strategies including DTS, midwater rockfish, whiting, mixed shelf (including a mix of flatfish, shelf rockfish, and lingcod), and mixed slope (including a mix of Dover sole and slope rockfish). While trawlers utilize the majority of the sablefish allocation (63 percent from 2016-2019), for trawl strategies (both whiting and non-whiting) non-sablefish species predominate the catch. Figure 18 shows by strategy the average percent of the trawl caught northern sablefish taken by each strategy (left panel) (annual data on landings by strategy can be seen in the [May 2019 SaMTAAC analysis](#)).¹² DTS has taken the vast majority of the trawl caught sablefish in the 2016-2019 period, 72.4 percent, followed by the flatfish strategy.

Of all the trawl strategies, DTS is the most likely to be limited by the availability of sablefish QP. For each 1,000 pounds of sablefish landed in 2016-2019, the DTS strategy brought in the least revenue among the trawl strategies—45 percent less than for other trawl strategies (right panel of Figure 18 and Table 10). Given that the total revenue per 1,000 pounds of sablefish north is so much higher for whiting and midwater rockfish compared to the other trawl strategies (and gear switching), it is probable that these strategies are unlikely to be outbid in the QP market for the sablefish QP needed to prosecute those strategies. Assuming other trawl strategies have somewhat similar costs, this would make the DTS strategy the most vulnerable to competition with gear-switching vessels and shortages in the availability of sablefish QP. A more complete analysis would include an evaluation of costs for each of these strategies.¹³ While DTS revenue per thousand pounds of sablefish is still more than double that of gear switchers, which averages only \$2,588 per thousand pounds of sablefish (Table 10).

¹¹ For gear switching vessels, sablefish comprised an annual average of 99.3 percent of the total revenue and 97.1 percent of total landings for 2016-2019.

¹² On average, 28.3 mt of sablefish (1.8 percent) was taken on trips that could not be distinctly classified into one of the identified trawl strategies. These trips were removed from the analysis.

¹³ Preliminary analyses conducted at the NWFSC generally indicate that average trawl vessel profits per pound of sablefish in the DTS fishery are comparable to or greater than fixed gear vessels (based on variable cost net revenue).



Figure 18. Average percent of all trawl sablefish north landings and ex-vessel revenue per 1,000 pounds of sablefish north by trawl strategy, 2016-2019. Source:PacFIN Reference: June Analysis.RMD; Post September 2020 Analysis.RMD

Table 10. Average proportion of trawl caught sablefish north landed, average ratio of non-sablefish species to sablefish north landed, and the average revenue per 1,000 pounds of sablefish north by trawl strategy compared to the average revenue per 1,000s pounds of sablefish by gear switching vessels, 2016-2019 and 2020. Source: PacFIN

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

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

As the proportion of sablefish in a trawl strategy increases, revenue from all species per unit of sablefish caught will decrease, which may make it more difficult for trawlers using that strategy to compete for sablefish QP. The amounts of sablefish needed for the trawl strategies and species catch ratios are likely to vary over time as other fishery conditions change—for example, most recently, the rebuilding of Pacific Ocean perch and darkblotched rockfish and the reopening of the trawl RCA. Recent years have seen an increased amount of sablefish showing up in all fisheries—from trawl to recreational—with multiple strong year classes entering the fishery. ([Agenda Item G.7.a, Supplemental GAP Report 1, September 2022](#)). Some potential effects of this variation in encounters are illustrated by comparing the values for 2020 to the 2016-2019 averages in Table 10. The 2020 data¹⁴ suggest that the total need for sablefish in the mixed slope and mixed shelf strategies might be increasing (first data column in Table 10). This increase may be the result of a combination of a trend toward increasing total catch in these strategies (bottom panels of Figure 19) and a decrease in the amount of non-sablefish landed for a given amount of sablefish (second data column in Table 10 and top panels of Figure 19—i.e. increase in the amount of sablefish required to land a given amount of non-sablefish species). This decrease in the non-sablefish to sablefish ratio decreases total revenue for a given amount of sablefish (third data column in Table 10) and thereby makes the mixed slope and mixed shelf strategies more vulnerable to competition for northern sablefish QP with DTS strategy and gear switching. At the same time, it should be noted that, at least for 2020, the gear-switching revenue per 1,000

¹⁴ The 2019 data (here rolled into the average) also show a shift in the direction of the 2020 data, indicating a possible trend.

pounds of sablefish also declined. The full significance of these 2020 shifts is difficult to assess because of the possible influence of the COVID-19 pandemic, however, for mixed shelf and slope, the changes appear to be part of a recent trend (as shown in Figure 19).

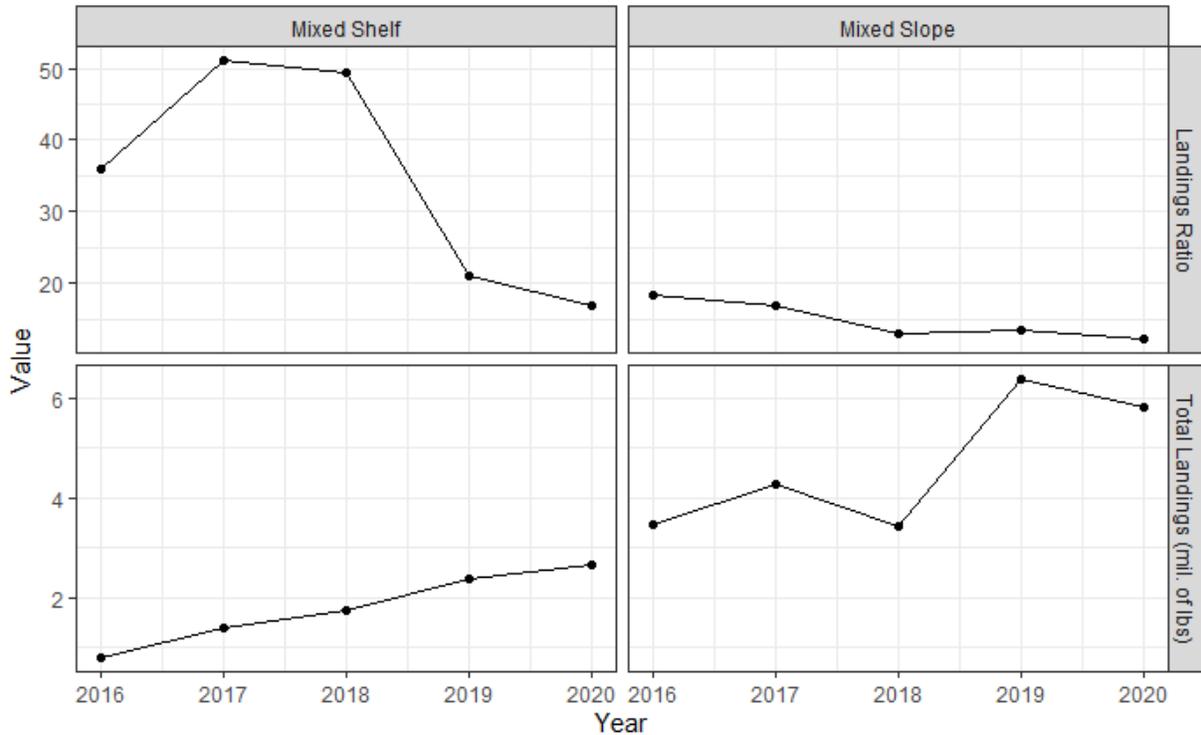


Figure 19. Ratio of non-sablefish to sablefish north (top panels) and total landings (millions of lbs; bottom panels) from 2016-2020 on mixed shelf (left) and mixed slope (right) strategy trips. Source: PacFIN Reference: June Analysis.RMD; Post September 2020 Analysis.RMD

Increasing amounts of sablefish QP demanded for trawl strategies that are expanding and utilizing sablefish at increasingly higher rates are likely to result in an upward pressure on sablefish QP prices. Additionally, the presence of gear switching vessels also has a tendency to exert upward pressure on sablefish QP prices, due to the greater quantities of QP demanded than would be the case if only trawl vessels were in the market for QP. These influences may create particular challenges for vessels fishing in strategies like DTS, which generate much lower total revenue per pound of sablefish landed than other trawl strategies.

Which gear types and vessels are willing to bid more sablefish will be affected by differences in the relative profitability per pound of sablefish. Trawl and fixed gear vessels face the same sablefish QP market prices but different revenue and cost structures. Average price for sablefish QP sold on its own (not in packages with other species) was \$1.01 per pound from 2011-2019 (Holland, 2020), while the exvessel price that fixed gear vessels received averaged \$1.14 per pound more over the same period. However, trawlers had average trip costs per pound that were much lower than for fixed gear vessels because of their larger harvest volumes. Using DTS trips as an example, the average trip cost per pound were \$0.96 less than fixed gear vessels (comparing the annual average for median vessels for each strategy from 2011-2019). This lower fishing cost for DTS tended to balance out the higher sablefish revenue per pound for fixed

gear vessels (depending on the year) and indicates the possibility of a degree of relative similarity in the willingness the average participants in each category to pay for sablefish QP. While the averages came close to balancing out, the results varied depending on the situation of individual vessels. Vessels face market determined prices for QP and landed sablefish but their individual cost structures vary based on the configuration of their business and equipment efficiency (including vessel and gear). For example, a high efficiency fixed gear vessel (a vessel operating at the 25th cost percentile for fixed gear vessels) has costs per pound that averaged \$0.55 less than a low efficiency DTS vessel (a vessel operating at the 75th cost percentile for DTS vessels, 2011-2019 average). Such a fixed gear vessel, in addition to having an exvessel price advantage also has a cost advantage over the low efficiency DTS vessel, with a net difference in this example of \$1.74 per pound. At the same time, a high efficiency DTS trawler has costs per pound that averaged \$1.42 lower than those for a low efficiency fixed gear vessel, more than overcoming the \$1.14 per pound price disadvantage, but not to as great a degree (a net of \$0.28 per pound). Thus, for any given set of conditions there are likely to be some vessels of one gear type that are more profitable than vessels of another gear type and, with respect to trawl vessels, there are likely to be some that generate a profit for each additional pound of sablefish caught (independent of revenue from co-occurring species) while others generate a loss. Those that are more profitable are likely to bid more for and garner more sablefish QP.

Whether trawlers make a profit on sablefish QP or not, they will likely have incentive to acquire all available sablefish QP. Theoretically, as long as a trawler's profit per pound of sablefish is positive (taking into account the exvessel price of the sablefish, fishing costs per pound, and the sablefish QP cost, but not revenues and costs from co-occurring species), a trawl vessel should have incentive to take all of the available sablefish that it can while maximizing the amount of other species harvested (likely favoring whichever species have the highest profit per pound).¹⁵ If profit per pound of sablefish is negative, trawlers may still have an incentive to fish for their complexes as long as profits for other species caught are positive and make up for any losses from the harvest of sablefish. In that case, trawlers would be expected to avoid sablefish while maximizing their harvest of the profit producing species (increase the ratio of other species in the catch relative to sablefish).. The maximum amounts of other species harvested could be limited by the total allocation of those species or by markets. A market limit would be a limit imposed by processors, for example, in the DTS fishery due to the limited volumes of Dover that their markets are able to absorb (see Section 3.3.2). If all sablefish QP is not used, sablefish QP prices would likely drop until lower efficiency vessels are able to make a profit, at which point they would likely increase the ratio of sablefish in their catch in order to use the available QP (see Section C-2.0 for further discussion).

Data for the DTS fishery illustrates that trawlers have some influence over the ratios of species in their catch. As discussed above, the species which is most likely to be constrained by the availability of sablefish QP is the harvest of Dover sole in the DTS strategy. Since the start of the program, catch ratios of Dover to sablefish in the DTS strategy have increased. Dover sole to sablefish ratios vary by time of year and geographic area (see [SaMTAAC Agenda Item B.2, Attachment 2](#), section on DTS Haul Characteristics). Coinciding with increases in trip limits in 2007, the Dover sole to sablefish catch ratio on observed trips with some Dover and sablefish increased from 2.44 to 3.42 (Figure 20). With implementation of the catch share program, ratios

¹⁵ This analysis assumes that the co-occurring target species are generating positive profits per unit of catch.

increased from 3.35 in 2010 to 4.64 in 2011 and have stayed at that higher level (averaging 4.74 from 2011 through 2019).¹⁶

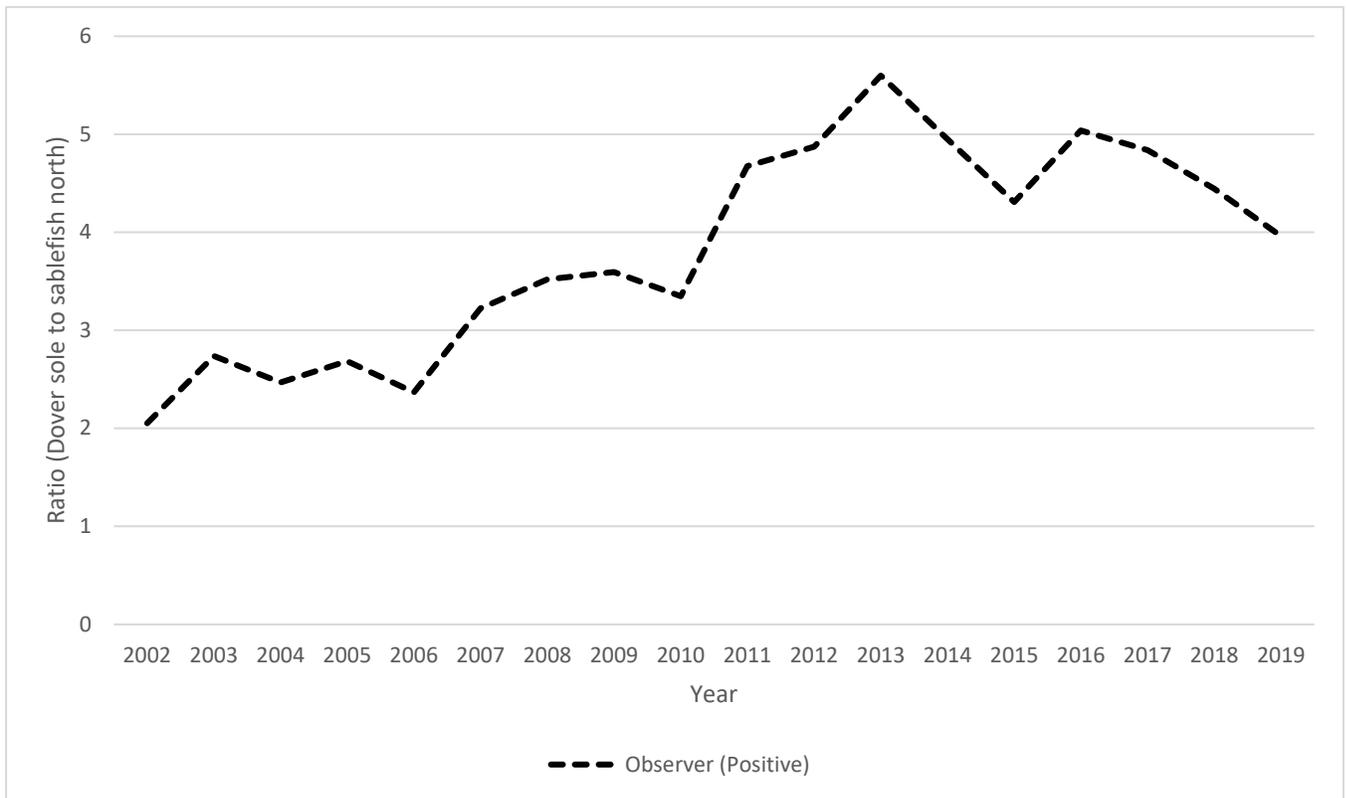


Figure 20. Catch ratio of Dover sole to sablefish on bottom trawl hauls with Dover and sablefish north present (black lines), 2002-2019. Sources: WCGOP.

Reference: Dovor Sabl GEMM Analysis.xlsx, WCGOP/SaMTAAC.rmd, 6 Trawl Analysis.rmd

3.4 Factors that Might Alter Future Levels of Gear Switching

3.4.1 Normal Variation and Extraordinary Events

There is a possibility that even if conditions in the fishery are relatively stable gear switching may increase or decrease to some degree due to normal variation, as has been seen historically and also indicated by a random sampling analysis that is based on conditions present from 2011-2019 (*F.4, Att 1, Section 3.1 Text p. 30, April 2021*). However, changing fishing and marketing conditions and extraordinary events could decrease or increase levels of gear switching in the

¹⁶ While prior to 2011 the proportion of observed Dover trips was small, the ratios observed are consistent with those seen in landings data (see [Section 6.0 of Agenda Item F.1, Attachment 1, April 2022](#)). It is possible that the landings data is biased representation of catch because of sablefish discards and that observer data is biased due to vessels avoiding areas of high sablefish encounters on observed trips (observer effect). In either case, the implication would be that actual Dover to sablefish ratios through 2010 would be lower than displayed in the figure. Thus, the relative change with implementation of the catch share program would be even larger than indicated here. Further, to the degree that the lower ratios from 2002 through 2010 are due to observer effects, they indicate an ability of the vessels to affect their species mixes.

future. The recent COVID pandemic, during which gear switching declined from 35.3 percent of the annual allocation in 2019 to an average of 22.2 percent in 2020 and 2021, provides an example of unexpected fluctuations. Some of the conditions likely to influence levels of gear switching are discussed in the following sections.

3.4.2 Biomass and Changing ACLs

As sablefish biomass changes in concert with management changes, the degree to which sablefish north is available and needed by various fisheries may change (as described in Section 3.3.5) 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 sablefish ACLs might not result in increased opportunity to take these other complexes. Changes in encounter rates resulting from strong recruitment events and biomass changes may also shift relative sablefish encounter rates between different strategies. For example, large year classes taken as bycatch in the whiting fishery like those seen in recent years may increase the amount of sablefish QP needed for that fishery and decrease the amount available for other trawl gear strategies. Section 3.3.5 discusses how whiting and other strategies are likely able to outcompete strategies such as DTS for sablefish QPs. Alternatively, if vessels are able to maintain similar encounter rates as the sablefish ACL increases, then increases in allocations could at least partially alleviate any constraint concerns 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 other factors (e.g., market limits), then there might be other responses as the available sablefish QP increase. For example, if trawlers are able to turn a profit on their sablefish catch, they might increase the ratio of sablefish in their catch. But, if the harvest and quota costs of trawl caught sablefish are greater than trawl exvessel value of sablefish, more of the sablefish QP may go to gear-switching vessels.

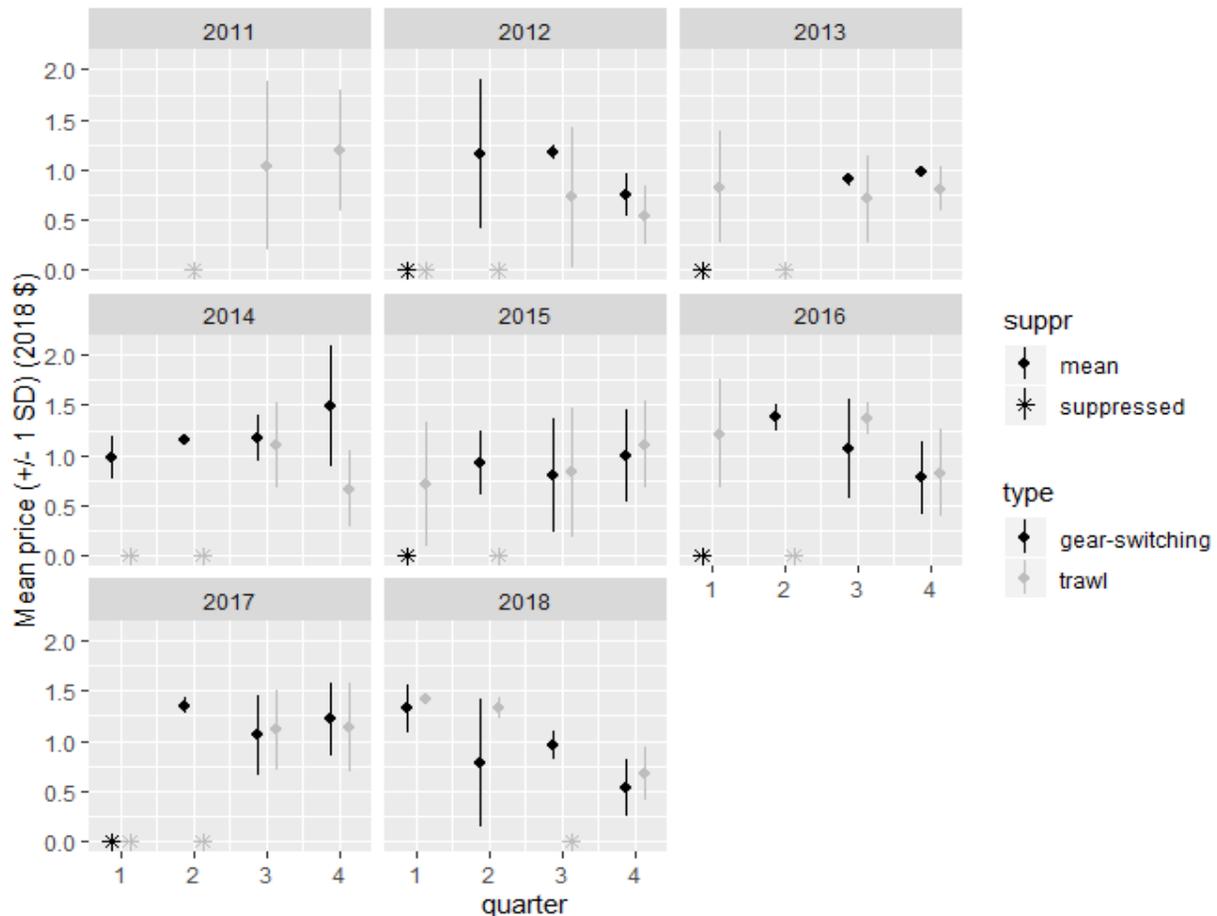
3.4.3 Sablefish Market Prices (Exvessel and QP)

- The degree to which gear switchers use trawl sablefish QP will be partially a function of exvessel prices, QP prices, and fishing costs, including the degree to which prices and costs differ between trawl and fixed gear vessels (see Section 3.3.5 for further discussion).
- Future exvessel prices, QP prices, and fishing cost fluctuations and differentials between gears may be greater than experienced in the past and consequently could result in levels of gear switching greater or less than seen in the past.

Over the course of the first eleven years of the program (through 2021), the amount of gear switching has varied from 445 mt to 912 mt and from 19.0 percent to 35.3 percent of the trawl allocation (Table 9). Future levels of gear switching could vary from this (be greater or less than in the past), particularly if differences in exvessel prices and costs between gear types are outside the range observed in the past.

Trawlers and fixed gear vessels tend to pay similar amounts for sablefish QP, as would be expected in a well-functioning market. Figure 21 shows the average prices paid, by gear type

and quarter of the year from 2011-2018. While the average prices have been similar, there is also some price dispersion around those averages, such that in any one year not all QP buyers have purchased at the same price. However, annual average sablefish QP prices generally fluctuate in a manner that tracks the major changes in exvessel prices (Figure 22).¹⁷ This fluctuation of QP prices likely reflects the changing profits that are expected with changing exvessel prices and fishing costs.



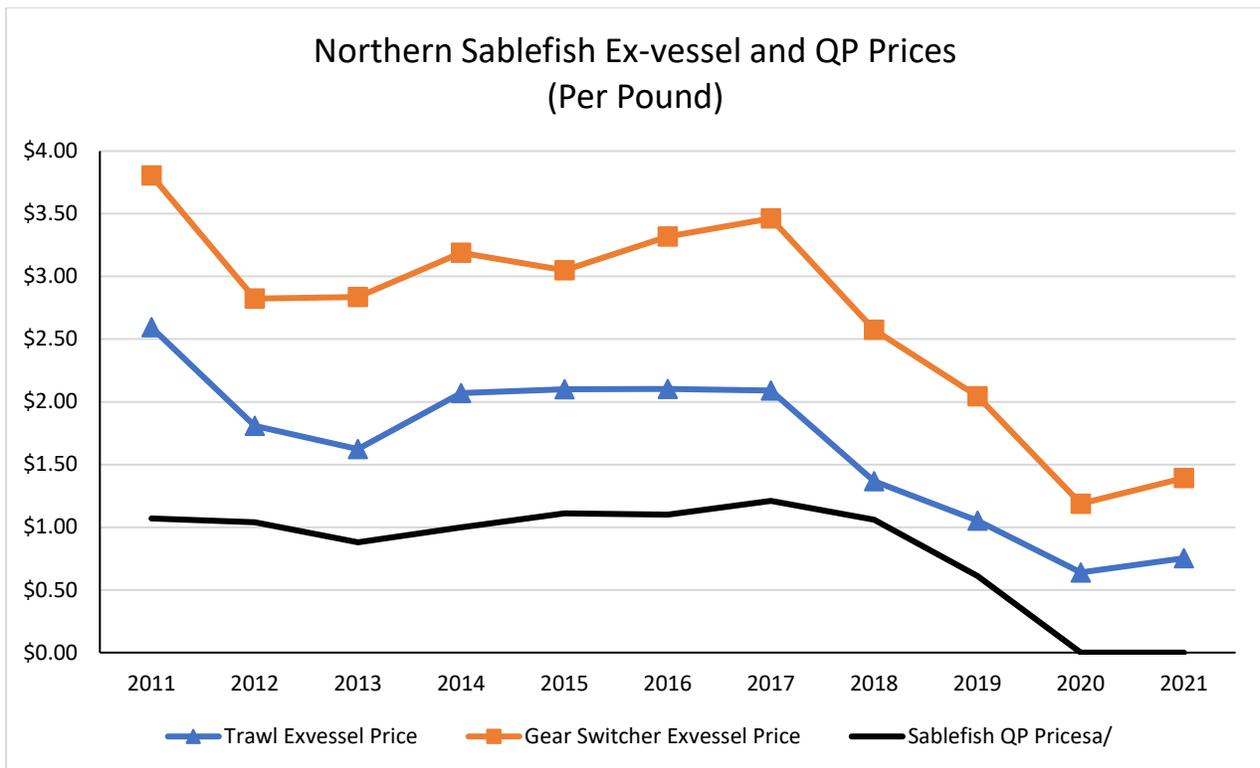
G. Note: Suppressed (“suppr”) indicate value withheld due to data confidentiality.
 Figure 21. Mean QP prices for purchases by trawl and by gear-switching vessels by quarter and year. (Source: Erin Steiner, NWFSC, Sept 27, 2019).

Differences between trawl and fixed gear exvessel prices and fishing costs influence the relative incentive for each gear type to target sablefish. In 2011, fixed gear vessels received \$1.21 per pound more than trawl vessels and in 2015 they received \$0.95 per pound more (Table 11). In all other years, they were within that range except in 2020 and 2021, when the differences were \$0.55 and \$0.64 respectively.

Costs also fluctuate over time, but it is more difficult to portray changes in costs for vessels because the costs vary among vessels due to varying ways in which fishing businesses organize

¹⁷ The most significant exception to this statement is with respect to the changes between the first and second year of the program, which might be explained as function of the participant learning about what they might expect under the catch share program—in terms of prices, costs and profits.

their operations and differences in equipment efficiency, even within a gear type. Thus, average costs for the fleet may not reflect the relative advantages of particular vessels (see discussion in Section 3.3.5). As an indicator of trends, from 2011 through 2019, the costs per pound for the median trawl vessels fishing DTS averaged \$0.90 a pound less than fixed gear vessels, but in 2019 and 2020 the difference were at their lowest levels, differences of below \$0.66 a pound. This reduction in the cost advantage for DTS trawlers coincided with a reduction in the trawl exvessel price disadvantage (Table 11).



H. a/ From Holland, 2020.

Figure 22. 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.

Table 11. 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. (2011-2021). (Source: PacFIN).

Gear	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Trawl	\$2.59	\$1.81	\$1.62	\$2.07	\$2.10	\$2.10	\$2.09	\$1.37	\$1.05	\$0.64	\$0.75
Fixed Gear	\$3.81	\$2.82	\$2.84	\$3.19	\$3.05	\$3.32	\$3.46	\$2.57	\$2.04	\$1.19	\$1.39
Price Difference	\$1.21	\$1.01	\$1.21	\$1.12	\$0.95	\$1.21	\$1.37	\$1.21	\$0.99	\$0.55	\$0.64
Sablefish QP Prices^{a/}	\$1.07	\$1.04	\$0.88	\$1.00	\$1.11	\$1.10	\$1.21	\$1.06	\$0.61	N/A	N/A

N/A = not available at this time

a/ From Holland, 2020.

As prices sablefish prices fluctuate, there is likely a greater proportional impact on fixed gear vessels, which do not have the buffer from other species, than for trawl vessels. Prices per pound for species in the DTS complex other than sablefish tend to be more stable than those for sablefish (Figure 23). Thus, for DTS trawlers, the changes in sablefish prices have more of an influence on whether they try to catch sablefish (when a positive profit is generated per pound of sablefish) or avoid it (when the profit is negative) than there is an influence on the total amount of DTS in which they engage.

Figure 23. Weighted average price per pound of bottom trawl caught Dover sole and thornyheads compared to sablefish north, 2011-2019.

3.4.4 Conditions in Cross-Over Fisheries

One of the driving factors for the levels of gear switching include the opportunities present in other fisheries—both on the West Coast and Alaska. Previous analysis shown in [September 2020](#) and [April 2021](#) discussed the primary fisheries where there is the most amount of crossover with the gear switching fleet—the Alaska IFQ sablefish fishery, West Coast Dungeness crab fishery, and the West Coast LEFG primary tier sablefish fishery.

From 2016-2019, even as Alaska sablefish quotas were increasing, vessels participating in both fisheries appeared to have been prioritizing West Coast sablefish over Alaska sablefish as average West Coast landings increased and Alaska landings decreased. This may be because these vessels are homeported on the West Coast and therefore, its more economically beneficial to fish off the West Coast longer as opposed to going to or staying longer in Alaska. Continuation of the recent trend or a reduction in opportunity in Alaskan fisheries could result in more gear switching on the West Coast.

For Dungeness crab, 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 with no restrictions on gear switching. Similarly, increasing opportunities or prices in the crab fisheries might lead to less participation in gear-switching activities, though the prime fishing times in the crab fishery (late fall and early winter) does not strongly overlap with when most of the fixed gear sablefish fishing occurs.

Crossover between the LEFG primary fishery and the gear switching fleet has been discussed extensively over the consideration of gear switching limitations and the most recent LEFG primary tier program review. Historically, the likely motivations for crossing over from the LEFG primary fishery to gear switching was the three-permit stacking limit in addition to the seasonal constraints (April 1-October 31). Previous analysis showed that all but one of the vessels from 2016-2019 that crossed over from the LEFG to the trawl fishery had reached its three-permit stacking limit ([LEFG primary tier review](#)). The three-permit stacking limit remains in place. However, the Council recommended the extension of the primary tier season through December 31 ([87 FR 54445](#)), as a part of the 2023-2024 Harvest Specifications and Management

Measures process. This extension would allow vessels to fish their tier quota over a longer period of time and later in the season off the West Coast (after returning from Alaska) potentially reducing some vessels' incentives to participate in gear switching.

There are certain advantages for vessels that participate in the LEFG primary fishery as compared to gear switching in the trawl IFQ fishery. The LEFG primary fishery has neither cost recovery nor industry funded 100 percent monitoring requirements. Thus, the overall profit for LEFG primary trips could provide more incentive to prioritize those trips compared to gear switched trips. Increasing cost recovery or monitoring costs in the trawl IFQ fishery could potentially increase the differential and reduce the amount of gear switching and efforts to reduce those costs could lead to increases in gear switching. Similarly, the addition of cost recovery to the LEFG tier program could reduce the cost differential between the two fisheries, encouraging more gear switching.¹⁸ One of the primary motivations for participating in gear switching is the potential total harvest opportunities in the IFQ sector (311,472 lbs for an annual vessel QP limit in 2021) compared to the maximum in the LEFG primary fishery (three tier 1 permits in 2021= 175,947 lbs) could outweigh the additional costs. There has been discussion of increasing the tier limit in the fixed gear fishery, which could lead to a reduction in gear switching.

3.4.5 Latent and Underutilized Permits

Whether or not current levels of gear switching are a constraint on trawl harvest opportunities, throughout the Council's consideration of a gear switching limitation, concern has been expressed that unlimited expansion of gear switching could adversely affect fishery management objectives. One opportunity for gear switching to expand through new entry is by acquiring access to limited entry permits that are latent (i.e., unregistered to a vessel) or inactive (i.e., registered to a vessel but not used for IFQ landings).

From 2011-2021, there have been 64 trawl endorsed permits that were unregistered to a vessel for an entire year, with five being latent over the entire period. The number of latent permits increased from an average of 22 per year between 2011-2014 to 32 from 2015-2018 to 37 in the most recent three years (2019-2021). The number of trawl permits that have been registered to a vessel but not used for IFQ landings for an entire year ("inactive") from 2011-2021 has been relatively stable at an average of 35 permits. There have been 100 different trawl permits that have been inactive for a year, with six being inactive the entire period. This suggests that if there are entities interested in gear switching (or participating in the IFQ program in general) that there are permits available that would not limit current participation (in terms of taking a permit from an active IFQ participant). Therefore, gear switching could continue to expand if the market conditions allowed.

3.4.6 New Entrants

Due to factors such as changing biomass, markets, and conditions in other fishery, vessels might move from other fisheries into the gear switching fishery or totally new entrants to fishing might decide the opportunities in gear switching make it a good candidate fishery. Moving into the

¹⁸ As part of the most recent [LEFG primary tier review](#), the Council recommended the consideration of cost recovery for the LEFG tie program.

gear switching fishery requires acquiring QPs and access to a trawl endorsed permit. As described above, there are latent or inactive permits that could be available to interested parties. Prior to the COVID-19 pandemic, gear switching participation had stabilized. Figure 24 below shows the cumulative number of distinct permits and vessels with gear switched landings (lines) compared to the yearly totals of permit and vessel participants in the fishery in a year. A total of six vessels and permits entered the gear switching fishery after the control date- when it was noticed that any gear switching activity after the fact may not be considered in allocating opportunity in the future. This included two vessels and permits that entered the fishery in 2020-2021 during the pandemic. If the control date has discouraged new entry into the fishery, one might expect to see an expansion of participation if the Council decides not to take any action. On the other hand, those who have entered since the control date may have done so on speculation that the control date would change and they might then become eligible for some future consideration.

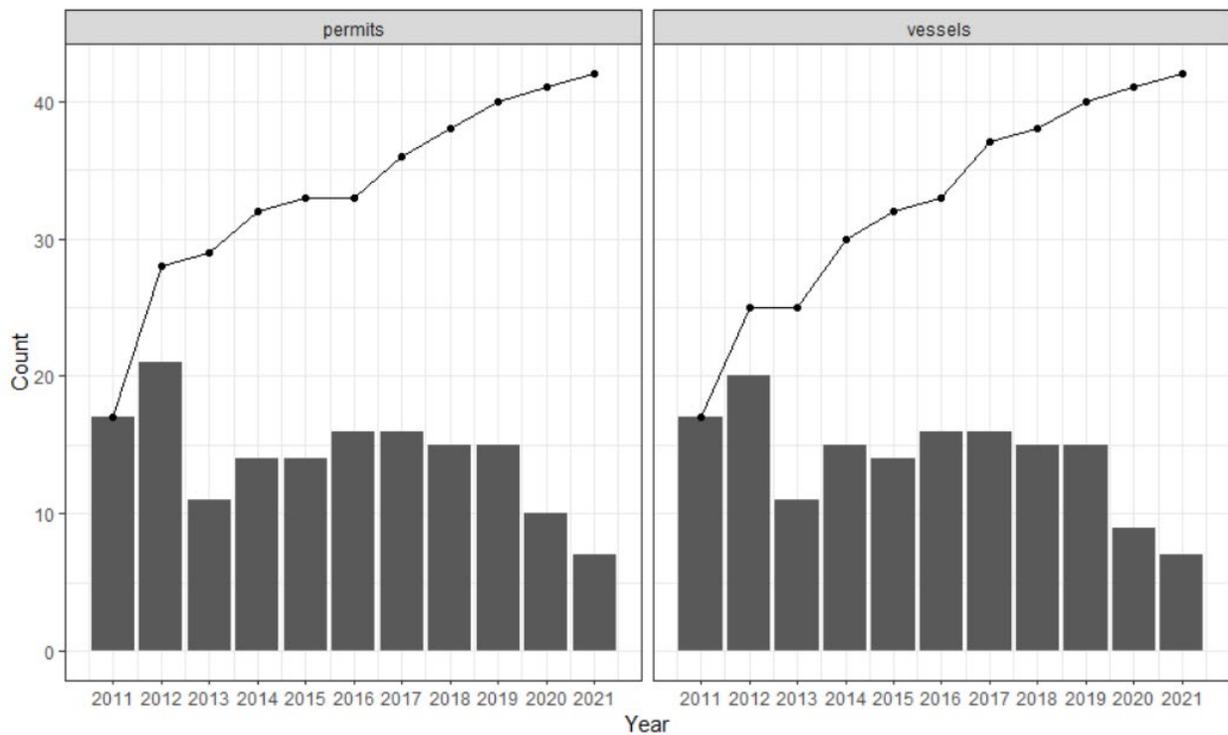


Figure 24. Cumulative number (lines) compared to yearly count (bars) of permits and vessels with participation in the gear switching fishery, 2011-2021.

3.4.7 Trends in QS Acquisition by Gear Switchers

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

It is difficult to fully ascertain QS ownership by gear switching operations because detailed ownership information is available only for QSAs and vessel accounts, but not permits. Another challenge is developing a measure for a group (gear switchers) whose membership and participation changes from year-to-year, such that changes in QS ownership may be related to the participation in a particular year, rather than trends in acquisition or divestment. This is seen in Table 12 where QS ownership has generally fluctuated with the number of participants. Also note that with respect to entities that own a gear switching permit, in some cases these may be trawl entities that leased their permit to a gear switching vessel.

Table 12. Annual QS amount owned by gear switching permits and vessels within a given year, 2011-2021.

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
QS owned by Permit Owners	22.580	21.364	9.670	14.678	13.792	15.053	14.623	13.382	15.965	12.179	10.120
Total Gear Switching Permits	17	21	11	14	14	16	16	15	15	10	7
QS owned by Vessel Owners	3.923	12.678	4.937	8.441	8.567	9.066	9.908	7.878	5.438	4.939	2.653
Total Gear Switching Vessels	17	20	11	15	14	16	16	15	15	9	7
Gear Switching Vessels that Owned QS	7	10	5	8	9	9	10	8	7	5	3

Looking at the set of vessel owners that gear switched at least once since the start of the program and that groups holdings in each year, there has been some QS acquisition since QS trading began in 2014. These vessel owners have increased their holdings from 16.229 percent to 19.333 percent, an increase of 3.104 percent (Table 13). However, since the year after trading first started (2015), levels of QS ownership by this set of vessel owners has been relatively stable. Of the 42 vessels that had some gear switching history in this period, 23 vessels had owners that also owned QS over the time period.

Table 13. Amount of QS owned by vessels that GS anytime between 2011-2021

Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
QS Owned	16.229	16.229	16.229	17.271	19.598	21.079	19.578	19.132	19.333	19.333	19.333

The 2011-2021 time period includes some vessels that primarily trawl but tried gear switching in a year or two at the start of the program but did not return to it. Therefore, it may be instructive to look at just those vessels that gear switched in more recent years. Vessel owners that gear switched at least once between 2015-2021 held 12.12 percent of the QS in 2015, and had acquired 13.35 percent by the following year, but were down to 13.07% in the last three years

(any degree of commonality in the vessel account and QS account was used in determining common ownership, Table 14). Of the 26 vessels that had some gear switching history in this period, 17 vessels had owners that also owned QS.

Table 14. Amount of QS owned in 2015-2021 by vessels that GS anytime between 2015-2021

Year	2015	2016	2017	2018	2019	2020	2021
QS Owned	12.12	13.35	13.35	12.87	13.07	13.07	13.07

4.0 IMPACTS OF ALTERNATIVES (INITIAL ASSESSMENT)

4.1 Approach to Analysis of Impacts

4.1.1 Challenges

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

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

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

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

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

The degree of specific port¹⁹ activity and dependence on gear switching and trawl landings.

Information on the geographic distribution of the fishery is limited due to the relatively small number of first receivers and the requirement to maintain confidentiality (i.e. the “rule of three”). In order to provide finer levels of geographic disaggregation, multi-year

¹⁹ Specific port level means, for example, Crescent City, rather than the Eureka port area or northern California, of which Crescent City is a part.

time periods that include more first receivers are sometimes used, however, this limits our ability to provide information on trends in a port. Therefore, trends and other information must often be presented at higher levels of aggregation (such as a port group or region) from which it is difficult to infer what is happening in the ports with fewer first receivers.

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

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

4.1.2 Analytical Scenarios and Short- and Long-Term Impacts

The analysis of No Action and the four action alternatives will consider scenarios in which gear switching is and is not displacing trawl gear catch and how trawl vessels may or may not respond to increased sablefish availability. The scenario approach will be applied primarily with the short-term analysis, but the issue of whether or not gear switching is constraining the trawl fishery will also be addressed in the analysis of the long-term impacts. Examples of this approach and results with respect to the short-term effects on the trawl fleet can be found in the following sections, most of which were produced for the Council consideration of the maximum level of gear switching that would be used to guide development of the action alternatives.

Overall, the level of gear switching that would be permitted versus what may actually occur under each of the alternatives will be dependent on the design of the gear switching mechanism (i.e. QPs, permit endorsements), whether gear switching is a limiting factor to trawl attainment, as well as the other factors described in Section 3.4 above.

For Alternatives 1 and 2, there are two options for determining the amount of any gear QPs issued each year- option 1 would cap it at 29 percent while option 2 would be the lesser of 1.8 million pounds or 29 percent. IFQ allocations in excess of ~6.2 million pounds would result in a cap of 1.8 million pounds under Option 2- reducing the overall percent of possible gear switching (albeit could be a similar amount to 29 percent of a lower ACL year). However, the overall amount of gear switching would be dependent on how the any-gear QS is distributed amongst gear switching entities (for Alternative 1) or any-gear QPs (in Alternative 2) and if gear switching participants were able to “sweep up” enough any gear QPs outside of what is owned to reach the potential 29 percent maximum. For Alternative 1, the short and long term impacts would be similar as it would create two types of QS at implementation, thereby securing a portion of the sablefish north allocation that could be gear switched. If gear switching is constraining and gear switching entities were able to purchase the any-gear QS, this would result in all the any-gear QPs being used for gear switching until it was no longer economically viable for those vessels to participate in the fishery. Trawl operations would therefore be restricted to the trawl-only portion sablefish allocation and this could potentially impact overall attainment. If gear switching is not constraining, then even if gear switching entities purchased all of the any gear QS, trawl vessels would likely not be impacted. While both Alternatives would use gear-specific QPs in for vessels

landing in the IFQ fishery, Alternative 2 would not create a permanent division of the sablefish allocation. Under Alternative 2, all QS accounts would all eventually receive a standard ratio to meet the QP Split Option. Therefore, over time it is likely that gear switching levels will be less than 29 percent as it would require transactions with every QSA to gather all the any-gear QPs.

For Alternatives 3 and 4, higher levels of gear switching would be controlled by the gear switching endorsements and associated limits issued. At maximum, the limits add up to 29 percent total; however, there would also be allowances for those limits to expire and some lower level of gear switching for non-endorsed permits. Over time, if permits were to expire, the overall level of gear switching would likely decline to a minimal amount. However, if permits did not expire, then gear switching levels would be driven by the endorsement limit of the permits.

4.2 Fishery Resources

In October 2019, an update of a 2011 analysis of gear switching on the sablefish stock was produced for the SaMTAAC utilizing the 2019 stock assessment. Specifically, the analysis looked at impacts to the stock assuming that 100 percent of the trawl allocation was taken with fixed gear compared to if 100 percent was taken with trawl gear. In 2011, under the base case, the preliminary conclusion was that there was little difference in the depletions of the two catch scenarios. Working with the 2019 sablefish stock assessment team (STAT), this analysis was redone using the 2019 base case and produced similar results. (*SaMTAAC Agenda Item E.2, Analysis, [Table 22, October 2019](#)*) While there was an update assessment in 2021, the analysis was not reproduced as of the drafting of this document; it is likely that the impacts to the sablefish stock under any of the action alternatives would be similar to No Action over the short and long term.

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

4.3 Other Biological Resources

Trawl and non-trawl gears typically interact with different protected and prohibited species. Trawl gears tend to interact with salmon and eulachon while non-trawl gears have the potential to interact with whales, turtles, and seabirds.

If gear switching is a limiting factor to trawl attainment and gear switching is reduced, leading to an increase in trawl activity, there could be increases in interactions with salmon and eulachon. The groundfish fisheries currently operate under the 2017 BiOp for salmon, which includes thresholds for both the non-whiting and whiting sectors for coho and Chinook salmon. Since 2017, the non-whiting sector has been well within its thresholds (average of 13.9 percent for

Chinook and 25.4 percent from 2017-2021²⁰). Even if bottom trawl activity were to increase with a decrease in gear switching activity, it is likely that the bycatch would stay within the thresholds given recent bycatch totals and the Council’s ability to institute inseason mitigation measures such as block area closures and gear restrictions (SFFT). Gear switching vessels in the IFQ sector have no recorded salmon bycatch since 2017. Of all the groundfish fisheries, bottom trawl fisheries have historically, in most years, had the highest observed amount of bycatch of eulachon across the groundfish sectors, but the fisheries have been within the ITS limit ([Agenda Item G.4.a, GESW Report 1, June 2021](#)). It is important to note that “Based on the overall magnitude of bycatch in U.S. West Coast groundfish fisheries, either there is limited interaction with eulachon in these fisheries or most eulachon encounters result in fish escaping or avoiding trawl gear”. There is also limited interactions for green sturgeon with the trawl fishery, but again, the fishery has been within the take limits.

For those species typically encountered by non-trawl gear types, if gear switching is reduced through an action alternative, there could be potential benefits to select protected and prohibited species. IFQ gear switchers typically target sablefish with the use of pot or longline gears, which have increased interactions with whales and seabirds compared to trawl gears.

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

4.4 Overall Trawl Fishery Harvest, Ex-vessel Revenue, and Attainment

The impacts to trawl fishery harvest, ex-vessel revenue, and attainment will not only be affected by the selection of an action alternative but will primarily be impacted by the question of “is gear switching limiting trawl attainment.” Previous analyses have shown how reductions in gear switching could impact trawl attainment in the short term over a range of allocation levels and under different scenarios ([Agenda Item F.4, Attachment 1, April 2021](#)). Specifically, that analysis looked at:

- ACL range (2013, 2019, 2021)
- Levels of gear switching (0, 12, 20, 33 ,40 ,52 percent)
- Is gear switching limiting vs. not limiting trawl attainment?
- If gear is limiting and trawlers were able to utilize the sablefish, what would the result be if DTS absorbed the sablefish versus all competing strategies (DTS, flatfish, mixed slope, mixed shelf)?

The April 2021 analysis was updated to look at the impact to competing strategies under the same set of ACLs and allocations, but under gear switching levels of 0, 12, 20, and 29 percent to help quantify the potential impacts of the action alternatives. The first part of this section will provide that updated analysis and the second part will discuss the impacts of the alternatives and where the impacts may fall within the analyzed range under the various scenarios.

²⁰ Includes 500 Chinook salmon and 138 coho salmon assumed mortality for non-trawl fisheries.

4.4.1 Short Term Impacts: Gear Switching Scenarios

Assumption: Gear switching is constraining trawlers and trawlers do not change their species mix.

If gear switching is limited by an action alternative and trawlers are able to increase their harvest of trawl complexes but do not change the mix of species in their catch, the change in total ex-vessel revenue for the trawl sector (including changes for both gear switchers and trawl vessels) would be positive and vary depending on the level to which gear switching is constrained (Table 15). For this analysis, it is assumed that the newly available sablefish QP are spread across those trawl strategies that are likely to be most in competition with gear switching for sablefish QP. While DTS is the strategy most likely to be competing, changing conditions could also bring mixed shelf, mixed slope, and flatfish into that competition (see 3.3.5). For a complete description of methods, see [Agenda Item F.4, Attachment 1, April 2021 \(page 53\)](#). As an example, if the 2 million pounds of gear switched sablefish in 2019 were redistributed across the identified trawl strategies and markets are able to absorb the additional trawl catch, it could have resulted in an increase of approximately 20.9 million pounds of non-whiting trawl landings. In 2019, this would represent an approximate increase of 7.6 percentage points in overall non whiting attainment (increasing attainment to 32.7 percent). Assuming that market prices remained stable and applying the average revenue per metric ton for each strategy, this hypothetical would result in additional annual revenue of \$12.7 million, which would be three times greater than the ex-vessel revenue from the gear switched fishery in 2019 (Table 2).

Table 15. Summary of changes under gear switching levels applied retroactively to 2013, 2019, and 2021, *assuming gear switching is constraining trawl harvest and trawlers do not change their species mixes in response to changing sablefish availability*. Changes in landings (millions of lbs) and revenue (millions of dollars) for gear switching, non-whiting trawl competitive strategies, and overall net change. Change in non-whiting trawl attainment. Grey rows indicate where actual gear switching levels were already below the proposed gear switching level.

Baseline Year	GS Level	Gear Switching a/		Non-Whiting Trawl b/		Net Change		Change in Non-Whiting Trawl Attain.
		Lbs (millions)	Rev (millions)	Lbs (millions)	Rev (millions)	Lbs (millions)	Rev (millions)	
2013	29							
	20	-0.2	-\$0.4	2.0	\$1.2	1.8	+\$0.9	+1.5%
	12	-0.5	-\$1.1	6.3	\$3.8	5.8	+\$2.7	+4.6%
	0	-1.0	-\$2.2	12.6	\$7.6	11.6	+\$5.4	+9.3%
2019	29	-0.3	-\$0.7	3.6	\$2.2	1.8	+\$1.5	+1.3%
	20	-0.9	-\$1.6	9.0	\$5.4	8.1	+\$3.8	+3.2%
	12	-1.3	-\$2.5	13.7	\$8.3	12.4	+\$5.9	+4.9%
	0	-2.0	-\$3.8	20.9	\$12.7	18.9	+\$8.9	+7.6%
2021	29							
	20							
	12	-0.5	-\$0.7	4.3	\$2.5	3.8	\$1.8	+1.6%
	0	-1.3	-\$1.8	11.8	\$6.8	10.5	\$5.0	+4.3%

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

As discussed in 3.3.5, if gear switching is not displacing trawl but is reduced under an action alternative, it is likely that trawlers could increase the proportion of sablefish in their species mixes assuming they are making a profit on their sablefish catch (independent of revenue from co-occurring species) and there is not a technical or market limit. In that case, trawlers will likely change their species mix to use the sablefish QP no longer usable by gear switchers, leading to an increase in the revenue per mt for the complex. Table 16 shows the range of gear switching levels and the range of revenue per mt that would hypothetically have occurred under

a weighted average of the competitive non-whiting strategies, assuming 2019 non-sablefish catch composition and exvessel prices.

Table 16. Range of actual revenue per metric ton of trawl landings in competitive strategies to gear switching in 2019 and the hypothetical revenue per metric ton if gear switching were reduced to 0, 12, 20, or 29 percent retroactively and trawlers increased their utilization of sablefish and average price per pound was maintained.

Gear Switching Level	Actual Revenue per MT	Hypothetical Revenue per MT
29	\$1279-\$1536	\$1292-\$1541
20		\$1312-\$1548
12		\$1329-\$1554
0		\$1353-\$1564

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

If gear switching is not constraining and for some reason trawlers do not change their species mix to utilize the additional QP, then the reduced revenue from the gear switching limitation would be a net loss to the fishery (see the gear switching columns of Table 15). If this were to occur and were caused by an inability of trawler to make a profit from their sablefish catch (not including revenue from co-occurring species), it would likely be a short-term phenomenon because sablefish QP prices would be expected to drop to levels at which trawlers were able to make a profit and so would buy and use the surplus sablefish QP. On the other hand, if not all sablefish QP were used because of a technical constraint in trawlers ability to land a higher proportion of sablefish or because the market could not take more trawl caught sablefish, then sablefish QP might go unused over a longer period.

4.4.2 Long Term Impacts

Long term impacts in association with a change in gear switching levels are most likely to be associated with changes in investment. However, impacts caused directly by the regulatory changes may occur over a longer time frame if certain provision(s) phase in, depending on the alternatives used to limit gear switching. For example, Alternative 3 and 4 consider an option for the gear switching endorsement to expire over time. As with the short-term impacts discussed above, the effects of gear switching reductions phased in over the longer term will depend on whether gear switching is a constraint to trawl vessels and the nature of the constraint. If gear switching is displacing trawl harvest, or there is a concern that it might become a more substantial constraint in the future, then it might be creating uncertainty about trawler access to sablefish QP. If that uncertainty exists, it would constitute a risk that could inhibit some investments in more efficient processing equipment and marketing. Those investments could increase the competitiveness of the trawl harvest of species like Dover sole, thus allowing for the expansion of trawl production. A prime example of this might be the potential investment by processors in fillet machines that can expedite the processing of trawl caught groundfish. In November 2020, public comment by Pacific Seafoods noted that they have acquired both a rockfish and flatfish filleting machine. These machines “can fillet fish at the same quality and

recovery rate as compared to a hand cut filet. Both machines are a first of their kind ever on the West Coast.” However, each machine is a \$5 million investment. Therefore, without certainty of sablefish availability to the trawl gear users, processors have stated that it is difficult to invest in these machines as the production might not be sufficient to offset the costs. In other segments of the economy, uncertainty about production supply lines is often handed through vertical integration, but the ability to vertically integrate in the IFQ program is limited by QS control limits (see Section 3.3.4). Also, even if gear switching is limited, for someone investing in processing Dover sole or species from other particular trawl strategies, there will continue to be some uncertainty associated with competition for sablefish QP between different trawl strategies (for example, increasing utilization of sablefish by whiting and other trawl strategies discussed in Section 3.3.5).

There may be existing businesses that are dependent on leasing quota to gear switchers for part of their revenue stream and a reduction of that revenue stream could affect their investments over the long-term. Businesses would continue to operate as long as they are covering operating costs, but reduced revenue streams might alter their ability to make the reinvestments necessary to maintain their businesses over the long run. Similar impacts on long-term investment could occur for fishing operations that gear switch. Changes in investment also impact a community’s workers and fishing infrastructure. Investments in filleting equipment reduces filleting jobs, replacing them to greater or lesser degrees with other kinds of labor associated with maintaining the equipment and a higher throughput of product. Where there are declines in investment, there is always a concern that a related decline in fishing activity will critically affect the maintenance of infrastructure that other fisheries also depend on. Depending on circumstances, a limitation on gear switching could increase or decrease total fishing activity or redistribute activity between communities—thereby having local effects that are different from coastwide effects.

4.4.3 Alternative Specific Impacts

Under the action alternatives, gear switching would be capped at 29 percent of the allocation, but the actual gear switching level, and therefore the amount available to be used by trawlers, would depend on the design of the alternative and options selected. Table A- 1 summarizes the likelihood that gear switching under each alternative would reach 29 percent.

4.4.3(a) Alternative 1

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

GS participants would receive all of their QS as any gear (up to the amount owned on the control date) and the remainder of the QS (up to 29 percent depending on the QP Split Option chosen) would be split amongst non-GS participants. Depending on the non-GS Participation Option chosen, this could allocate the remaining any-gear QS across numerous accounts under Option 1, increasing the number of potential leases/purchases that would be required for gear switching

participants to acquire that opportunity, or consolidating it under fewer accounts under Option 2. Gear switching participants are estimated to receive approximately 16 percent of the any-gear QS under GS Participation Option 1 and just under eight percent under GS Participation Option 2 (Table 17).

Table 17. Amount of any-gear QS and corresponding QPs (including AMP) that GS and non-GS Participants would receive under QP Split Options and GS Participation Options for Alternative 1.

GS Participation Option	GS Participant		Non-GS Participant	
	QS	QPs	QS	QPs
	QP Split Option 1 (71% trawl only, 29% any gear)			
GS Option 1	15.8	17.6	10.3	11.4
GS Option 2	7.8	8.7	18.3	20.3
	QP Split Option 2 (74% trawl only, 26% any gear in 2021)			
GS Option 1	15.8	17.6	7.6	8.4
GS Option 2	7.8	8.7	15.6	17.3

Assuming gear switching is constraining and trawl vessels were able to utilize the available QPs for harvest, the level of gear switching could be less than the amount of any-gear QP issued because either non-gear switching participant QS owners may not be willing to sell the any-gear QP or because of the transaction costs related to sweeping up all of the any-gear QP from many QSAs. While the majority of accounts are likely associated with trawlers, in some cases, QS accounts may be affiliated with non-fishermen or gear-switchers that did not qualify. If GS participants were unable to acquire more QS through purchase or QPs through leasing from these other any-gear QS owners, then there could be a reduction in the amount of gear switching to levels well below the total amount of any-gear QS available. Under GS Participation Option 1, approximately 17.6 percent of the QP would be expected to go to gear switchers and be used them to gear switch. The amount of other any-gear QP that would find its way to gear switchers is uncertain. Depending on the year and other factors, this could result in an overall reduction of gear switching and increase in trawl harvest at levels at amounts between the 12 and 20 percent rows of Table 15. For GS Participation Option 2, which would allocate 8.7 percent of the QPs to GS participants, the results could be between the 0 and 12 percent rows.

Assuming that at prevailing QP prices gear-switchers acquire all of the any-gear QP they need from non-gear switchers (or acquire the any-gear QS) (see section 3.4.7), then whether they reach 29 percent would likely dependent on the total amount of the sablefish allocation. For example, if ACLs continue to be at higher than historic levels (i.e. exceeding 2019 and 2021), the amount of QP gear switchers have used historically might be less than 29 percent under Alternative 1 or No Action, suggesting that this alternative might not reduce gear switching harvest may not be reduced from historical levels (though it could still be constrained relative to levels that would have occurred under No Action). Under the assumption that gear-switching is constraining trawl activity, to the degree that gear-switchers do not acquire all the any-gear QP, there would be that much more available for trawlers. If trawlers are unable to expand their harvest of the complex but able to change their species mix to take the additional sablefish QPs being made available, they could increase their revenue per metric ton, so long as they can take the additional sablefish at a profit.

If gear switching is not constraining and gear switching do not acquire the any-gear QS or sweep up the any-gear QPs, then impacts would likely be similar to the levels of the any-gear QPs held by the gear switching participants.

4.4.3(b) **Alternative 2**

In the short term, the overall level of gear switching under Alternative 2 would be similar to that described for Alternative 1 as the GS participation criteria would qualify the same individuals and similar quota amounts (Table 18). Gear switchers that did not qualify as GS participants would need to acquire any additional any-gear QPs from other participants who may vary in their willingness to lease or sell depending on their operational structure. Given the number of QSAs that the remaining any-gear QPs would be spread amongst, it is likely that gear switching would be less than 29 percent. For example, under GS Option 1, it would likely be closer to the 20 percent level of Table 15 if gear switchers acquire some additional QPs in addition to their 17.3 percent. Table A- 24 of Section C-3.0 provides an analysis of how any-gear QPs would be spread across non-GS Participant QSAs.

Table 18. Amount of any-gear QPs by Participant category, QP Split Option, and GS Participation Option for Alternative 2.

Participant Category	QP Split Option 1		QP Split Option 2	
	GS Participant	Non-GS Participant	GS Participant	Non-GS Participant
GS Option 1	17.3	11.7	17.3	8.7
GS Option 2	10.9	18.1	10.9	15.5

Under Alternative 2 over the long-term gear-switcher acquisition of all the any-gear QP would be less likely compared to Alternative 1 because as QSAs expire the any-gear QPs would be spread across all the QS accounts in the standard ratio (Table A- 25). Under Alternative 1, over the long-term, it is likely gear switchers could to consolidate any gear QS, increasing the likelihood that gear switching levels approach 29 percent. As described in Table 2, under Alternative 2 the maximum any entity could own or control would be less than one percent of the any-gear QPs. While operations could have multiple QSAs to fund their vessels gear switching operations, it is likely that it would require several transactions to accumulate sufficient QPs to gear switch (depending on the size of the operation).

4.4.3(c) **Alternatives 3 and 4**

For Alternatives 3 and 4, it is likely that gear switching endorsements would be fully utilized given the ability to utilize multiple endorsed permits and therefore the total amount of gear switching will be dependent on the qualification and limit options chosen. If the endorsement limits do not expire, some of the options could result in gear switching levels being substantially less than 29 percent (Table 19; see Table A- 21 and Table A- 23 in Appendix for full analysis).

Table 19. Range of Total Combined Endorsement Limits for Alternatives 3 and 4

Endorsement Limit Option	Alternative 3 (Permit Qualifier)	Alternative 4 (Vessel Qualifier)
1	14.8-26.4%	11-27.2%
2	24-29%	17.7-28.4%
3	6.5-12.2%	3.7%

If conditions were similar to 2019 and gear switching is constraining, impacts could be a small to moderate decrease in gear switching under Endorsement Limit Option 2 resulting in impacts generally within the 29 to 20 percent gear switching row in Table 15 above, where overall net landings and revenue for the IFQ sector increase. However, if the Council were to select a qualification and endorsement limit requiring QS ownership, it could result in significant decreases in gear switching and impacts could be between the zero and 12 percent scenarios.

If gear switching were not constraining but was reduced, there would be a loss in ex-vessel revenue to gear switching participants; however, trawl vessels could increase the proportion of sablefish in their catch resulting in a higher price per metric ton of total landings (Table 16, also see discussion in Section C-2.1).

Over time, if the Council were to select the expiration sub option, gear switching would likely be near zero.

4.5 Vessel and Permit Owners

From 2011-2021, there have been a total of 42 vessels and 42 permits that have landed sablefish north with non-trawl gear in the IFQ sector. Ownership of these vessels and permits may have changed over time, however, allocation of the gear switching opportunity will depend on the alternative and specifically, to whom the allocation is made (e.g. vessel owner, permit owner, or QSA owner) and when the qualifying history was established.

While Alternatives 1 and 2 consider gear switching vessel history in determining participation criteria, the ultimate impact to both permit and vessel owners will be based on their QS ownership on the control date and at implementation, and whether they are able to accumulate enough any gear QPs to prosecute their operations.

Under both alternatives, vessels engaged in gear switching could continue to use the same trawl LEPs to gear switch (whether owned or leased), but their individual gear switching level would be determined by the amount of any-gear QPs they could acquire. Those vessel or permit owners that qualify as GS participants under Alternatives 1 and 2 and own QS, at a minimum, would be provided some any-gear QPs. However, if those participants typically lease QPs to cover their annual gear switching amounts, then they would likely have to increase the number of transactions to acquire those same amount of any-gear QPs, as the any-gear QP would be spread across multiple QSAs (see section C-3.0 for more details). The increased number of transactions needed to procure QPs would increase costs to fishing operations.

Vessel and permit owners could see different impacts over the long term. Alternative 1 would provide an opportunity for some to accumulate any-gear QS and maintain a steady supply of

any-gear QP. Under Alternative 2, there is no opportunity to accumulate access to any-gear quota. Over time, QSAs receiving a higher proportion of any-gear QP because of their association with gear switching history would expire, thereby changing the distribution of any-gear QP holdings and increasing the degree to which it is dispersed (see section C-3.0). Alternative 2 would increase the transaction costs to participants over the long term, even if they held QS.

For Alternative 3, permit owners would receive the gear switching endorsement based on gear switching history and potentially ownership of QS and a gear switching vessel as of and since the control date. For those permit owners that qualify for an endorsement, the degree of impact to the vessel to which its registered will be dependent on the endorsement limit associated with the endorsement. If the qualified permit owners own their own vessel, the impact to their operations will be dependent on the degree to which the endorsement limit inhibits their gear switching activity. If the qualified permit owner leases their permit to a vessel, the value of that permit for gear switching may change. An endorsement may increase the value of the permit as it would provide a specific opportunity to gear switch at a higher level (compared to all other trawl LEPs). For non-endorsed permits there is less likely to be an impact on permit values because of the large number of latent permits that likely influence permit values.

Between six and 11 permits could receive an endorsement under Alternative 3, which would be fewer than the annual number of permits used on average from 2016-2019 (16) and the overall annual average for the program (14). Overall, there were 27 permits used for gear switching from 2016-2019, suggesting that there would be permit owners with recent gear switching history that would not receive an endorsement. For further details, see Section A-4.0.

The 11 maximum permits qualifying under the qualification options are owned by nine businesses, with six permit owners registered in Washington and the other five in Oregon and California.

Table 20. Summary of the Alternative 3 Qualifiers for Permit Endorsements

Option	Number of Permit Owners	Number of Permits	Range of Endorsement Limits	Total Endorsement Limit Range
1	9	11	0.93 - 3.88	14.8 - 26.4
2	9	11	1.38 - 4.5	24.7 - 29
3	5	6	0.36 - 2.28	6.5 - 12.2

For Alternative 4, between 4 and 11 qualifying vessel owners would designate a trawl endorsed permit to carry the endorsement (Table 21). For those vessel owners that own a permit (five of the 11 under Option 1 based on 2021 publicly available information), there would be no difference in the impact compared to Alternative 3.²¹ However, for those vessel owners that have historically leased a permit and would qualify, they would need to either buy a trawl endorsed LEP prior to implementation or enter into a business agreement that would provide them access to a permit. As with Alternative 3, there would be a maximum of 11 permits that could receive endorsements; however, there could be fewer overall permits depending on the

²¹ Differences in the limits between Alternatives 3 and 4 could result from the permit and vessel history being different.

option chosen (4). Overall, Alternative 4 would result in a reduction in the participation opportunity compared to No Action where an average of 16 vessels participated in gear switching from 2016-2019. Qualification Options 2 and 3 would result in fewer vessels qualifying than the lowest participation levels seen by the gear switching fleet (7 in 2021).

Table 21. Summary of the Alternative 4 Qualifiers for Vessel Endorsements

Option	Number of Vessel Owners	Number of Permits (Based on Vessel Qualifiers)	Range of Endorsement Limits	Total Endorsement Limit Range
1	10	11	0.9 - 4.0	11 - 27.2
2	3	4	0.9 - 4.5	17.7 - 28.4
3	3	4	0.3 - 1.5	3.7

4.6 QS Owners (QP Sellers)

The key questions for this section and the related Appendix C section are:

- *To what degree might QP sellers/traders lose the opportunity to sell/trade to gear switchers and how likely is it that those sales/trade opportunities would be replaced by transactions with trawl gear operations?*
- *To what degree might the prices/value received for QP change (increase/decrease)?*
- *How might QP sales opportunities be redistributed among QS owners?*

Additional analysis: We are working to see if we can use QP transaction data to provide more information about the nature of the entities earning revenue from selling their QP and how they might be impacted by reduction or increases in revenue from QP sales.

4.6.1 Description of QS Owners

QS Owners (QP Sellers) could be individuals that own trawl LEPs, vessels, first receivers, crew members, or others with an interest in the fishery. Therefore, the impacts on those who own QS and sell QP are treated as a separate type of impact that may cross all of the afore mentioned groups. In this section, impacts to owners of sablefish QS are considered separately from impacts to non-sablefish QS owners. Also, in this group are those who exchange QP through barter transactions.

Additional Analysis: The EDC will be providing descriptive information based on the new QS owner survey

Among the vessel owners that may sell sablefish QP to gear switchers and others are whiting and other operations that reportedly hold onto northern sablefish QP until late in the year, when they become certain that they will not need it.

4.6.2 Impact of Alternatives on Sablefish QS Owners (QP Sellers)

QS owners that earn income by selling northern sablefish QP to gear switchers, might be adversely impacted if their QP

- **is no longer valid for gear switching** so they cannot sell it for that purpose (Alternatives 1 and 2), or
- remains valid for gear-switching use but the amount of gear switching and hence the **size of the gear switcher market for their QP is reduced due to a limit on total gear switching** (i.e., less QP is demanded, Alternatives 3 and 4).

However, in both cases, any adverse impacts to QP sellers would be lessened to the degree that

- trawlers are ready buyers for all sablefish QP that is no longer usable (Alt 1 and 2) or needed (Alt 3 and 4) for gear switching, and
- QP prices are not affected (all alternatives).

Under these circumstances, while trading relationships might be forced to change, any loss of a gear switching QP buyer could be replaced by a trawl QP buyer and similar revenue generated per pound sold. Section C-2.0, on sablefish QP values, discusses how the impacts of the alternatives on gear switcher demand, trawler demand, and the structure of the sablefish QP market are likely to impact sablefish QP prices, including conditions under which the amounts of QP trawlers are willing to buy is likely or unlikely to make up for restrictions on gear switchers use of QP. Possible impacts on barter relationships are also discussed in that section. Overall, the degrees of impact also depend on the degree of any reduction in the amount of gear switching allowed. A modest reduction from the recent gear switching levels (an average of 29.5 percent of the trawl allocation for 2011-2021 and 34.2 percent for 2016-2019) to 29 percent would have a lesser impact than a reduction to 3.7 percent (for certain options under Alternative 4) or elimination of gear switching over time (if the Alternative 3 and 4 gear switching endorsements are not transferable).

4.6.2(a) Alternative 1 (Gear Specific QS)

QS owners that earn revenue from selling northern sablefish QP will be impacted by the division of their QS into any-gear and trawl-only QS through changes to QP prices. As described in Section A-2, those who qualify as gear-switching participants will generally have all their QS converted to any-gear QS while others will receive a mix or all trawl-only QS. Prices will be impacted by the partial splitting of the market (with gear switchers only able to participate in the market for any-gear QP), the amount of QS converted to any-gear QS type relative to No Action levels of gear switching, and trawler demand for trawl-only QP. On average, sablefish QP would be expected to continue to be utilized at typical levels and the primary question is the degree to which trawl-only sablefish QP prices might decline in the process of clearing the sablefish QP market of significant surpluses. Additionally, relative to No Action, impacts will be distributed differently among QP sellers depending on the proportion of each type of QS they receive at implementation and their past practices of selling QP (or planned future practices).

Without regard to the amount of any-gear sablefish QP issued under Alternative 1, just the split of the sablefish QP into a market for any-gear QP and trawl-only QP might have an impact on sablefish QP prices relative to prices under No Action. The split will effectively reduce the

supply of QP for gear-switchers such that all of their demand will be focused on the any-gear QP, but they will still have to compete with trawlers that might be interested in bidding for that QP if trawl only QP is not available. Thus, supply for gear switchers will be reduced but the number of participants in the market for any-gear QP will likely be the same as for general sablefish QP under No Action. At the same time, trawl participants will have the option of buying trawl-only QP as an alternative and so might not exert much pressure on any-gear QP prices. The question is whether gear switchers bidding against each other will bid prices higher than the past when they just had to outbid the less efficient trawl vessels. Overall, the price impact may be more a function of the degree to which the amount of any-gear QP available is reduced relative to the gear switching levels that would have prevailed under No Action.

Under QP Split Option 1, 29 percent of all QS (including AMP) and hence 29 percent of all QP would be any-gear. Under QP Split Option 2, assuming the 2021 ACL, 26.0 percent of all QP would be any-gear QP. On the one hand, these are **only somewhat lower than the gear-switching utilization of the recent allocations** (an average of 29.5 percent of the trawl allocation for 2011-2021 and 34.2 percent for 2016-2019, with a maximum of 35.3 percent in 2019). And, similarly, looking at the recent changes in the ACLs, a 29 percent limit on gear switching would allow as much gear switching **in terms of total metric tons** as occurred when gear switching peaked in 2019. Therefore, if changes in gear switching levels are modest, the price changes for any-gear QP relative to status quo may be modest. On the other hand, **if one expected an increase in gear switching under No Action**, the difference between such an increase and the degree of restriction imposed by an action alternative might be more substantial and hence there would be a more substantial increase in any-gear QP prices.

For those selling QP to trawlers, the impact on revenue will largely depend on whether trawlers are making a profit with their sablefish catch (independent of revenue from co-occurring species). If trawlers profit from sablefish, it seems likely that they would fully utilize the available QP either through increased harvest of complexes or increasing the ratio of sablefish in their catch (unless they reach a technical limit in their ability to do the latter). Under such circumstance, the reduction in trawl-only sablefish QP prices relative to No Action sablefish QP would be expected to be modest. On the other hand, if trawlers are not able to make a profit on sablefish at current QP prices, over time one would expect the price of trawl-only sablefish QP to drop until it becomes profitable for trawlers to catch it. In this case, there might be a more substantial decline in trawl-only sablefish QP prices compared to No Action.²²

Under Alternative 1, the impact of changing prices **on individual QS owners** that sell QP **will vary depending** on what portion of their QP they usually sell to which gear-type. Those that qualify to receive **all their QS as any-gear** (gear-switching participants) would likely be benefitted by an increase in any-gear QP prices relative to No Action. However, gear-switching participants may be more likely to use their any-gear QP themselves and may find themselves having to buy any-gear QP at higher prices than QP under No Action. Those that **receive only a portion of their QS as any-gear** (mainly those with QS that is fully or partially owned by a non-gear switching or other participant) and who typically sell to gear switchers, will be impacted **to the degree that the amount of any-gear QP they receive is not sufficient** to cover the amount of their sablefish QP they typically sell to or exchange with gear switchers (mitigated by the

²² In considering these possible changes, it should be kept in mind that there is a mix of relative efficiencies among trawl vessels (as in any fleet) such that some may be making a profit on their sablefish and others may be losing money on sablefish but making a profit on the complex as a whole.

opportunity to sell to trawlers, as discussed above). As can be seen in the Table A-2 split ratios on page A-6 and Table A-4 on page A-7, depending on the options selected, the proportion of a non-GS participant's QS that would be converted to any-gear QS might run from 12.4 percent to 52.4 percent. This reflects the proportion of their QP they would likely be able to sell to gear-switchers for a somewhat higher price. As discussed above, the amount of their QP they typically sell to trawlers would likely sell at a lower price than under No Action. Of course, current QS holders would not experience an impact from QP price changes with respect to the amounts they use themselves—though if they sell it in the future the value of the QS would be diminished.

As a whole, the group who barter their northern sablefish QP in order to receive other species QP will be similarly restricted and have to purchase their other species QP instead of bartering for it—individual circumstances may vary. Potential impacts for those who barter their northern sablefish QP are described in Section C-2.2.

4.6.2(b) Alternative 2 (Gear Specific QP)

As with Alternative 1, QP price changes resulting from the division of QP into any-gear and trawl only QP will impact QS owners that earn revenue from selling northern sablefish QP to gear switchers. Any-gear QP prices are likely to be higher and trawl-only QP prices lower than would have occurred under No Action, as described for Alternative 1. Additionally, under Alternative 2 prices for any-gear QP could be somewhat higher than under Alternative 1, because there will be smaller amounts of QP in many QSAs (see Section C-3.0). It may take higher any-gear QP prices to induce individuals owning those accounts with smaller amounts of any-gear QP to take on the costs associated with making a transaction.²³ In some cases, it may be that QP prices will not rise to a level necessary to sweep up small QP amounts spread across many accounts, or the reticence of some individuals to sell their any-gear QP for gear switching will reduce the effective supply of any-gear QP and further increase the any-gear QP prices. In comparison, under Alternative 1 through a one-time QS acquisitions, gear-switching individuals may be able to consolidate the small amounts of any-gear QP issued annually, rather than having to enter the market for those QP every year.

With respect to individual QS owners, also as with Alternative 1, the impact of price changes on individual operations will vary: first, with the amount of any-gear QP they receive and whether that is sufficient to cover their typical sales to gear switchers; and second, with the amount of QP they typically sell to trawlers. See the above description of Alternative 1 impacts for further discussion. Under Alternative 2, the proportion of any-gear QP under the standard ratios (trawl-only/any-gear) that would apply under various combinations of options run from 10.7 to 22.3 percent (on page A-6).

Over time, the gear switching associated QS Accounts will expire and the standard ratios will increase. Thus, owners of QSAs receiving the standard ratio (QS owners classified as non-GS participants at the time of initial implementation) may have an increasing opportunity to sell QP to gear-switching participants. Concurrently, there will be an increasing amount of annual transactions required to gather up any-gear QP (rather than being consolidated in accounts that receive all or mostly any-gear QP), which may have an impact on average transaction costs

²³ Transaction costs include search and negotiating time in addition to any other fees and expenses that may be involved.

(increasing transaction costs per pound) and QP prices, as described in the first paragraph of this section.

As a whole, those who barter their northern sablefish QP in order to receive other species QP will be similarly restricted and have to purchase their other species QP instead of bartering for it, with impacts as described in the introductory discussion—individual circumstances may vary. Potential impacts for those who barter their northern sablefish QP are described in Section C-2.2.

4.6.2(c) Alternative 3 Gear-Switching Endorsement—Permit Qualifier

For QS owners that earn revenue from selling QP (or barter their northern sablefish for QP for other species), Alternative 3 will not restrict the amount of QP they have available to provide to gear switchers but will limit the size of the gear switcher market for that QP through the gear switching endorsement limits.

The gear switcher demand for QP will depend on the total amount of gear switching allowed based on the qualification and endorsement limit options selected and will likely be less than or equal to the amount of gear switching that has occurred in the past. Under this alternative, upon implementation, the amount of gear switching allowed (excluding the non-endorsed vessel limit) as a percentage of the trawl allocation would run from 6.5 percent to 29 percent (Table A- 21 on page A-15) depending on options selected. This would be a substantial to modest decrease relative to historical gear switching levels (see Alternative 1 discussion) but potentially much lower relative to a No Action scenario in which gear switching could have increased.

As discussed in the 4.6.2 introduction, any adverse impacts on QP sellers from a reduced market from gear switchers may be mitigated to the degree that trawlers are able to utilize the sablefish QP no longer utilized by gear-switchers and sablefish QP prices do not fall. Over time, trawlers are expected to fully use the sablefish QP and the question is whether and the degree to which QP prices might have to fall before that occurs. In contrast to Alternatives 1 and 2, for which those selling any-gear QP might see price increases and those selling trawl-only QP might see decreases, under Alternative 3 all QP sellers will be similarly impacted by QP price changes.

However, individual QP sellers may be impacted differently depending on whether they have been selling/trading QP to gear-switchers, trawlers, or both. For those that typically sell to gear-switchers, some selling relationships may be disrupted—where the seller had a regular QP buyer that was a gear switcher who does not receive a gear switched endorsed permit or receives one with a lower gear switching limit than the QP buyer typically caught.

Initially, the total opportunity to sell northern sablefish QP to gear switchers (or barter northern sablefish QP in exchange for QP of other species) may not vary substantially relative to No Action. However, this alternative includes an option that would expire the gear switching endorsements over time, reducing the opportunity to provide gear switchers with QP to near zero (depending on the degree to which vessels with permits not endorsed for gear switching decide to gear switch). Again, the impacts to QP sellers would depend on trawler demand for sablefish QP and resulting QP prices.

4.6.2(d) Alternative 4 Gear-Switching Endorsement—Vessel Qualifier

The impacts of Alternative 4 are expected to be similar to those described for Alternative 3 except that the total levels of gear switching may vary. Under this alternative, upon implementation the amount of gear switching allowed as a percentage of the trawl allocation would run from 3.7 percent to 28.4 percent (Table A- 23 on page A-22) depending on options selected—generally lower than under Alternative 3.

4.6.2(e) Summary of Impacts to QP Sellers and Buyers

Table 22. Summary of impacts of influences of action alternatives on QP sellers, relative to No Action.

	Alt 1 and 2	Alt 3 and 4
Impact Mechanism	QP market split into two separate but connected markets	A single QP market will remain with no changes in supply relative to No Action.
Gear switcher demand for sablefish QP	: No Change (but redistributed so that gear-switchers exert no demand for trawl-only QP).	Decreased ^a to between 3.5 and 29 percent depending on the alternative and options selected (potentially declining to zero if expiration option is chosen).
Supply of QP for gear switchers	Decreased from all QP to a maximum of 29 percent of the QP, depending on alternative and options selected.	No Change.
Impact on Sellers Will be Determined By the Degree...		
...to Which QP Prices Change	Any-gear QP – price likely to rise relative to status quo prices. Trawl-only QP – price may decline relative to status quo Price declines likely be greater if trawlers are not making profit on the sablefish in their catch.	Price of sablefish QP is likely to decline somewhat relative to status quo prices. Price declines will be greater if trawlers are not making profit on the sablefish in their catch.
...to Which Total QP Used Changes	Any-gear QP -- likely fully utilized. Trawl-only QP – likely full utilized unless both of the following are true the markets for non-sablefish are not sufficient to allow the expansion of landings; and trawlers are not able to increase profits by increasing the ratio of sablefish in their catch. ^b	Sablefish QP likely full utilized unless both of the following are true the markets for non-sablefish are not sufficient to allow the expansion of landings; and trawlers are not able to increase profits by increasing the ratio of sablefish in their catch.
Distribution of Impacts among QP Sellers	Each individual’s ratio of any-gear and trawl-only will determine their opportunity to sell to gear switchers and how that compares to the proportion they typically sold in the past. It will also determine the degree to which trading relationships are disrupted. And mediate the impacts of QP price changes. Under Alt 2, those receiving the standard ratio will get an increasing proportion of their QP as any-gear, over time.	All QP sellers will be similarly impacted and continue to have an opportunity to sell to gear switchers. Some trading relationships may be disrupted depending on the degree to which QP buyers that are gear switchers receive gear switching endorsements that allow them to continue in that activity.

^a The decrease would be from those levels one might expect in the future (recently around 34 percent, 2016-2019).

^b Either because their profits from sablefish are negative (not taking into account revenue from other species) or profits are positive but a limit has been reached on their ability to increase the proportion of sablefish in their catch.

4.6.3 Impact of Alternatives on Non-Sablefish QS Owners (QP Sellers)

Entities that sell QP of other species could be impacted if the action alternatives increased attainment of the trawl allocation resulted in increasing QP prices. However, this appears unlikely for most species because the under-attainment levels for most species are extremely low (generally below 50 percent, Table 7) and the amount by which the action alternatives might increase the availability of sablefish QP to trawlers would not likely be sufficient to push catch near enough to full attainment levels to substantially impact QP prices.

Gear switching QS owners that barter their holdings of QP for non-sablefish species to get QP of sablefish may also be impacted by a gear switching limitation. Under Alternatives 1 and 2, gear switchers would still be able to barter their non-sablefish QP for any-gear sablefish QP but would likely need to engage in more transactions to acquire their needed quota (see Section C-3.0). For all the action alternatives, the amount of bartering might decline depending on the degree to which gear switching is restricted and the degree to which those who barter are able to get the QP they need. For example, it could be that trawlers prefer to barter and that the volume of non-sablefish and sablefish exchanged in bartering would be relatively unimpacted compared to the effect on QP sales.

If those who typically barter their non-sablefish for sablefish QP cannot enter into such transactions because of the reduced availability of any-gear QP (Alternatives 1 and 2) or a reduction in their need for sablefish QP (Alternatives 3 and 4), given the overabundance of non-sablefish QP for most species (other than whiting, Petrale, and widow), they may have a difficult time selling the QP for which they previously received value through barter. Under some circumstances, the reduction in net revenue resulting from the gear switching limitations may be greater for those that were bartering their non-sablefish QP than for those gear switching entities that purchased their sablefish QP each year. Assuming that the non-sablefish QP they are bartering is part of an initial allocation, the cost of acquiring that QP be small relative to the value of the quota (for some, the cost of buying a trawl permit prior to the implementation of the catch share program). Given that low value, the sablefish north QP can be acquired at a relatively low financial cost. Therefore, their net financial profit from the northern sablefish QP they acquire would be greater than for a gear switcher that purchases their northern sablefish QP.

Reduction in gear switcher bartering of non-sablefish QP for northern sablefish QP, if it were to occur, might also increase the opportunity for other holders of non-sablefish QS to find buyers for their QP (in competition with the gear-switchers that might now offer their previously bartered QP for sale).

4.7 Crew Members

To be completed after November 2022. This will likely to be a qualitative analysis looking at impacts related to effects to the harvest operations for which they work. For gear-switchers, this would be likely be a loss of opportunity. For trawlers, potential increased income opportunity, particularly if catch of complexes can be expanded (as opposed to just increasing the proportion of sablefish in the catch).

4.8 Recent (Post-Control Date) and Future Entrants

NEED SUMMARY BULLETS

Under each of the alternatives, recent (post-control date) and future entrants would have different opportunities to gear switch. Given that most of the qualification criteria for the alternatives requires some ownership as of the control date to receive a higher gear switching opportunity (with the exception of Qualification Option 1 in Alternatives 3 and 4), this section looks at how entrants that have entered the fishery since the control date would be impacted- as well as future entrants.

Since the control date, there have been six vessels and six permits that have entered the fishery as gear switching participants. In terms of QS ownership, around 20 percent of the QS has been acquired by new owners since the control date. Of the QS owners that owned QS on the control date, 192 individual entities associated with 119 QSAs still own QS as of the end of 2021.

For Alternative 1, any new purchasers of QS since the control date (and prior to implementation) would receive all of their QS as trawl only. After implementation, future entrants to the fishery could purchase any gear or trawl only QS to be able to prosecute their desired targeting strategy. Gear switching vessel owners that entered the fishery after the control date would only be impacted if they owned QS on the control date (and would not be eligible to be classified as a gear switching participant). Permit owners would only be impacted depending on their role as a QS owner.

For Alternative 2, non-gear switching participant QS owners would receive a split of any gear and trawl only QPs as would any new QS owners entering the fishery in the future. The split of any gear to trawl only QPs would depend on the QP split allocation option chosen and the number of QS accounts owned by gear switching participants. Eventually, all QS accounts would be issued the same standard split.

For Alternatives 3 and 4, the impacts to post-control date new participants or future participants would depend on the options selected within the alternative. Under both alternatives, post-control date participants (until implementation) could purchase a qualifying permit or vessel and receive the endorsement under Qualification Option 1 at the time of implementation. Depending on the endorsement limit option chosen with that qualification option, the owner could receive the permit or vessel's associated historical limit (Endorsement Limit Option 1) but the ownership of QS as of and since the CD would determine the limits under Endorsement Limit Option 3. Endorsement limit option 2 would take both pieces into account. With Qualification Option 2 and 3, ownership of a permit or vessel and QS and potentially a gear switching vessel or permit (respectively) would be required to qualify. Therefore, entities that purchase QS after the control date, even if they owned a qualifying permit or vessel as of implementation, would not receive an endorsement.

4.9 First Receivers

First receivers (FRs) will be affected differently by a change in gear switching levels, depending on the degree to which they are reliant on trawl or gear switched landings. In general, about half of FR licenses received gear switched sablefish landings annually from 2011-2019, with the percentage declining to 33 percent in 2019. With respect to the IFQ deliveries they receive, FRs that would be most affected by a restriction in gear switching would be those that purchased only

gear switched sablefish and no other IFQ landings. FR licenses receiving both gear-switched and trawl caught northern sablefish would also be negatively impacted by a decrease in gear-switched landings but might also be positively affected if gear switching is constraining and trawl landings increased as a result of a decrease in gear-switched landings. FRs that receive only trawl landings would be positively impacted if gear switching is constraining and the action alternatives resulted in an increase in trawl landings; however, if gear switching is not constraining and gear switching is restricted, there would likely be little impact to these FRs.

It is important to consider that a FR license is specific to IFQ landings, but a dealer (or business) may receive and process non-IFQ species. Some operations may be large enough to absorb in other activities any losses from reduced gear switching, while others may be reliant on those deliveries.

Of those businesses associated with FR licenses from 2016-2019, the average annual ex-vessel revenue (in active years) paid to all vessels ranged from just over \$57,000 to tens of millions of dollars across all West Coast fisheries. Depending on the size of the business and reliance on gear switching, there could be significant impacts to a business if gear switching is reduced. Those businesses for which the average proportion of total IFQ fishery exvessel expenditures is more than half of what they paid to vessels in all fisheries, tend to be “smaller” businesses that range in ex-vessel paid values of 57,000 to 4.2 million on average from 2016-2019 (Table 23).

Table 23. Number of businesses that purchased IFQ deliveries from 2016-2019 by the average proportion of revenue paid to vessels in years actively purchased and the range of average ex-vessel revenue paid by those businesses (millions of 2021\$).

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

In looking at the alternatives specifically, some processors do own QS and therefore under Alternatives 1 and 2 could secure quota for vessels to deliver gear switched sablefish or trawl caught sablefish. For Alternative 1, this could include receiving any gear quota share at implementation under some participation criteria (if they owned QS on the control date, and potentially a gear switching vessel) or purchasing the QS after implementation- securing that ability to purchase gear switch caught sablefish. For Alternative 2, any processor that owns (or could purchase) QS would receive some any-gear QPs and could accumulate more through lease or sale.

For Alternatives 3 and 4, FRs reliant on gear switched landings would be impacted depending on the permit that receives the endorsement, the amount of the gear switching limit associated with the permit, and whether the vessel registered to that endorsement would deliver to the FR.

To be completed after November 2022. Additional analysis about potential impacts to first receivers by alternative.

4.10 Communities

Gear-switching opportunities, whether increased, decreased, or eliminated, 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 (e.g., maintenance), as well as the income of those working for vessels, processors and supporting sectors. While reduction or elimination of gear switching would likely reduce gear switching activity in a port, it would also free up northern sablefish QP that might provide additional bottom trawl opportunities (see Section 4.4 for a discussion of the likelihood that trawl activity might increase). Those ports with recent trawl landings might benefit from that expansion, depending on how additional trawl landings might be distributed. That distribution would be influenced by the geographic distribution of the trawl strategies likely to benefit from a reduction in gear switching and whether the ports have the infrastructure to process larger amounts of trawl caught groundfish.

A port's involvement and dependence on a particular fishery is indicated by several factors including landings made to the port, the degree to which the landings are processed in the port, whether the vessels making the landings are homeported there, and whether the owners and crew reside in the community or elsewhere. Dependence is affected by the activities associated with a particular fishery in comparison to other fisheries and the port economy as a whole, and whether the reduction of one activity is likely to result in an increase in some other activity. Coastal communities along the West Coast are dependent on a portfolio of fisheries, including groundfish, Dungeness Crab, and salmon. Previous analyses have shown that, on average, most ports areas received less than 15 percent of the average ex-vessel revenue from IFQ fishery deliveries from 2016-2019—with the exception of Fort Bragg (20.2 percent), Newport (25.5 percent) and Astoria-Tillamook (47.3 percent) ([Figure 25, April 2021](#)). IFQ landings as a percent of total exvessel revenue in southern ports have recently been much lower than in the north (with the possible exception of Morro Bay). In general, estimates of coastwide income impacts and jobs tend to follow the exvessel revenue category (i.e, when non-IFQ values are higher in revenue category, so are estimates the other categories). For an assessment of recent (2016-2019) impacts from IFQ and non-IFQ fisheries by port group, see [Table 26 of the April 2021 analysis](#).

One of the concerns with respect to the reduction or elimination of gear switching opportunities is the potential impact to smaller ports. Data like that in Table 27, April 2021 may provide some insight through the presence and absence of different types of fishing activity. While there are numerous ports within the broader port groups typically considered in groundfish actions (also called port areas), the ports most directly affected by gear switching tend to be the major ports as those are where first receivers are located. There are only two ports that received gear switched landings in the 2016-2019 period that did not also receive nonwhiting trawl landings (Ilwaco/Chinook and Moss Landing). If a reduction in gear switching leads to an increase in trawl activity, these ports might not experience any gain. There were six ports that received nonwhiting trawl landings but no gear switched landings, and therefore would not likely experience a loss from a gear switching reduction but could experience some gains: Neah Bay, Westport, Brookings, Crescent City, Eureka, and Other San Francisco/San Mateo.

The presence of LEFG landings in a port might provide another clue as to where the impacts of a reduction in gear switching might occur. Over half the participants in the LEFG fishery also

make gear switched landings as discussed in Section 3.4.4. If the vessels making LEFG deliveries to the non-IFQ ports are also participating in gear switching but home ported in those non-IFQ ports, then those non-IFQ ports may experience some impacts as a result of a reduction in gear switching activities (reduction in vessel expenditures and income to the degree that crew, operators and owners live in those other ports). There are numerous smaller ports that receive neither gear switched nor non-whiting trawl deliveries but do receive limited entry fixed gear sablefish deliveries along the Washington coast, south of Coos Bay in Oregon, and south of Fort Bragg in California (Table 27, April 2021).

To be completed after November 2022. Additional analysis and context for this section and in Section C-1.0.

4.11 Governance: Fishery Management System

4.11.1 Management Costs

The NMFS will provide a general assessment of the impacts of the alternatives on management costs at the November 2022 meeting.

4.11.2 Regulatory Complexity

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

- Impacts may be limited or extend through time.
 - Complexity that affects only the initial allocation may eventually no longer be a point of reference and be removed from regulations (as has occurred for past initial allocation rules for limited entry systems).
 - Complexity that is not related only to initial allocation must be explained to new fishery participants and managers who are learning the system.
- Complexity is cumulative, increasing the work required to develop, analyze, and communicate new policy actions which modify already existing complex regulations.

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

Relative to No Action, all the action alternatives add some degree of complexity to the management system. A qualitative summary is provided in Table 24. The November 2022 NMFS report to the Council on gear switching will also include an assessment with respect to these issues.

Table 24. Qualitative summary of relative complexity of the action alternatives (See Section 4.11.3 for additional discussion of complexity related to future modifications).

Alternative	Complexity of Initial Implementation	Complexity of On-Going Administration	Complexity of Modifying Gear Switching Levels in the Future
Alternative 1-- Gear Specific QS	Most Complex	Simplest	Most Complex
Alternative 2-- Gear Specific QP	Somewhat Less Complex than Alt 1	Most Complex	Simplest
Alternative 3-- Gear Switching Endorsement (Permit Based Allocation)	Least Complex (Qualification Option 1 & Endorsement Opt 1)	Intermediate Complexity	Simplest
Alternative 4—Gear Switching Endorsement (Vessel Based Allocation)	Complexity increases as options are selected that require consideration of QS ownership and a vessel (Alt 3) or permit (Alt 4)		

With respect to initial implementation, while Alternative 1 and 2 require similar types of assessment of ownership and past history, Alternative 2 requires fewer such assessments. For both alternatives, first those current QSA owners that also owned QSAs as of the control date are identified. Then for those that owned QS as of the control date, a determination is made as to whether or not they owned a vessel while it made the landings that would qualify the owner as a gear switching participant (landings prior to the control date). There is then a divergence of the complexity of the alternatives. For Alternative 1, there is then an assessment for non-gear switching participation options, and a determination made of the amount of QS each entity held as of the control date, then a number of other calculations are done to determine the a trawl-only to any-gear ratio to be applied to the QS issued to the QSA. On the one hand, after identifying gear switching participants, Alternative 2 might be simpler as it would issue a standard ratio for the QPs issued across all other to QS accounts. On the other hand, the designation of ratios attached to QS accounts is something new to the IFQ program, requiring a new tracking system. In contrast, for the most part, the IFQ program is already set up to track the different types of QS that would be issued if Alternative 1 if selected.

For Alternatives 3 and 4, for the first qualification and endorsement options under each, the initial implementation steps would be relatively simple and similar to implementations that have been carried out previously under the limited entry system (e.g. the issuance of sablefish endorsements, tier endorsements, and MSCV endorsements). The catch history of a permit or vessel would be evaluated and a determination made as to whether the permit or vessel qualified and, if so, the size of the permit endorsement. From there, the other qualification and endorsement options become a bit more complicated in that they require determining the QS holdings of the owner of the qualifying permit or vessel and, for the third qualification option, require determination of whether the qualifying permit owner also owned a vessel that gear switched (Alternative 3) or whether the qualifying vessel owner also owned a trawl limited entry

permit (Alternative 4). For all options except the first qualifying and endorsement option, not only must the indicated ownerships be established as of the control date but they must have been in place continuously since the control date.

With respect to the complexity of ongoing administration, the simplest to administer is likely Alternative 1 in that after initial issuance it makes use of the existing QS and QP tracking system and only requires the system be modified to pass the gear landed information from the landings tracking system to the QP tracking system. Alternative 2 is similar with respect to the QP tracking need but it also requires some additional ongoing administrative attention to the gear-specific QP ratios applied to each QS account, until such time that all ratios based on a history of gear switching expire. Prior to that expiration, for QSAs owned by those who qualify as gear switching participants, the ownership and amounts of QS in the accounts would need to be monitored and ratios adjusted when changes occur. Once complete expiration has occurred, then all QS accounts would receive the QP in the same standard ratio. For Alternatives 3 and 4, there would be a need to track catch against permits, including as the permits are transferred in season. Additionally, if the option is selected which expire endorsements on transfer, or if the option is selected to allow a gear switching limit deficit carryover provision, there would be some additional complexity and tasks related to those provisions.

With respect to complexity of modifying the overall levels of gear switching allowed under each alternative, these are described in the following section.

4.11.3 Policy Flexibility (Contingencies)

In the future, situations may arise in which the Council finds that it would be advantageous to further restrict or allow more gear switching. The opportunities and challenges with implementing changes in the future vary among the alternatives, as indicated in Table 25.

Table 25. Description of how the amount of gear switching might be adjusted in the future, under each alternative.

	Alt 1 (Gear-Specific QS)	Alt 2 (Gear-Specific QP)	Alt 3 and Alt 4 (GS Endorsements)
Increase GS Opportunity	Approach 1: Increase allocation of northern sablefish QP to Any-Gear QS holders. This reallocates total QP among QS owners.	Increase the proportion of any-gear QP provided by the standard ratio	Provide proportional increases in the GS limits for each GS endorsed permit. If the increases are large, it might be that a single vessel would not be able to take advantage of the additional opportunity. For vessels unable to take full advantage of the increased limits (because of limited vessel capacity), the GS endorsed permit could be transferred to a different vessel to finish out the limit. ^{a/}
	Approach 2: Provide some any-gear QP to trawl-only QS holders. It might be difficult for gear switchers to sweep up small amounts of any-gear QP from many QS accounts.		
Decrease GS opportunity.	Approach 1: Decrease allocation of northern sablefish QP to Any-Gear QS holders. This reallocates total QP among QS owners.	Decrease the proportion of any-gear QP provided by the standard ratio	Impose proportional decreases in the GS limits for each GS endorsed permit.
	Approach 2: Provide some trawl-only QP to any-gear QS holders. It might be difficult for trawlers to sweep up small amounts of any-gear QP from many QS accounts.		

^{a/} If the permit limits could not be further increased, due to the 4.5 percent maximums based on the vessel use limits, the limits for vessels fishing with non-endorsed permits might be increased.

4.12 Impact Summary

Section ES-6.6 provides of summary of the performance differences among the action alternatives. A complete impact summary based on the discussions from Section 4.0 will be completed after November 2022 Council meeting. For a more in-depth analysis of each of the action alternatives, please see Appendix A.

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6.2 Council Gear Switching Analyses and Discussion Papers Cited Here-In

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

APPENDIX A: Rationale and Analysis on Design of Alternatives

This section starts with some overarching contrasts between the action alternatives and then, for each alternative, looks at the functional effects of each provision and documents related rationale.

A-1.0 DISCUSSION OF OVER-ARCHING ISSUES

A-1.1 Control Date

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

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

To be completed: Additional discussion of the importance of the control date in fishery management.

A-1.2 Gear Switching Limitation (29 Percent Decision)

The Council established a policy designing the draft alternatives such that there would not be more than 29 percent of the trawl allocation gear switched (see the [April 2021 Council meeting decision summary](#)). The 29 percent gear switching level was calculated as the average annual percent of the available northern sablefish QP that were gear switched in full calendar years prior to the control date (2011-2016). Table A- 1 describes the likelihood of each alternative reaching 29 percent.

Table A- 1. Relative likelihood of reaching 29 percent for each action alternative.

Alt 1	Alt 2	Alt 3	Alt 4
Assuming sufficient demand for fixed gear caught sablefish			
Over time, a high likelihood that all available any-gear QP will be used because the any-gear QS can be consolidated among fewer participants.	Over time, a lower likelihood that all available any-gear QP will be used because the any-gear QP will be spread across all QS accounts with northern sablefish QS, currently around 120 different accounts. Also, the amounts in some accounts may be relatively small.	<p>Gear switching opportunity will be spread among a relatively few permits and it seems likely that the gear switching opportunity permits with endorsements will be fully utilized.</p> <p>Ability of a single permit to be fished sequentially by multiple vessels increases the likelihood that the gear switching limits will be fully taken.</p> <p>Initially, the total amount of gear switching possible will be 29 percent except under certain combinations of qualification and endorsement options.</p>	
		<p>Range Qual Opt 1&2 & Lim Opt 2 = 29% Qual Opt 3 & Lim Opt 3 = 6.5%</p>	<p>Range Qual Opt 1 & Lim Opt 2 = 28.4% Any Qual Opt & Lim Opt 3 = 28.4%</p>
Percent of QP that is any-gear could be below 29 percent if QP Split Option 2 is selected.	Percent of QP that is any-gear could be below 29 percent if QP Split Option 2 is selected.	Gear-switching could go to near zero if gear switching endorsements expire with permit transfer.	Gear-switching could go to near zero if gear switching endorsements expire with permit transfer.

A-1.3 Allocation of Gear Switching Opportunities to QS Owners, Permits and Vessels

One of the key components in assessing the impacts of the alternatives is the choice of the qualifying entity. In order for a vessel to harvest fish in the IFQ program, it must have a LE permit with a trawl endorsement. Within the shorebased IFQ fishery, there are several different types of participants. There are those that own vessels, a trawl endorsed LE permits, and quota shares, some that own a vessel but lease the permit from another owner and buy quota pounds on the market, those that lease a vessel, permit, and quota share, and several other combinations. Therefore, if there is a new limit on gear switching and an accompanying qualifying requirement for continued gear switching, the choice of qualifying entity will affect different participants in different ways. For a history of how the Council has allocated LE privileges, see *SamTAAC Agenda Item E.2, Analysis, [Text, October 2019](#)*.

To be completed: Additional discussion of the importance of the choice of qualifying entity when making allocations.

A-1.4 Individual and Collective Approach

At its June 2022 meeting, the Council considered “individual” and “collective” approaches to the evaluation of qualification for gear switching opportunity. At that time, it decided to move ahead with an individual approach, but requested further analysis of the differences between the approaches in order to more fully understand the implications of the choice. Regardless of the approach, allocations would be made to existing ownership groups.

Under both approaches, individuals are evaluated to determine whether they meet qualification criteria. In situation where there is group ownership of a QSA, under the individual approach, if the individual meets the criteria, the resulting allocation of gear-switching opportunities applies only to the QS attributable to the individual (based on their share of ownership interest in the QSA). Under the collective approach, if an individual meets a set of criteria, the entire group is considered to have met the criteria and all QS owned by the group is evaluated on that basis. For Alternative 1, this would be the amount of any-gear QS allocation; for Alternative 2, the amount of any-gear QPs; and for Alternatives 3 and 4 the size of the gear-switching endorsement under Endorsement Limit Options 2 and 3.

A full discussion of the individual and collective rules can be found starting at [page 24 in Agenda Item F.5.a, Attachment 2, June 2022](#). **Differences in performance of the individual and collective approaches are covered in the following sections on each alternative.**

Note that Council staff is continuing to work with NMFS staff on ownership data and other information which may change results in future iterations, but not to a degree that would affect the policy decision.

A-2.0 ELEMENTS OF ALTERNATIVE 1—GEAR SPECIFIC QS

A-2.1 Initial Allocations

Alternative 1 categorizes current QS holders based on their QS ownership on the control date and their history as a gear switcher (GS Participant) and potentially bottom trawl activities (Non GS Participation Option 2). For the following analysis, “current” QS holders were those that owned northern sablefish QS at the end of 2021. Changes in the amounts of QS in the accounts between the end of 2021 and the control date may alter the results of the analysis, as described at the end of this section. Additionally, the QP split option chosen affects the amount of any-gear and trawl-only QS issued in the implementation year. QP Split Option 2 issues any-gear QS in amounts equivalent to the smaller of 29 percent of the trawl QP allocation and 1.8 million lbs with the remainder of the allocation issued as trawl-only. Therefore, any allocation in excess of 6.2 million pounds would be restricted to 1.8 million pounds of any gear QPs. In 2021, the sablefish north allocation was 6,921,611 lbs; 29 percent of that allocation would be over 2 million pounds, therefore under QP Split Option 2 for this analysis, the cap would be 1.8 million pounds any gear. This poundage, equates to approximately 26.0 percent of the QPs in 2021- which would be 23.4 percent of the QS being issued as any gear QS.

In 2021, there were 129 QSAs with sablefish north in which 237 different individuals and trusts participated in ownership (hereafter “individual entities”). Of those owners, 192 were assessed as owning QS on the control date and those owners were associated with 119 of the 2021 QSAs. These current QS owners are estimated to have owned 80.9 percent of the QS on the control date.

A-2.1.1 Gear Switching Participants

There are two gear switching participant options:

Gear-switching Participation Option 1: The QS owner owned a vessel that they used to make at least one gear switched landing of northern sablefish prior to September 15, 2017.

Gear-switching Participation Option 2: The QS owner owned a vessel or vessels that they used to make gear switched landings of at least 30,000 pounds of northern sablefish in each of three or more years prior to September 15, 2017.

As a reminder, the provision that a QS owner must have owned a vessel when the vessel met the qualifying landing requirement requires only that the QS owner have had some fraction of ownership of the vessel and does not require that that ownership of the vessel be maintained after the qualifying landings were made.

For GS Participation Option 1, a total of 32 individual entities met the criteria of being current QS owners that owned QS on the control date and were owners of a vessel that gear switched between 2011 and the control date. For GS Participation Option 2, which required 30,000 pounds in at least three years prior to the control date, only 13 individuals would qualify as gear switching participants. If Alternative 1 were implemented using the end of 2021 data, these owners would have a total of 15.7 percent QS or 17.4 percent of the sablefish QPs issued as any gear under GS Option 1 and 7.8 percent QS (or 8.7 percent of the QPs) under GS Option 2. This would result in a range of any-gear QS that would be issued to non-GS participants depending on the combination of QP split options and the GS Participation Option (see bottom of Table A- 2).

At its June 2022 meeting, the Council decided to use an individual approach over a collective approach for determining the amount of QS in an account that would be converted based on the qualification of the QS owners as gear switching participants. At the same time, it requested analysis of the differences between the two approaches. Under both approaches, individual entities are evaluated to determine their qualification as a gear switching participant. The individual approach converts the amount of QS to any-gear QS based on that entity's ownership interest in QS account(s) on the control date.²⁴ Under the collective rule, all of the QS in any QS account of which a qualifying GS Participant was a part owner on the control date would be converted as if the GS Participant was the sole owner of the account.²⁵

Table A- 2 describes the differences in the amount of any-gear QS that would be issued and number of QSAs that would be affected under the two ownership approaches. For example, 7 of the 23 QSAs associated with qualifiers under GS Participation Option 1 would be impacted by the ownership approach such that a collective approach would result in a higher amount of any-gear QS issued to those accounts (Table A- 2). Some GS Participants have purchased QS in excess of that held on the control date, which would be issued as 100 percent trawl only. The ownership approach only affects the amount under GS Participant Option 1. This choice would

²⁴ While the conversion is based on the individual entity's history and ownership, the converted QS remains under ownership of all current owners of the account (i.e., the individual entity does not become the sole owner of the QS converted on the basis of its history and ownership).

²⁵ The Council provided additional details on application of the collective rule as part of its motion on this matter ([June 2022 Motion Transcript](#)).

also impact the amount of any-gear QS that would be available to non-GS Participants under the QP Split Option.

Table A- 2. Impacts of ownership approaches on amount of QS that would be converted to any gear^a QS and numbers of QSAs (2021) affected—under each GS Participation Option.

Ownership Approach	GS Participation Option			
	GS Participation Option 1		GS Participation Option 2	
	Percent of QS Converted to Any-Gear for GS Participants			
Individual	15.7		7.8	
Collective	17.6		8.6	
Difference	1.9		0.8	
	Number of QSAs (2021)			
Number of QS Accounts Owned by GS Participants	24		9	
Number of QS Accounts Affected by Ownership Approach ^b	7		3	
	Trawl Only QS (Amounts in Excess of CD)			
Individual	1.0		0.4	
Collective	1.2		0.4	
Difference	0.2		0	
	Percent of QS Converted to Any-Gear for Non-GS Participants			
	QP Split Opt 1	QP Split Opt 2	QP Split Opt 1	QP Split Opt 2
Individual	10.4	7.7	18.3	15.6
Collective	8.5	5.8	17.5	14.8
Difference	1.9	1.9	0.8	0.8

^b Of the 7 entities affected under Option 1, four involve complex ownership situations or many individual owners (more than 4). Of the 3 entities affected under Option 2, none involve complex ownership situations or many individuals.

A-2.1.2 Non-Gear Switching Participation Option

As with the GS participation options, there are two non-GS participation options.

Non-Gear-Switching Participant Option 1: The QS owner owns sablefish north QS but does not meet the gear switching participation criteria (including QS account owners that do not own vessels).

Non-Gear-Switching Participant Option 2: The QS owner does not meet the gear-switching participation criteria but owns or owned a vessel that they used to land northern

sablefish with bottom trawl in the IFQ fishery in any of the two years prior to the year in which the above QS conversions to gear-specific QS are conducted.

The QS owned by non-gear switching participants would be converted to any-gear and trawl-only QS in constant proportion applied to each account. That proportion would be determined based on what is needed to result in the conversion of the QS to the determined amount of any-gear QS, depending on the QP Split Option chosen and after taking into account the amount of any gear QS issued to gear switching participants (Table A- 2).

Under Non-GS Participation Option 1, all current QS owners that owned QS on the control date, but did not qualify as a gear switcher, would be eligible to receive a portion of their QS as any gear. Applying the individual approach, of the current QS owners, there were 160 individual entities with ownership in 100 QSAs that also owned QS on the CD, but did not qualify as a GS Participants under GS Participation Option 1 and 179 associated with 113 QSAs under GS Participation Option 2. Depending on the GS Participant Option and QP Split Option chosen, the proportion of any-gear to trawl-only QS issued to Non-GS Participants varies (Table A- 5). For example, under GS Option 1 and QP Split Option 1, the proportion is 17 percent any gear compared to under QP Split Option 2 where the proportion is 12.6 percent. All QS owners that purchased QS after the control date would receive 100 percent of their QS as trawl only (Table A- 4).

Table A-3. Percentage of any-gear and trawl only QS that non-GS participants **under non-GS Participation Option 1** would receive (up to the amount owned on the control date), number of non-GS participants, and number of QSAs under both GS participation options and QP split options using the **individual approach**.

GS Part. Option	Number of Ind. Entities	Number of QSAs	QP Split Option 1				QP Split Option 2			
			Split Ratio		QS Amount		Split Ratio		QS Amount	
			Any Gear	Trawl Only	Any Gear	Trawl Only	Any Gear	Trawl Only	Any Gear	Trawl Only
1	160	100	16.9	83.1	10.4	53.8	12.5	87.5	7.7	56.5
2	179	113	26.4	73.6	18.3	54.4	22.5	77.5	15.6	57.1

Table A- 4. Number of individual entities and QSAs that purchased sablefish north QS after the control date.

Number of Individual Entities	Number of QSAs	Trawl Only QS
45	20	9.2

Under Non-GS Participation Option 2, current QS owners that did not qualify as GS Participants, owned QS on the control date, and had at least one bottom trawl landing in the two years prior to implementation would be eligible to receive a portion of their QS as any gear. Those who qualified neither as GS Participants nor non-GS Participants would have all of their QS converted to trawl only. Historically, the number of vessels that have made bottom trawl

landings has varied slightly, from 60 from 2018-2019 to 54 in 2020-2021 (even under the COVID-19 pandemic conditions). Using 2019-2020 as the two years prior to implementation date (2021), this would qualify 43 individuals as non-GS participants with GS Participant Option 1 and 49 in combination with GS Participant Option 2. These non-GS participants would receive a higher percentage of their QS as any gear compared to under non-GS Participation Option 1 as there are fewer individuals that would qualify (Table A- 5). Under Non-GS Participant Option 2, individual entities that were neither GS Participants nor Non-GS Participants would be classified as Other Participants and receive all of their QS as trawl-only (Table A- 6).

Table A- 5. Percentage of any-gear and trawl only QS that non-GS participants under **non-GS Participation Option 2** would receive (up to the amount owned on the control date), number of non-GS participants, and number of QSAs under both GS participation options and QP split options using the **individual approach**.

GS Part. Option	Number of Ind. Entities	Number of QSAs	QP Split Option 1				QP Split Option 2			
			Split Ratio		QS Amount		Split Ratio		QS Amount	
			Any Gear	Trawl Only	Any Gear	Trawl Only	Any Gear	Trawl Only	Any Gear	Trawl Only
1	43	44	34.9	651	10.4	20.6	25.8	74.2	7.7	23.3
2	49	54	52.5	47.5	18.3	17.9	44.8	55.2	15.6	20.5

Table A- 6. Number of individual entities and QSAs that would qualify as **“Other Participants”** under **Non-GS Participation Option 2** by GS Participation Option and the amount of QS that would be issued as trawl only under the **individual approach**.

GS Participation Option	Number of Individual Entities	Number of QSAs	Trawl Only QS
1	117	60	33.2
2	130	63	36.5

If the Council were to apply the collective rule however, then the proportion of any gear QPs allocated to non-GS participants would decrease compared to the individual rule (Table A- 5) as more QS would be converted to any-gear QS for GS Participants (Table A- 2).

Table A- 7. Percentage of any-gear and trawl only QS that non-GS participants would receive (up to the amount owned on the control date) under both GS participation options and QP split options using the **collective approach**.

Non-GS Part. Option	GS Part. Option	QP Split Option 1				QP Split Option 2			
		QP Split		QS		QP Split		QS	
		Any Gear	Trawl Only	Any Gear	Trawl Only	Any Gear	Trawl Only	Any Gear	Trawl Only
1	1	13.5	86.5	8.47	57.20	9.2	90.8	5.78	59.90
	2	24.3	75.7	17.46	57.83	20.6	79.4	14.76	60.52
2	1	28.7	71.3	8.47	22.65	19.6	80.4	5.78	25.34

	2	51.4	48.6	17.46	18.09	43.5	56.5	14.76	20.78
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Table A- 8. Number of QSA owners that purchased QS after the control date under the collective approach.

Number of QSAs	Trawl Only QS
10	5.69

Table A- 9. Number of QSAs that would qualify as “**Other Participants**” under **Non-GS Participation Option 2** by GS Participation Option and the amount of QS that would be issued as trawl only under the **collective approach**.

GS Participation Option	Number of QSAs	Trawl Only QS
1	53	34.56
2	61	39.76

It is important to consider that these amounts are based on 2021 QS holdings and that values may change depending on how ownership interest changes prior to implementation. For example, Alternative 1 does not require owners to hold QS as of and since the control date (as is required in Alternative 3 or 4) so there is the potential for qualifying QS owners (i.e. those that owned QS on the CD and potentially gear switched prior to the control date) to re-enter the fishery and have all their QS issued as any gear. Staff has identified some situations where this could occur. Additionally, if current participants acquire additional QS, to the point where it exceeds what they owned on the control date, the proportion of QS issued to these entities as trawl-only would increase. As a result of an increase in the amount of QS converted to trawl only, other GS participants (those not owning more than they owned on the control date) would receive a larger proportion of their QS as any-gear QS.

A-2.1.3 Summary of Allocations by Participant

The following tables provide a summary of the allocation types to participant groups by GS and non-GS Participation options, QP Split Options, and the individual and collective approaches.

Table A- 10. Amount of QS types by participant category under QP Split Option 1 (71 percent trawl only, 29 percent any gear) using **individual approach**.

Participant Category	GS Participant		Non-GS Participant		Other Participant	New Entrant
	Any Gear	Trawl Only	Any Gear	Trawl Only	Trawl Only	Trawl Only
Participation Options	Non-GS Participation Option 1					
GS Option 1	15.7	1.0	10.4	53.8	0	9.2
GS Option 2	7.8	0.4	18.3	54.4	0	9.2
	Non-GS Participation Option 2					
GS Option 1	15.7	1.0	10.4	20.6	33.2	9.2
GS Option 2	7.8	0.4	18.3	17.9	36.5	9.2

Table A- 11. Amount of QS types by participant category under QP Split Option 2 (74 percent trawl only, 26 percent any gear in 2021) using **individual approach**.

Participant Category	GS Participant		Non-GS Participant		Other Participant	New Entrant
	Any Gear	Trawl Only	Any Gear	Trawl Only	Trawl Only	Trawl Only
Participation Options	Non-GS Participation Option 1					
GS Option 1	15.7	1.0	7.7	56.5	0	9.2
GS Option 2	7.8	0.4	15.6	57.1	0	9.2
	Non-GS Participation Option 2					
GS Option 1	15.7	1.0	7.7	23.3	33.2	9.2
GS Option 2	7.8	0.4	15.6	20.6	36.5	9.2

Table A- 12. Amount of QS types by participant category under QP Split Option 1 (71 percent trawl only, 29 percent any gear) using **collective approach**.

Participant Category	GS Participant		Non-GS Participant		Other Participant	New Entrant
	Any Gear	Trawl Only	Any Gear	Trawl Only	Trawl Only	Trawl Only
Participation Options	Non-GS Participation Option 1					
GS Option 1	17.6	1.2	8.5	57.2	0	5.7
GS Option 2	8.6	0.4	17.5	57.8	0	5.7
	Non-GS Participation Option 2					
GS Option 1	17.6	1.2	8.5	22.7	34.6	5.7
GS Option 2	8.6	0.4	17.5	18.1	39.8	5.7

Table A- 13. Amount of QS types by participant category under QP Split Option 2 (74 percent trawl only, 26 percent any gear in 2021) using **collective approach**.

Participant Category	GS Participant		Non-GS Participant		Other Participant	New Entrant
	Any Gear	Trawl Only	Any Gear	Trawl Only	Trawl Only	Trawl Only
Participation Options	Non-GS Participation Option 1					
GS Option 1	17.6	1.2	5.8	59.9	0	5.7
GS Option 2	8.6	0.4	14.8	60.5	0	5.7
	Non-GS Participation Option 2					
GS Option 1	17.6	1.2	5.8	25.3	34.6	5.7
GS Option 2	8.6	0.4	14.8	20.8	39.8	5.7

A-2.2 Annual Vessel QP Use Limits and QS Control Limits

While two types of sablefish north QS and QPs would be created under Alternative 1, sablefish north accumulation limits would continue to be applied sablefish north QS and QP in aggregate (without regard to the gear type distinctions). These limits are: annual vessel limit (4.5 percent) and QS control limit (3 percent).

A-3.0 ELEMENTS OF ALTERNATIVE 2

Alternative 2 has similar elements to Alternative 1, with the gear switching participation criteria being the same across the alternatives. Therefore, the same number of gear switching qualifiers described above would apply in this alternative. However, unlike Alternative 1, the current QSA owned by the qualifier would be “tagged” as a gear switching account. For the QS in the

account that is attributable to the ownership of a GS Participant qualifier, all QPs would be issued as any gear QPs (except for that in excess of the amount owned on the control date). The QP issued for any QS in excess of the control date amount or not attributable to the ownership interest of a GS Participant would be issued in a standard ratio (determined as that necessary for the QP issued for each gear-type to meet the desired any gear/trawl only split under the QP split option).

Based on 2021 QSA information, there would be 24 QSAs tagged as gear switching accounts under GS Participation Option 1 and 9 under GS Participation Option 2 regardless of if the individual or collective approach were taken. This is the same as shown under Alternative 1 in Table A- 2 since the GS Participation Options are the same across the two alternatives. Therefore, the difference between the approaches would come in the amount of QPs that would be issued as any gear versus trawl only to each QSA. Under the collective approach, a higher amount of QPs would be issued as any gear to gear switching participants.

For all other QS (QS owned by non-GS participants and any amount of QS in excess of the control date owned by qualifying GS participants), a standard ratio would be applied (as described above). Depending on the gear switching participation option and QP split option, the ratio would vary. For example, under GS Participation Option 1 and QP Split Option 1, all QS not issued as 100 percent any gear to qualified GS Participants would be issued as 14.3 percent any-gear QP and 85.7 percent trawl-only QP.

Table A- 14. “Standard Ratios” under GS Participation Options and QP Split Options using the **individual approach**.

Gear Switching Participation Option	QP Split Option 1		QP Split Option 2	
	Any Gear	Trawl Only	Any Gear	Trawl Only
1	14.3	85.7	10.7	89.3
2	22.3	77.7	19.0	81.0

While the majority of accounts would be issued as all any gear QPs or all in the “standard ratio”, there are some accounts linked to GS participants that would have an intermediate ratio due to being owned by both GS and non-GS participants or acquiring QS in excess of the amount held on the control date. For those “blended” accounts, any QS attributable to the ownership of non-GS participants or in excess of the “cap” would be issued in the standard ratio, with the result that each blended account would have its own QSA specific ratio. Of the 24 QSAs with qualifying gear switching participants under GS Participation Option 1, 14 would be issued 100 percent any gear QPs and the remaining nine would have a QSA specific ratio. For GS Participation Option 2, there would be four QSAs with 100 percent any gear and five with a QSA specific ratio.

Table A- 15. Types of QSA based on GS participation options and the ratios in which QPs would be issued under the **individual approach**.

Types of QS Accounts	GS Participation Option 1	GS Participation Option 2
All Any Gear	14	4

All Standard Ratio	105	120
Blended	10	5

If the Council were to apply the collective rule, then those 24 and nine QSA linked to GS participants under GS Participation Options 1 and 2 respectively would receive all of their QS (not in excess of the cap) as 100 percent any gear QP (there would be no adjustment for the portion of the QS attributable to ownership by non-GS participants). This would result in a higher amount of the QS being issued as 100 percent any gear QPs and needing to balance that increase with a decrease in the proportion of the standard ratio that would be issued as any gear under both GS participation options (Table A- 16).

Table A- 16. “Standard Ratios” under GS Participation Options and QP Split Options using the **collective approach**.

Gear Switching Participation Option	QP Split Option 1		QP Split Option 2	
	Any Gear	Trawl Only	Any Gear	Trawl Only
1	11.7	88.3	8.0	92.0
2	21.5	78.5	18.1	81.9

With the collective approach, 20 of the 24 QSA associated with a GS participant under Option 1 and 7 of 9 under Option 2 would now have all of their QPs issued as 100 percent any gear. This increase was due to some “blended” accounts under the individual approach now being issued as 100 percent any gear under the collective approach as the entity’s entire amount (up to the cap) would qualify. There would be no change in the number of QSA issued at the standard ratio.

Table A- 17. Types of QSA based on GS participation options and the ratios in which QPs would be issued under the **collective approach**.

Types of QS Accounts	GS Participation Option 1	GS Participation Option 2
All Any Gear	20	7
All Standard Ratio	105	120
Blended	4	2

A-3.1 Summary of QP Distribution by Participant Category, QP Split Option, and Ownership Approach

Table A- 18. Amount of QP types by participant category under QP Split Options using **individual approach**.

Participant Category	GS Participant		Non-GS Participant	
QP Type	Any Gear	Trawl Only	Any Gear	Trawl Only
Participation Options	QP Split Option 1			
GS Option 1	17.3	0.9	11.7	70.1
GS Option 2	10.9	7.6	18.1	63.4
	QP Split Option 2			
GS Option 1	17.3	0.9	8.7	73.1
GS Option 2	10.5	8.0	15.5	66.0

Table A- 19. Amount of QP types by participant category under QP Split Options using **collective approach**.

Participant Category	GS Participant		Non-GS Participant	
QP Type	Any Gear	Trawl Only	Any Gear	Trawl Only
Participation Options	QP Split Option 1			
GS Option 1	19.7	1.0	9.3	70.0
GS Option 2	9.7	0.3	19.3	70.7
	QP Split Option 2			
GS Option 1	19.7	1.0	6.3	73.0
GS Option 2	9.7	0.3	16.3	73.6

A-4.0 ELEMENTS OF ALTERNATIVE 3

A-4.1 Endorsement Qualifier Options

Under Alternative 3, to qualify for a gear-switching endorsement, between January 1, 2011 and September 15, 2017 (the control date):

Endorsement Qualification Option 1: a permit must have landed northern sablefish QPs with non-trawl gear totaling at least 30,000 lbs per year in at least 3 years.

Endorsement Qualification Option 2: same as Option 1 plus, as of and since the control date, the current permit owner owned the qualifying permit and had some ownership interest in northern sablefish quota shares (any amount).

Endorsement Qualification Option 3: same as Option 2 plus, as of and since the control date, the current permit owner also had some ownership interest in a trawl permitted vessel that had some history of gear switching prior to the control date.

Utilizing fish ticket data and publicly available ownership data from 2011-2021, Table A- 20 below describes the number of permits that would qualify under each endorsement option. The same number of permits (and their owners) would qualify under Options 1 and 2 as all current (2021) owners of permits with gear switching history have owned those permits and some sablefish north QS as of and since the control date. Under qualification Option 3 however, only six of the eleven appear to have owned a gear switching vessel as of and since the control date. Of the five permit owners that would not qualify under qualification Option 3, three appear to have sold a gear switching vessel after the control date (but prior to 2021) and the other two didn't own a gear switching vessel on the control date.

Table A- 20. Number of permits that qualify for a gear switching endorsement by qualification option.

Option	Number of Permits
1	11
2	11
3	6

A-4.2 Gear Switching Limits for Vessels with Gear Switching Endorsed Permits

For those permits that qualify for an endorsement, there are three endorsement limit options:

Endorsement Limit Option 1: the average percentage of the sablefish north trawl QP allocation caught by the qualifying permit with fixed gear for years²⁶ fished through either December 31, 2016 or September 15, 2017 (the control date), whichever results in the larger average.

Endorsement Limit Option 2: a percentage equivalent to the share of QP issued²⁷ for the sablefish north QS owned by the qualifying permit owner as of and since the control date, **plus** an additional amount which will be determined in two steps. First, calculate the difference between the aggregate gear switching limit that would be issued to all recipients based on QS ownership and 29 percent. Second, allocate that difference among all qualifying permits proportionally to each permit's limit under Option 1.

Endorsement Limit Option 3: a percentage equivalent to the share of QP issued²⁷ for the sablefish north QS owned by the qualifying permit owner as of and since the control date.

²⁶ Including 2017 through the control date.

²⁷ The share of QP issued would be equivalent to the percentage of QS owned plus a share of the AMP quota pounds which has been passed through to QS owners since the start of the program.

Table A- 21 below describes the total combined limits under each combination of endorsement qualification option and limit option. Given that qualification Options 1 and 2 result in the same qualifying permits (Table A- 21), the results are the same for each qualification option (2nd and 3rd columns). Endorsement Limit Option 3, based on QS ownership only, provides the lowest total limit for any of the qualification options. Endorsement Limit Option 2 provides the highest in each qualification option. While the endorsement limit is designed to meet a 29 percent total limit (taking into account QS ownership then apportioning the residual of that amount and 29 percent across the qualified permits), given the few number of qualifiers under qualification Option 3, the endorsement limits for three of the six permits would have been in excess of 4.5 percent (i.e., the annual vessel limit), but were capped at 4.5 percent. The additional 4.3 percentage points available (the difference between 29 and 24.7) could have been distributed among the three permits that were under 4.5 percent, but this was not done in order to provide the same expansion ratio for all permits).

There were situations in which one QS account was associated with several permits that would qualify for an endorsement. In those cases, to avoid double counting of QS under the endorsement limit options that took into account QS holdings, staff assumed an even split of the credit for QS holdings across the permits. However, at the time of implementation the owner would ultimately be allowed to split the limit as they see fit, which could change the individual limits described below, but not the total limits in Table A- 21. Additionally, these limits were based on the “individual approach” for determining the permit limits per the Council motion (see page 37 of the alternatives document). If the Council were to instead use the collective approach, one permit’s individual limit would be increased by 4.1 percent (a relatively minor increase in the actual percentage point limit).

Table A- 21. Total gear switching endorsement limit (percentage) by qualification and endorsement limit option.

Endorsement Limit Option	Qualification Option		
	1 (11 permits)	2 (11 permits)	3 (6 permits)
1	26.4	26.4	14.8
2	29	29	24.7
3	12.2	12.2	6.5

To preserve confidentiality, the following describes the range permit-specific limits that could be issued under Alternative 3:

Endorsement Limit Option 1

Qualification Options 1 and 2:	0.93	-	3.88
Qualification Option 3:	1.42	-	3.88

Endorsement Limit Option 2

Qualification Options 1 and 2:	1.38	-	3.93
Qualification Option 3:	3.12	-	4.5 (capped at annual vessel limit)

Endorsement Limit Option 3

Qualification Options 1 and 2:	0.36	-	2.28
Qualification Options 3:	0.6	-	1.86 (note one to many relationship described above could affect the range of limits here)

A-4.3 Gear Switching Limits for Vessels Without Gear Switching Endorsements

Under Alternative 3, the gear switching limit for vessels without gear switching endorsed permits would be the lesser of a percent (to be determined) and 10,000 pounds. The most liberal qualification requirement—Endorsement Limit Option 1—would grant 11 permits an endorsement. From 2016-2021, there were 26 vessels that utilized 29 permits to make gear switched landings but only an average of 16 vessels were active in any one year from 2016-2019 and an average of eight in 2020 and 2021 (years impacted by the COVID pandemic). Given that only 11 permits would qualify at maximum under Alternative 3, that means there are 18 permits that would not receive gear endorsements but have been used in recent years to gear switch. If historical trends hold and only one vessel fishes under each of the endorsed permits ([Agenda Item C.5, Attachment 3, September 2021](#)), then 15 vessels that recently (2016-2021) participated in gear switching would be unlikely to continue to do so. However, participation by some of these vessels could be accommodated with mid-season transfers of permits with gear-switching limits that were only partially used. Of the 26 vessels that participated from 2016 to 2021, a total of 13 did not use a permit that would qualify for a gear switching endorsement. While it is uncertain which vessels that fished recently would not acquire or lease a GS endorsed permit, these 13 vessels might be considered as representative of such vessels. The average landing in active gear switching years for these vessels was 71,547 lbs from 2016 to 2021 and, if they do not acquire or lease a permit their gear switching opportunities would be reduced to the 10,000 lb maximum for vessels fishing on unendorsed permits.

However, few vessels are expected to participate under the low level limit provided for non-endorsed vessels. This limit (provided here and in Alternative 4) was based on a previous iteration of the alternative from the SaMTAAC, which set the limit at 0.5 percent “to allow some economically viable low-level targeting of sablefish with non-trawl gear [by trawl gear vessels] and/or cover bycatch taken while gear switching but targeting non-sablefish species”. ([May 2020 SaMTAAC Report](#)) Historically, on average fewer than two vessels that trawled also gear switched in the same year from 2011-2021; and few vessels appear to have targeted non-sablefish species via gear switching (Table 35 of [Attachment 1 from October 2019 SaMTAAC meeting](#)). On that basis, it seems likely that few if any vessels would utilize the limit, including vessels that recently participated and might not have access to a gear-switching endorsed permit.

A-4.4 Other Provisions of Alternative 3

A-4.4.1 Midyear Permit Transfers and Sequential Permit Registration

As described above, permits historically are used on only a single vessel in a given year as trawl endorsed permits may not be registered for use with a different vessel more than once per

calendar year²⁸ and under current regulations permit transfers do not confer additional fishing opportunity (QP transfers provide the additional opportunity). Given that under this alternative gear switching opportunities are attached as a unit to the permit, mid-year permit transfers and sequential registration are the primary means by which vessels have the flexibility to scale and match the limits they hold to their desired amount of gear switching. A vessel that does not wish to fill out its limit, perhaps due to opportunities in other fisheries, can lease its permit out to a different vessel and thereby garner additional revenue for the gear switching opportunity it would have otherwise forfeited. Additionally, a vessel that would prefer to gear switch at a higher level (perhaps one that received a gear switching endorsement that is smaller than its historic or desired level of fishing) can scale up by leasing a permit with a fully or partially unused limit. These transactions would be limited by the limit on the number of times a permit can be transferred each year and the Council might wish to consider the reason for and utility in maintaining the transfer limits.

A-4.4.2 Combination of Trawl Permits

Current management measures allow vessels to combine two permits to create a single permit with a larger vessel length endorsement. If trawl LEPs are combined and if there is a gear-switching endorsement on either permit, the permit resulting from the combination will have a gear-switching endorsement. This maintains vessel size flexibility for the fleet without penalizing vessels with the loss of a gear-switching endorsement (as would be the case if both permits were required to have a gear-switching endorsement in order for the resulting combined permit to have the endorsement). If both of the combined permits have a gear-switching endorsement, then the larger of the two limits will be included on the resulting permit—which would result in some attrition in the total amount of gear switching allowed under this alternative.

Historically, excluding the scores of initial combinations made to create permits for catcher processors, there have only been 23 permit combinations to establish a larger vessel length endorsement, with the majority occurring prior to IFQ implementation. This suggests the likelihood of this occurring would be low.

A-4.4.3 Gear Switching Limit Overages

When a vessel reaches the gear-switching limit (as determined by the trawl LEP registered to the vessel), it may retain and sell any sablefish caught in excess of the limit but may not deploy non-trawl gear on any trawl IFQ sector trips taken during the remainder of the year.²⁹ The gear-switching limits are specified as limits on the maximum amount of sablefish QP that can be used to cover fish caught under the IFQ Program with non-trawl gear.³⁰ All gear-switching overages

²⁸ Except in cases of death of a vessel owner or if the vessel registered to the permit is totally lost as defined in [§ 660.11](#). The exception for death of a vessel owner applies for a vessel owned by a partnership or a corporation if the person or persons with at least 50 percent of the ownership interest in the entity dies.

²⁹ A vessel that reaches the sablefish gear-switching limit would not be able to gear switch on subsequent trips even if it was targeting non-sablefish species and the chance of sablefish bycatch is extremely low. It would be able to continue to fish with trawl gear and retain sablefish caught, up to the annual vessel limit.

³⁰ Sablefish gear-switching limits are evaluated after applying credits for discard survival. Therefore, they are actually limits on total QP used (sablefish discard mortality and landings) rather than of catch.

must be covered by QP. The main provision in this section specifies that any QP a vessel uses for gear switching in excess of its gear-switching limit will reduce the following year's gear-switching limit for the permit by the amount of the excess QP used. This applies to the permit being used by the vessel at the time of the overage. A carryover of gear-switching limit overages would allow vessels to come closer to landing the gear-switching limits specified for their permits and not have an implication for meeting conservation objectives but would add to the administrative burden of the program. However, a suboption is provided that would not reduce the following year gear-switching limit on the permit used when the limit was exceeded.

A-4.4.4 Gear Switching for Other Species

Under this alternative, there would be no gear switching limits for species other than northern sablefish. Historically, there been few vessels targeting non-sablefish species with non-trawl gear as described at the end of Section A-4.3. As the non-trawl RCAs open up, there could be some increased interest in targeting on shelf species with non trawl gear using trawl quota. If there is a fishery that begins to develop within the IFQ sector outside of sablefish, then these vessels gear switching would be restricted only by the degree to which their target species co-occurs with sablefish north and whether or not the permit they are fishing under is gear switch endorsed.

A-4.4.5 Annual Vessel QP Use Limit

Regardless of these gear-switching limits, trawl permitted vessels are not allowed to catch amounts in excess of the northern sablefish vessel QP limit (taking into account both the vessel's trawl and gear switched QP landings). This provision is included just to ensure that it is understood that, for example, the opportunity to fish gear switched endorsed permits sequentially is still subject to the annual vessel QP limits.

A-4.4.6 Endorsement Expirations

Once the gear-switching endorsements are issued, they may expire when the permit is transferred to a new owner (Expiration Option 1) or continue indefinitely (transferring with the permit to a new owner or vessel; Expiration Option 2). Thus, for Expiration Option 1, over time there would be a complete phase out of gear-switching under endorsement limits, while under Option 2 such gear switching could continue indefinitely.

For purposes of Expiration Option 1, the transfer of a permit to a new owner would be considered to occur with any change to the ownership that involved the replacement of an owner or the addition of a new individual or entity to a permit ownership group. Thus, for example, with respect to ownership groups, changes in the name of the business owning a permit or the departure or death of a business partner would not cause the gear-switching endorsement to expire. However, the addition of a new person as part owner of an LLC would cause the endorsement to expire, even if the name of the LLC did not change. Expiration upon addition of a partner is intended to prevent circumvention of the expiration provision by incremental addition of partners. Allowing subtraction of a partner prevents the creating a situation where one partner could exercise excessive leverage with a partnership by threatening to leave and cause the gear-switching endorsement to expire. Monitoring of these changes would require the

submission of additional ownership information for all permits (similar to what is currently required for QSAs and vessel accounts).

The expiration of the gear-switching endorsement (Expiration Option 1) provides an incentive to avoid addition of new owners for as long as possible. This would be similar to the owner-on-board grandfather clause of the LEFG permit stacking program. That program provided an exemption to the own-on-board requirement, which expired upon the addition of a new owner to an ownership group. As an example of what might be expected from this provision, the LEFG owner-on-board provision was implemented in 2002 and thus far approximately 56% of the exemptions have expired (LEFG Review 2021).

Expiration Option 1 could adversely impact entities operating under gear switching endorsements when they seek to leave the fishery. Expiration of the endorsement would reduce the total amount of sablefish available for West Coast fixed gear vessels (in both the LEFG and trawl gear switching vessels) and hence the total fixed gear fishing assets (gear and vessels) the fleet needs to take the amount of sablefish allowed for fixed gear vessels on the West Coast. With a reduction in the total equipment needed, the value of the fishing assets could decline. If the Council were to select Expiration Option 1, the amount of gear switching through endorsement limits would eventually decline to zero. Assuming that 29 percent of the northern sablefish allocated to the trawl sector is gear switched and the opportunity is later eliminated, the total amount of limited entry northern fixed gear sablefish fishing opportunity on the West Coast would be reduced from 48 percent of the ACL to 34 percent of the ACL. At the same time, this reduction is likely to occur slowly over time and might manifest as a lower replacement rate for fishing equipment rather than a substantial decline in the value of used equipment.

The expiration option selected will also affect permit values. In general, under Alternative 3 all trawl permits that are not endorsed for gear switching might see a small decrease in value associated with virtual elimination of gear switching opportunities with those permits (based on the presence of latent trawl permits and assuming that trawl permit values are mainly driven by the value of their use in trawl fishing). Under Expiration Option 1, there would be no opportunity to transfer a permit along with its gear-switching endorsement. Therefore, the sale price for an endorsed permit would be effectively that for other trawl permits.³¹

In contrast, under Expiration Option 2, there would be no expiration and no need to collect additional ownership information. Gear switching endorsed permits would have enhanced value due to the limited number of permits with gear-switching endorsements. This would allow fishers wishing to exit the fishery to get more for their endorsed permits and other fixed gear related assets (equipment and vessels) than under Expiration Option 1 or No Action. This would be particularly true for the endorsement limit options that provide larger limits; for example, Limit Option 2, which provides some permits with limits equal to an entire vessel limit (4.5 percent).

Expiration Option 2 by maintaining higher levels of gear switching opportunities over the long-term would also benefit those relying on gear switching operations, such as northern

³¹ While owners of gear-switching endorsement permits may be less willing to part with such permits than are owners of non-endorsed permits, anyone wanting a trawl permit is more likely to find a non-endorsed permit owner willing to sell their permit for less than the owner of an endorsed permit, i.e. the market price for the permits is likely to be set by the sale prices for non-endorsed permits rather than endorsed permits.

sablefish QS owners that rely on selling QP to gear switchers—to the degree that the same QP cannot be sold to trawlers for a similar price (see Section 4.6).

One option considered but not included for analysis, in part because it was considered a midpoint between the existing options, would be to have the endorsements expire as under Expiration Option 1 or after a specified number of years, whichever came first. If it was just based on the specified number of years, there would be no need to collect the ownership information required under Expiration Option 1.

A-5.0 ELEMENTS OF ALTERNATIVE 4

A-5.1 Endorsement Qualifier Options

As with Alternative 3, there are three qualification options for vessels to qualify for a gear switching endorsement. Between January 1, 2011 and September 15, 2017 (the control date):

Endorsement Qualification Option 1: a vessel must have landed northern sablefish QP with non-trawl gear totaling at least 30,000 lbs per year in at least 3 years.

Endorsement Qualification Option 2: same as Option 1 plus, as of and since the control date, the current vessel owner owned the qualifying vessel and had some ownership interest in northern sablefish quota shares (any amount).

Endorsement Qualification Option 3: same as Option 2 plus, as of and since the control date, the current vessel owner also had some ownership interest in a trawl LEP.

Table A- 22 shows the number of vessels that would qualify based on each endorsement qualification option.

Table A- 22. Number of vessels that would qualify a permit for a gear switching endorsement.

Option	Number of Vessels
1	11
2	4
3	4

A-5.2 Gear Switching Limits for Vessels with Gear Switching Endorsed Permits

There are also three endorsement limit options based on vessel qualification options:

Endorsement Limit Option 1: a percentage equivalent to the average percentage of the sablefish north trawl QP allocation caught by the qualifying vessel with fixed gear for years²⁶ fished through either December 31, 2016 or September 15, 2017 (the control date) whichever results in the larger average.

Endorsement Limit Option 2: a percentage equivalent to the share of QP issued³² for the sablefish north QS owned by the qualifying vessel owner as of and since the control date, **plus** an additional amount which will be determined in two steps. First, calculate the difference between the aggregate gear switching limits that would be issued to all recipients based on QS ownership and 29 percent. Second, allocate that difference among all qualifying permits proportionally to each permit's limit under Option 1.

Endorsement Limit Option 3: a percentage equivalent to the share of QP issued³² for the sablefish north QS owned by the qualifying vessel owner as of and since the control date.

Table A- 23 is the Alternative 4 complement to Table A- 21 for Alternative 3, but based on the vessel qualification and limit options as opposed to permit qualification and limit options of Alternative 3. While the same patterns hold for the total gear switching limits (i.e. Endorsement Limits 1 and 2 provide higher limits than Endorsement Limit Option 3), there are distinct differences between the alternatives. For example, under Endorsement Limit Option 1 and Qualification Option 1, the total endorsement limit is higher than for the same combination of options under Alternative 3 because some vessels utilized multiple permits over the time period to gear switch, resulting in the vessels having more gear switching history than the permits. The biggest difference between the two alternatives appears to arise when considering the impacts of the QS ownership endorsement qualifier (qualification Option 2). Unlike the 11 owners of qualifying permits, all of which also meet the Option 2 QS ownership qualifier, under Alternative 3, only four of the 11 qualifying vessel owners also meet the Option 2 QS ownership requirement. The impact of this situation can be seen in several cells of Table A- 23 below. For example, the total limit of Endorsement Limit Option 2 does not reach the maximum amount of 29 percent because endorsements cannot be greater than the 4.5 percent annual vessel QP limit. One of the four QS owning vessels is capped at 4.5 percent under Qualification Option 1 and three of the four are capped in Qualification Options 2 and 3. Further, Endorsement Limit Option 3 results in endorsement limits that total to less than 4 percent because of the small number of qualifiers.

Note that these impacts are based on the information available as of the end of 2021. Ownership changes that could occur between now and implementation that would affect the outcome. For example, under Endorsement Qualification Option 1 and Endorsement Limit Options 2 or 3, a change ownership of one of the 11 qualifying vessels would impact the resulting endorsement limits. If the vessel buyer owned more QS than the seller (as of and sense the control date) it would result in a greater limit than anticipated in this analysis. Similarly, if the buyer owns less QS than the seller it would result in a lower limit.

As with Alternative 3, there is a single QS account associated with more than one qualifying vessel which will affect the individual endorsement limits described below, but not the overall limit totals shown in Table A- 23. If an option that determines a limit based on QS ownership is chosen (limit Options 2 or 3), then the entity may choose to allocate the limit across the permits that receive the gear switching endorsements, as desired by the vessel owner.

³² The share of QP issued would be equivalent to the percentage of QS owned plus a share of the AMP quota pounds which has been passed through to QS owners since the start of the program.

Also similar to Alternative 3, there would be one entity’s limit that would be affected by the choice of the individual or collective rule. The individual rule was used here but use of the collective rule would increase that individual’s limit by up to 50 percent depending on whether Endorsement Limit Options 2 or 3 are selected, each of which consider QS ownership in determining the endorsement limit.

Table A- 23. Total gear switching endorsement limit (percentage) by qualification and endorsement limit option.

Endorsement Limit Option	Qualification Option		
	1	2	3
1	27.2	11.0	11.0
2	28.4	17.7	17.7
3	3.7	3.7	3.7

Similar to Alternative 3, the below summary provides the range of endorsement limits by endorsement limit option and qualification option:

Endorsement Limit Option 1

Qualification Option 1: 0.93 - 4.03
 Qualification Option 2 and 3: 1.14 - 3.97

Endorsement Limit Option 2

Qualification Option 1: 0.86 - 4.5 (capped at annual vessel limit)
 Qualification 2 and 3: 4.21 - 4.5 (capped at annual vessel limit)

Endorsement Limit Option 3

Qualification Options 1, 2, and 3: 0.3 - 1.45 (one-to-many relationship)

A-5.3 Gear Switching Limits for Vessels Without Gear Switching Endorsements

The impacts of Alternative 4 for vessels without gear switching endorsements would be similar to that described in Alternative 3 (see Section A-4.3).

A-5.4 Other Provisions of Alternative 4

The impacts of the other provisions of Alternative 4 (outlined below) would be similar to that described for the corresponding provisions in Alternative 3 (see Section A-4.4).

- Midyear permit transfers and sequential permit registration
- Combination of trawl permits
- Gear switching limit overages
- Gear switching for other species

- Annual vessel QP Use limit
- Endorsement expirations

APPENDIX B: MSA and Other Policy Considerations

MSA—Required Considerations

B-1.0 MSA - NATIONAL STANDARDS

- (1) Conservation and management measures shall prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.
- (2) Conservation and management measures shall be based upon the best scientific information available.
- (3) To the extent practicable, an individual stock of fish shall be managed as a unit throughout its range, and interrelated stocks of fish shall be managed as a unit or in close coordination.
- (4) Conservation and management measures shall not discriminate between residents of different States. If it becomes necessary to allocate or assign fishing privileges among various United States fishermen, such allocation shall be (A) fair and equitable to all such fishermen; (B) reasonably calculated to promote conservation; and (C) carried out in such manner that no particular individual, corporation, or other entity acquires an excessive share of such privileges.
- (5) Conservation and management measures shall, where practicable, consider efficiency in the utilization of fishery resources; except that no such measure shall have economic allocation as its sole purpose.
- (6) Conservation and management measures shall take into account and allow for variations among, and contingencies in, fisheries, fishery resources, and catches.
- (7) Conservation and management measures shall, where practicable, minimize costs and avoid unnecessary duplication.
- (8) Conservation and management measures shall, consistent with the conservation requirements of this Act (including the prevention of overfishing and rebuilding of overfished stocks), take into account the importance of fishery resources to fishing communities by utilizing economic and social data that meet the requirements of paragraph (2), in order to (A) provide for the sustained participation of such communities, and (B) to the extent practicable, minimize adverse economic impacts on such communities.
- (9) Conservation and management measures shall, to the extent practicable, (A) minimize bycatch and (B) to the extent bycatch cannot be avoided, minimize the mortality of such bycatch.
- (10) Conservation and management measures shall, to the extent practicable, promote the safety of human life at sea.

B-2.0 MSA - 303(B)—DISCRETIONARY PROVISIONS

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

- present participation in the fishery;
- historical fishing practices in, and dependence on, the fishery;
- the economics of the fishery;
- the capability of fishing vessels used in the fishery to engage in other fisheries;

- the cultural and social framework relevant to the fishery and any affected fishing communities;
- the fair and equitable distribution of access privileges in the fishery

B-3.0 MSA - 303A—REQUIREMENTS FOR LIMITED ACCESS PRIVILEGES

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

MSA 303A(c)(1)

Promote fishery conservation and management
 Promote social and economic benefits
 Include an appeals process regarding initial allocation
 Provide for revocation

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

303A(c)(5)

ALLOCATION.—In developing a limited access privilege program to harvest fish a Council or the Secretary shall—

- (A) establish procedures to ensure fair and equitable initial allocations, including consideration of—
 - (i) current and historical harvests;
 - (ii) employment in the harvesting and processing sectors;
 - (iii) investments in, and dependence upon, the fishery; and
 - (iv) the current and historical participation of fishing communities;
- (B) consider the basic cultural and social framework of the fishery, especially through—
 - (i) the development of policies to promote the sustained participation of small owner-operated fishing vessels and fishing communities that depend on the fisheries, including regional or port-specific landing or delivery requirements; and
 - (ii) procedures to address concerns over excessive geographic or other consolidation in the harvesting or processing sectors of the fishery;
- (C) include measures to assist, when necessary and appropriate, entry-level and small vessel owner-operators, captains, crew, and fishing communities through set-asides of harvesting allocations, including providing privileges, which may include set-asides or allocations of harvesting privileges, or economic assistance in the purchase of limited access privileges;
- (D) ensure that limited access privilege holders do not acquire an excessive share of the total limited access privileges in the program by—
 - (i) establishing a maximum share, expressed as a percentage of the total limited access privileges, that a limited access privilege holder is permitted to hold, acquire, or use; and
 - (ii) establishing any other limitations or measures necessary to prevent an inequitable concentration of limited access privileges; and
- (E) authorize limited access privileges to harvest fish to be held, acquired, used by, or issued under the system to persons who substantially participate in the fishery, including in a specific sector of such fishery, as specified by the Council.

APPENDIX C: Detailed Analysis

This appendix includes more detailed information which was used to develop the main analysis or provides context for the results.

C-1.0 COMMUNITIES

To be completed after November 2022: An in-depth look at communities impacted by the action alternatives.

C-2.0 SABLEFISH QP VALUE

C-2.1 Sale Prices

All of the action alternatives will influence sablefish QP prices relative to No Action through their impact on gear switcher participation in the QP markets. This analysis looks at the expected influence of QP demand by gear switching and trawl vessels.

With respect to the influences of gear switching vessels, under Alternative 1 and 2, the price of any-gear QP is likely to be higher than sablefish QP under No Action (non-gear-specific QP) because of the reduction in supply that is available for use by gear switchers (Figure 25). At the same time, trawl-only QP would be expected to decline some in price because some of the more efficient gear switching vessels will no longer be bidding for that segment of the sablefish QP. Under Alternatives 3 and 4, the restriction on gear switching would be expected to have a downward influence on QP prices because of the reduced amount of gear switching that would be allowed compared to recent periods, and hence removal of some gear switching demand from the sablefish QP market. For some of the alternatives and options, the change in demand relative to No Action might be modest while for others it would be more significant (see discussion of each alternative in Section 4.6.2). These price changes (particularly for trawl-only QP under Alternatives 1 and 2 and under Alternatives 3 and 4 in general) would be expected to be relatively modest assuming that trawlers are ready buyers for the additional sablefish QP.

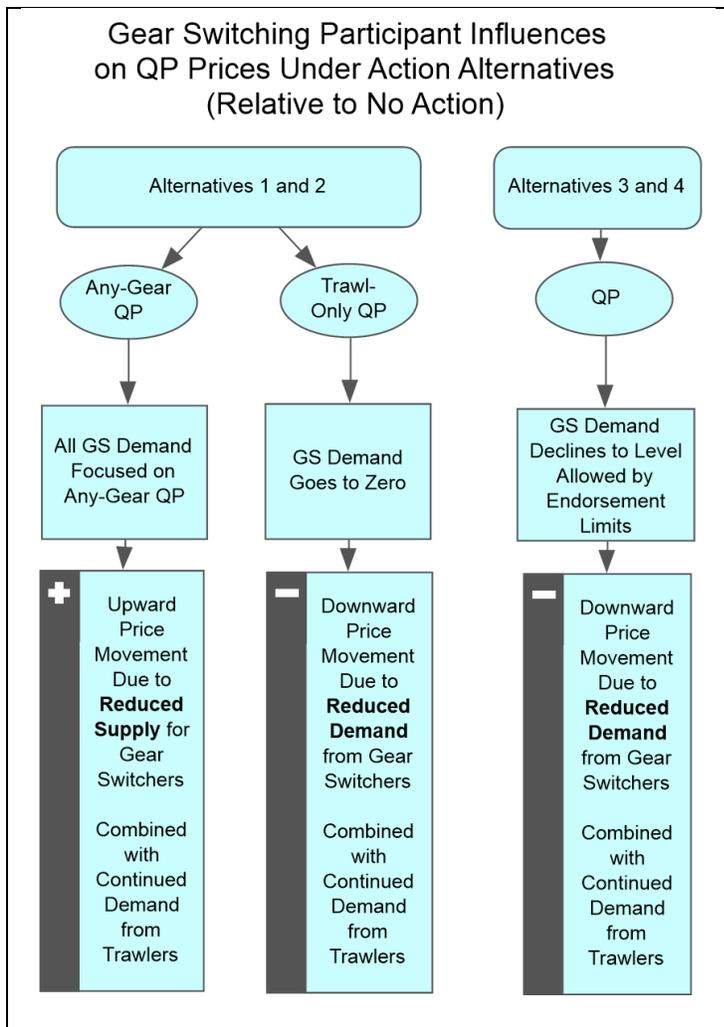


Figure 25. Effects of action alternatives on gear switching participant influences on QP prices, relative to no action.

The degree of price changes resulting from either a split in the QP market (Alternatives 1 and 2) or a reduction in use by gear switchers (Alternatives 3 and 4) could be relatively modest if per pound net revenues for sablefish that are comparable between the gears. At the end of Section 3.3.5, there is a discussion which shows that, taking into account lower average costs per pound for trawl vessels and higher exvessel prices per pound of sablefish for gear switching vessels, the relative sablefish per pound profits may be similar between the gear types (not taking into account revenue from co-occurring species). However, some of the more efficient trawl vessels generate higher profits per pound of sablefish than some of the less efficient gear switching vessels and vice versa. At the same time, these vessels have all been operating in the same QP market and by implication are somewhat competitive with one another.³³

Given these conditions, it seems unlikely that the efficiency differences are so great that there would be an extreme price drop if the QP no longer usable by gear switchers were being bid on by trawl vessels that

operate somewhat less efficiently than the newly constrained gear switching vessels.³⁴ Also to be considered with respect to the possible price changes is the amount of QP that will be made available by the restriction on gear switching vessels and degree to which trawlers are able to absorb that amount. Under alternatives that are expected to result in gear switching levels to close to 29 percent, relative to the historical maximum proportion of QP used for gear switching (35.3 percent in 2019), limiting gear switching would have increased the amount of QP available in 2019 by 6.3 percent. The trawl vessels' ability to absorb that amount of QP with minimal impact on QP prices is likely greater than it would be for a much more substantial reduction in

³³ This may be less true for vessels that received an initial allocation of QS than for those that have bought QS or buy their way into the market each year.

³⁴ For a more definitive analysis, marginal variable cost per pound data would be required. Marginal costs are the costs of catching one additional pound. For example, if a vessel is already fishing, the cost of fishing a bit more or the cost of making another trip. The EDC data that is available, while informative, provides average variable costs per pound.

gear switching (for example, down to 3.7 percent under some Alternative 4 options or eventually to zero if sablefish endorsements expire under Alternatives 3 or 4).

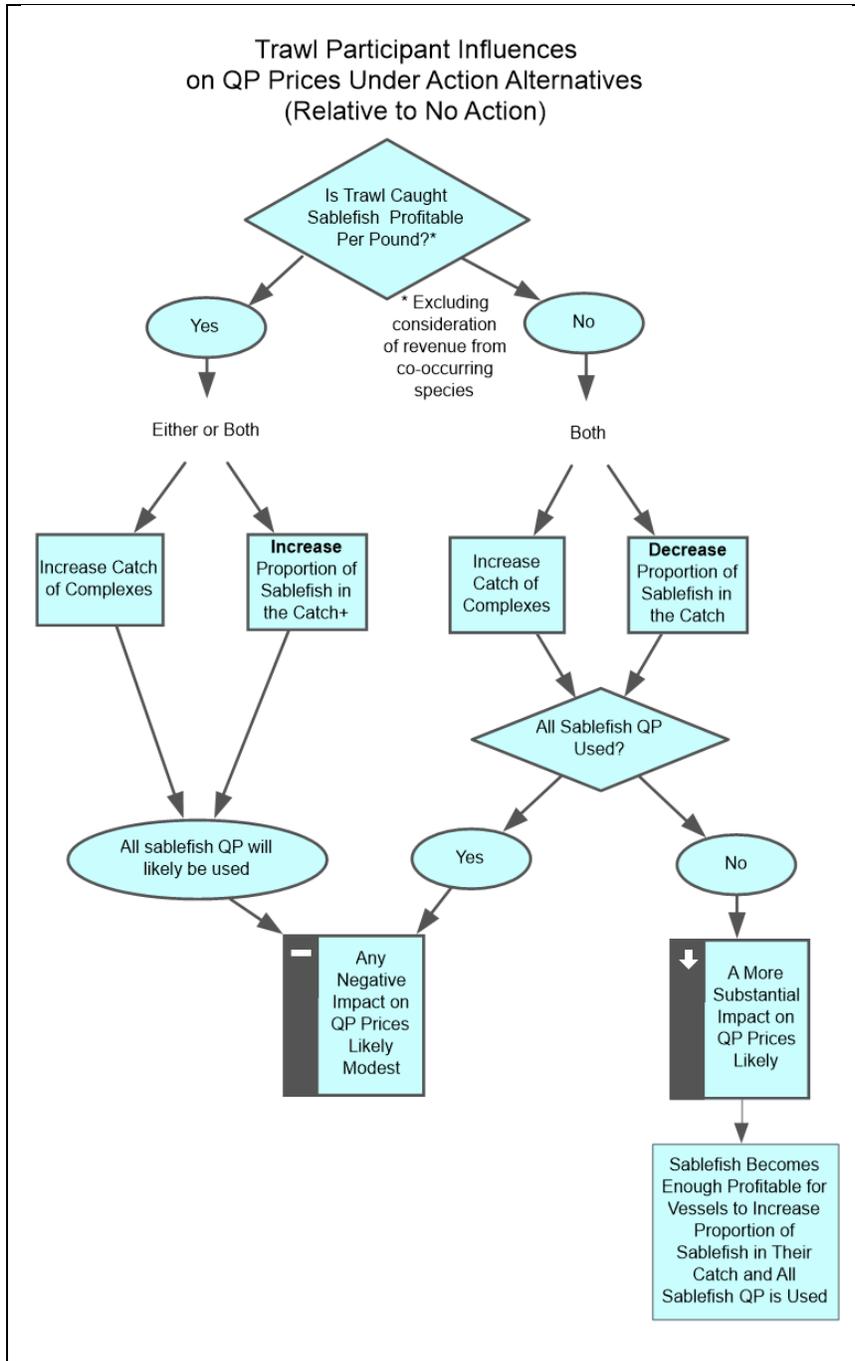


Figure 26. Conditions impacting likelihood that sablefish QP will be fully harvested and implication for impact on QP prices (over the long-term with adequately functioning QP markets).

If trawlers are unable to utilize the additional QP, a more substantial impact on QP prices would be expected. If trawlers make a profit on their sablefish catch (independent of revenue from co-occurring species), trawlers would be expected to fully utilize the additional sablefish (left side of Figure 26).

Exvessel prices, QP price and data on average cost of fishing per pound indicate that most but not all trawlers likely turn a profit on their sablefish catch, except possibly when exvessel prices decline to levels such as those seen starting in 2018 (see Section 3.4.3). In most years, even the less efficient trawl vessels (vessels at the 75th percentile of the cost per pound rankings) likely turn a profit on their sablefish catch on a per pound basis. If sablefish is profitable, full utilization of sablefish QP would likely be achieved through a combination of trawl vessels increasing their catch of complexes, or if they are limited in their ability to increase their catch of the complexes, then increasing the proportion of sablefish in

their catch in order to maximize profits. Recall from Section 3.3.5 that it was shown that there

was a notable decrease in the proportion of sablefish in the catch when the program was first implemented, indicating the possibility that there would be some ability now to increase the proportion of sablefish in the catch.³⁵ Under any of these circumstances, all sablefish QP would be expected to be utilized (unless both catch of the complexes have been maximized and it is not technically possible for trawlers to further increase the proportion of sablefish in their catch) and substantial reductions in QP prices appear unlikely.

If sablefish is not profitable, but landing the trawl complex in which it occurs is profitable, trawlers would be expected to minimize the sablefish in their catch and utilize all of the additional sablefish QP unless they encounter a limit to the market's ability to accept other species in the trawl complex (right side of Figure 26). If the market for the complex restricts trawlers, the market price for sablefish QP would be expected to decline until catching sablefish is profitable for more trawlers, at which point those trawlers would begin to increase the ratio of sablefish in their catch in order to take advantage of that profit opportunity. Under these circumstances, a restriction in gear switching could bring about a more substantial decrease in sablefish QP prices.

C-2.2 Bartering

The impacts of a limit on gear switching might be somewhat different for those who barter their sablefish QP to gear switchers in order to get QP for other species in return. If the limit on gear switching interferes with some barter transactions, those sablefish QP providers might need to instead sell their sablefish QP for cash and then use that cash to purchase the QP for the other species they want. A comparison of barter rates based on exvessel value to relative QP prices indicates cash transactions might be better for sablefish QP suppliers. However, because many exchanges occur through barter there may be other reasons that barter transactions are preferred over market transactions (e.g., risk, longer-term relationships, and transaction costs).

It has been reported in public comment that fishermen typically barter their QP on the basis of exvessel price ratios. Using Dover sole and sablefish as an example, and estimating trading ratios based on exvessel prices, Dover to sablefish trading ratios from 2011 to 2020 likely ran from 1.7:1 (using 2019 prices) to 6.3:1 (using 2011 prices). For a comparison using QP prices, the only year for which a cash price for Dover was reported in the Holland 2020 study was 2011, and the reported price was \$0.06 per pound. In that year, northern sablefish QP sold for an average of \$1.07 per pound, which would have allowed the purchase of nearly 18 pounds of Dover QP for each pound of northern sablefish QP sold. However, since Dover price data is quite thin and limited, rather than just looking at actual QP prices it is useful to look at the Dover QP prices that would have had to prevail in order to achieve the barter ratios hypothesized based on exvessel prices (Dover to sablefish ratios of between 1.7:1 and 6.3:1). In general, looking at the 2011 to 2019 range of sablefish QP prices (\$0.61 to \$1.21) and the range of Dover to sablefish pound exchange ratios (implied based on exvessel prices) it appears that Dover QP prices ranging from \$0.10 to \$0.72 per pound would achieve ratios similar to those based on QP price ratios. (Table C- 1) Lower Dover QP prices would have allowed an individual to buy more

³⁵ Alternatively, if the market is able to absorb more of the complex than could be caught with the available sablefish QP at current ratios, if possible trawlers would be expected to further decrease the proportion of sablefish QP in their catch in order to increase the amount of the complex harvested. However, if both of these conditions were true (more of the complex can be sold and trawlers can further reduce the ratio of sablefish in their catch), one would expect that adjustment would already have been made.

Dover QP per pound of sablefish QP sold than by exchanging at exvessel price ratios and higher QP prices would have yielded less Dover sole QP per pound of sablefish QP sold. The industry may be able to provide comment on the degree to which these QP prices might be expected or whether those that may move from barter to cash transactions would be worse or better off. This evaluation gets more complicated when multiple species are included in barter transactions.

Table C- 1. For the range of historical sablefish QP prices, the Dover sole QP prices that would achieve the range of trading Dover QP:sablefish QP ratios implied by historical prices.

	Historical Range of SF QP Prices Per Pound	
	\$0.61 (2019)	\$1.21 (2017)
Implied Historical Trading Ratios ^a	Dover QP Price Needed to Achieve Historical Ratio	
1.69 Dover lb/Sablefish lb (2020)	\$0.36	\$0.72
6.34 Dover lb/Sablefish lb (2011)	\$0.10	\$0.19

^a Trading ratios implied based on exvessel price ratios.

As a final note, if an action alternative is successful in increasing the trawl attainment of other species, the QP prices for those other species could increase, altering these results. However, this seems unlikely because of current attainment levels are very low and, while there may be some improvement, substantial surpluses of QP are likely to remain (exceptions: whiting, Petrale sole, widow rockfish, see Section 3.2).

C-3.0 DISPERSION OF ANY-GEAR QP AMONG QS ACCOUNTS

Under No Action, participants can acquire QPs from any other QSA or vessel account to use in gear switching. However, under Alternative 1 and 2, any-gear QPs needed for gear switching would be spread across QSAs in varying degrees. For gear switching participants, this would likely increase the number of transactions that would be needed to accumulate enough QPs to cover their historical gear switching history depending on the amount of QS that they own and is converted to any-gear QPs. While the following analysis is based on Alternative 2 and QP Split Option 1 (71 percent trawl only, 29 percent any-gear), the overall conclusions could be applied to QP Split Option 2 and Alternative 1 (noting that participants could secure more any-gear QPs through purchase of any-gear QS).

Based on 2021 QS information, 24 QSAs under GS Participation Option 1 and 9 QSAs for GS Participation Option 2 would receive most or all of their QS as any-gear QPs which would result in 17.7 percent of the 29 percent any gear QPs (including AMP) held in gear switching participant QSAs under GS Participation Option 1 and 7 percent under GS Participation Option 2. The remaining QSAs would receive all their QPs as the standard ratio, which would likely be the accounts that gear switchers would need to interact with in order to procure more QPs.

Table A- 24 shows the number of QSAs that would receive the standard ratio for all their QS by the number of QPs in 2021 for QP Split Option 1 and the resulting total percentage of the allocation each group would hold. The majority of non-GS Participant QSAs under GS Participation Option 1 would receive between 2,500 and 10,000 pounds and up to 15,000 pounds under GS Participation Option 2.

To understand the implications of the number of trades required to reach recent gear switching levels, let's consider the average catch from 2016-2019 (1.87 mil. lbs). Under QP Split Option 1, GS Participants would receive approximately 1.22 million pounds under Option 1 and 0.62 million pounds under Option 2. Therefore, in order to accumulate sufficient QPs outside of the GS Participant QSAs to meet the 2016-2019 average, there would need to be a minimum of 63 and 87 QSAs traded with assuming all any-gear QPs could be acquired from those accounts with the highest amount of QPs. Given that it is likely that trades would not occur from the just the top accounts, it would likely take several more trades to accumulate QPs.

Table A- 24. Number of QSAs (2021) that would receive the standard ratio under GS Participation Options and QP Split Option 1 by the amount of any-gear QPs that would be received and total percentage of the sablefish allocation that group would account for. Count of GS Participant QSAs and percentage of 2021 allocation they would receive.

Amount of QPs in 2021	GS Participation Option 1		GS Participation Option 2	
	Number of QSAs	Percentage of Allocation	Number of QSAs	Percentage of Allocation
2,500 or less	9	0.2	4	0.1
2,501-5,000	31	1.5	22	1.3
5,001-7,500	18	1.6	20	1.7
7,501-10,000	30	3.8	12	1.5
10,001-15,000	8	1.4	39	7.3
15,001-20,000	6	1.6	9	2.1
20,001-30,000	3	1.1	8	2.9
30,001-40,000			6	3.1
40,001+				
Gear Switching Participants				
	24	17.7	9	9.0
Total	129	29	129	29

Over time, as accounts expire, all QSAs would receive the standard ratio to achieve the designed any-gear to trawl only QP ratio. To provide context in how this might affect gear switchers ability to gather up any gear QPs to fish, Table A- 25 below uses 2021 QS ownership data to show the hypothetical spread of any-gear QPs across all 129 QSAs where the standard ratio (29 percent any gear, 71 percent trawl only) is applied to all accounts under QP Split Option 1. To accumulate enough QPs to gather enough for the average fleet level catch from 2016-2019, it would take the top 101 QSAs combined.

Table A- 25. Number of 2021 QSAs by the amount of any-gear QPs assuming all accounts received the standard ratio (29 percent any gear, 71 percent trawl only) and percent of the allocation for that group.

Amount of QPs	Number of QSAs	Percentage of Allocation
5,000 or less	9	0.4
5,001-7,500	26	2.3
7,501-10,000	13	1.6
10,001-15,000	21	3.8
15,001-20,000	36	9.2
20,001-30,000	10	3.5
30,001-40,000	10	5.3
40,001 +	4	2.9