

SUPPLEMENTAL ANALYSIS ON SABLEFISH GEAR SWITCHING IN SUPPORT OF SELECTION OF PRELIMINARY PREFERRED ALTERNATIVE

This document provides summarization of the following:

- Factors that May Constrain Trawl Attainment
- Factors That May Influence Future Levels of Gear Switching
- Cost-Benefit Analysis for the Regulatory Impact Review

Summary on Factors That May Constrain Trawl Attainment (Section 2.4)

The analysis was not able to definitively conclude whether gear-switching is constraining attainment of the trawl allocation. Therefore, some degree of informed judgement will be necessary to assess the likelihood that gear-switching is constraining. To facilitate that judgement, Table 1 summarizes the indicators of various hypothesized causes of constraints on attainment of the trawl allocations (see Section 2.4).

Summary on Factors That May Influence Future Levels of Gear Switching (Section 2.5)

Table 2 summarizes from Section 2.5 factors that impact or may indicate future gear switching levels. Some factors just relate to potential expansion in the range observed to date, without regard to whether gear switching levels might be higher or lower than observed so far.

Cost-Benefit Analysis for the Regulatory Impact Review

Required elements for a regulatory impact review are covered in Section 4.5 of Attachment 3 with the exception of the cost-benefit analysis. This cost-benefit analysis was developed through four stages of consideration:

1. What are the categories of costs and benefits that need to be considered?
2. What can be said qualitatively about the direction of change for those categories?
3. What dimensions of the categories can be quantified?
4. For which quantifications can dollar values be assigned?

Taking this approach and displaying results accordingly allows the reader to consider all the relevant costs and benefits, including those that it may not be possible to monetize. Monetization reflects a standard and easy to assess way of measuring one dimension of human values. However, inability to monetize an effect does not mean that a particular effect is unrelated to an important human value and an aspect of determining overall benefits to the nation. An impact for which the information needed for monetization has not been collected or which is inherently difficult to monetize could still outweigh in importance the monetizable impacts. Identifying all impacts and including the quantifications where possible is intended to assist policy makers in weighing and articulating a rationale for a particular action or not taking action.

Table 3 summarizes costs and benefits assuming that gear switching is constraining attainment of the trawl allocation. Table 4 identifies the differences assuming gear switching is not a constraint on attainment of the trawl allocation and that if action is taken to restrict gear, sablefish QP would go unutilized. Impacts to gear-switching vessels, together with those dependent on them (e.g., quota share owners, communities) and administrative costs, would be the same as Table 3, and the trawl fishery related impacts would be same as No Action (as there would not be any additional harvest of the complexes or harvest of sablefish by trawl vessels).

If, rather than sablefish QP going unused, trawlers would increase the ratio of sablefish in their catch without increasing their catch of other species, the results would be somewhere in the middle of those displayed in Table 3 and Table 4—with respect to those impacts that are dependent on catch.

Table 1. Summary of indicators of potential constraints on attainment of the trawl allocations. (see Section 2.4).

Factor	Indications Factor May be a Constraint	Indication a Factor May Not Be a Constraint
Vessel Participation (Capacity) Section 2.4.1		
	Drop in number of vessels in 2011	Vessels that did not leave (59 have participated consistently) have expanded their harvest to very near pre-IFQ levels (Figure 5). There are an additional 25 vessels of similar or greater sizes that could potentially expand their harvest.
Market Limits		
Historic evaluation: 2007-2010 Dover Expansion (Figure 7)	The peak of the Dover sole expansion (2009-2010) indicates there may have been a market constraint in those two years.	Pre-peak expansion levels (2007-2008) do not show similar indication of market stress and those pre-peak levels have not been achieved under the IFQ program.
Prices	2009-2010 saw a substantial portion of the catch coming in at frozen prices (Figure 9). 2010 saw a drop in fresh prices (Figure 8).	Price drops in 2009/2010 may have been influenced by economic downturn (consumer fresh fish price index dropped, though Dover priced dropped much more substantially).
Volume	2010 saw a drop in volume of Dover landed (Figure 7)	Volume drop may have been caused by: a jump in pink shrimp CPUEs (Figures 44 and 45); and/or Petrale becoming overfished—constraints to Petrale sole may have reduced Dover trips (Figure 43). (Petrale is frequently caught on DTS trips and contributes substantially to trip revenues).
Imports	Imports might be contributing to a market constraint on Dover sole. The potential for this competition is indicated by the large increase in fresh and frozen catfish and tilapia imports that occurred in the 2000s and extended into the period of the trawl catch share program (top of Figure 10).	Historically, Dover has been delivered to fresh markets. Frozen imports may have had less of an impact on Dover markets. Fresh imports of tilapia and catfish peaked in 2007 and 2008, exvessel prices appeared to have not been affected in those years, and Dover sole landings continued to increase thereafter, albeit an increasing portion of those landings were delivered at frozen prices (bottom of Figure 10).
	A complex array of factors effect markets and production. Conditions have changed in the 12+ years since the Dover expansion. Dover and fresh and frozen imports have also been declining in recent years. As compared to 2009-2010, the portion of Dover landed at frozen prices has remained low (Figure 9).	
Infrastructure Limitations		Non-processor infrastructure has been relatively stable.
This evaluation does not take into account the efficiency and competitiveness of the infrastructure.	Number of first receivers has declined somewhat, primarily in ports to the south (also see following row regarding impact of management system design on investment).	The existence of latent physical capacity is evidenced by the ability of landings to expand over a short period: for example the expansion of Dover in the 2007-2010 period and the expansion of landings starting in 2017, driven by midwater rockfish.
Management System Design	Trawl catch share QS control limits reduce the viability of using market mechanisms to limit uncertainty about access to long-term supply that may be hampering investment in more efficient processing equipment and market development.	

Factor	Indications Factor May be a Constraint	Indication a Factor May Not Be a Constraint
Competition Between Strategies (relative profitability)	<p>Many gear-switching trips have variable costs net revenue (VCNR) per unit of sablefish that are greater than the less efficient DTS trips (i.e. gear switchers make trips for which they would have been willing to pay more per pound of sablefish QP than some DTS vessels).</p> <p>There is some indication that the number of gear-switching trips with greater efficiency may be higher when the trawl/gear-switched exvessel sablefish price differential is higher.^{a/}</p>	<p>Just because many gear-switched trips have higher VCNR per pound of sablefish than trawl DTS trips, does not mean that some other factor is not constraining harvest of the trawl allocation.</p>

^{a/} Gear switching vessels generally receive higher prices for their sablefish than trawl vessels.

Table 2. Factors that indicate that future gear switching levels may be higher or lower than those seen thus far during the IFQ program.

Factor	Increases	Decreases
Normal variation and extraordinary events.	The full range of gear-switching levels that might be expected under the typical range of conditions that occur in the fishery may not yet have been observed. Further, extraordinary events can have a significant influence (e.g. COVID).	
Sablefish Biomass and Changing ACLs	Forces that might increase future proportions of gear switching: Low sablefish ACL levels Trawl sablefish encounter rates that don't decline as much as the sablefish ACLs High sablefish prices (influenced by international and local markets—but see following topic)	Forces that might decrease future proportions of gear switching: High sablefish ACL levels Trawl sablefish encounter rates that don't increase as much as the sablefish ACLs Low sablefish prices (influenced by international and local markets—but see following topic)
	Impacts of biomass on fixed gear CPUE could have a contrary effect (e.g. low ACL levels associated with substantial reduction in fixed gear CPUE and trawl encounter rates could reduce rather than increase likelihood of a gear-switching constraint).	
Sablefish Exvessel and QP Prices	Lower exvessel prices do not necessarily indicate a lesser likelihood of gear switching. Exvessel price reductions are offset by reductions in QP values (Figure 15). The differential in exvessel prices between fixed gear caught and trawl caught sablefish may be more influential to the level of gear switching than the absolute price levels (Figure 16).	
Conditions in Cross Over Fisheries	Changing conditions in cross-over fisheries could either increase or decrease the amount of gear switching. Dungeness crab, Alaska IFQ sablefish and the LEFG primary fishery are the main fisheries from which vessels cross-over into the trawl IFQ fishery and gear switch. With respect to the LEFG primary fishery, permit stacking limits and the relatively few pot permits available may be encouraging vessels to gear switch. Changes to the LEFG program, for example, conversion to a single fixed gear endorsement, might alter the level of gear switching.	
Latent and Underutilized Permits	There is a sufficient supply of latent and underutilized trawl permits such that if economic conditions were to incentivize gear switching, trawl permit availability would be unlikely to constrain an expansion.	
New Entrants and Effects of the Control Date	Since 2017 new vessels have started gear switching but the rate of entry has tailed off somewhat as compared to prior to 2017 (Figure 19). This could be an effect of the control date.	While there has been new entry, due to exits the total number of gear-switching vessels was steady from 2016-2019, declined during COVID, and in 2022 recovered to levels that were still below pre-COVID levels (Table 3).
Trends in QS Acquisition by Gear Switchers	While amounts of QS owned by gear-switching vessels has been relatively stable, there have been recent purchases by recently active gear-switching interests (Table 16)	If there were steady purchases of QS by gear switchers that might indicate an expansion trend. The amount of QS owned by gear switching vessels has been relatively stable since 2015. While there have been recent purchases by recently active gear-switching interests, the level of QS ownership is still within the previously observed range (Table 16).

Table 3. Summary of costs and benefits of action alternatives in comparison to no action (including non-monetized impacts), **assuming that gear-switching is constraining trawl allocations.**

Impact Category (Change from No Action)	Impacts Assuming Gear-Switching is Constraining Trawl Attainment and Alternatives Allow 29% Gear Switching			See Section(s)
	Alt 1 Gear Specific QS	Alt 2 Gear Specific QP	Alt 3 Seasonal Management	
Physical Impacts	Minimal	Minimal	Minimal	7.2
Biological Impacts	Minimal	Minimal	Minimal	7.3
Socio-economic Impacts				
Total Harvest & ExVessel Rev <i>(Dependent on conditions. All action alternatives are expected to result in gains in harvest and revenue compared to no action)</i> <i>Estimates for each alternative are based on comparisons to 2013, 2019, and 2021.</i> <i>Higher levels of gear switching under No Action would result in greater benefits under the Action Alternatives. Lower levels of gear switching under No Action would reduce (and potentially eliminate) the benefits of the Action Alternative.</i>	Dependent on GS Participation Option/Conversion Option Selected Per year impacts (assuming only any-gear QS received by GS Participants is used for gear switching ^a) +4.9-13.2 mil. lbs +\$2.5-\$7.3 mil	Dependent on ability for GS to sweep up any-gear QPs from across QS accounts. Per year impacts (assuming only legacy QPs used for gear switching) +3.8-12.1 mil lbs +\$1.9-\$6.7 mil	Similar to No Action unless conditions lead to GS levels above 29%, then potential loss in gear-switching opportunity and gains for the trawl sector. Note: gear switching levels have been above 29 percent in approximately half of the historical years. Per year impacts: +3.2 lbs +1.8 mil	7.4.1 & 7.4.3

Impact Category (Change from No Action)	Impacts Assuming Gear-Switching is Constraining Trawl Attainment and Alternatives Allow 29% Gear Switching			See Section(s)
Efficiency <i>(All action alternatives would potentially result in a loss of efficiency relative to No Action, except to the extent that they compensate for the effect QS control limits on reducing the opportunity to cope with uncertainty.)</i>	Most efficient across action alternatives; relies on features of current program.	Least efficient across alternatives; relies on gear-specific QP but not gear-specific QS.	Similar to Alternative 1, but negative impacts on efficiency compared to historic conditions under No Action (years greater than 29%).	2.4.5(b), 4.2.5, and 7.5
Distributional Impacts				
Vessels				7.4.1, 7.6 and 10.1
Trawl	Vessels fishing in competitive bottom trawl strategies, particularly DTS, likely to benefit.			
Trawl component of estimates provided in the "Total Harvest & ExVessel Rev" row.	+5.5-14.5 mil lbs +\$2.7-10.3 mil ^a	+ 4.2-13.4 mil lbs + \$2.6-9.5 mil	+3.5 mil lbs + \$2.5 mil	
Gear-Switching	Individual qualified GS Participants affected to the degree that their QS holding don't cover their typical GS landings. Opportunity for most to recover by acquiring any-gear QS/QP (at a cost). Non-qualifying GS participants likely negatively impacted unless they acquire any-gear QS/QP (at a cost).	Legacy participants that own/operate vessels affected to the degree that QS holdings don't cover typical GS landings. Some recovery by acquiring any-gear QP annually (at a cost). Non-legacy participants (including GS vessels that lease LEPs) negatively impacted and need to acquire any-gear QPs (at a cost).	Negative impacts compared to historic conditions under No Action (years greater than 29%).	
GS component of estimates provided in the "Total Harvest & ExVessel Rev" row	-0.6- -1.4 mil lbs -\$0.9- -\$3.1 mil	- 0.5- -1.3 mil lbs - \$0.7 - -2.8 mil	-0.3 mil lbs -\$0.7 mil	
LEP Owners	LEP ownership not considered in qualification	Qualified LEP owners would receive legacy status with respect to their QS.	Negligible impact	7.8
	Among LEP owners, a few of those that lease to GS vessels would likely be most impacted through loss of that entire stream of lease revenue. In general, trawl LEP lease and sale prices might decline somewhat.			

Impact Category (Change from No Action)	Impacts Assuming Gear-Switching is Constraining Trawl Attainment and Alternatives Allow 29% Gear Switching			See Section(s)
QS Owners	Any-gear QS/QP value might increase; trawl-only QS/QP value might decrease. QS/QP values for other species could increase if attainment increases enough.	Sablefish QS value may increase or decrease depending on relative changes in the gear-specific QP values and ratio of each. QS/QP values for other species could increase if attainment increases enough.	QS/QP value might be lower than under No Action for years in which the 29 percent limitation would be constraining. QS/QP values for other species could increase if attainment increases enough.	7.8
Crew	Potential increases in income opportunity and possibly jobs.			
GS	Loss of income and possibly jobs compared to historic conditions under No Action, but losses minimized to the degree that 29% is attained (likely) . Level of impacts to each of the above gear-switching dependent groups depends on the gear-switching levels that would have occurred under No Action. Higher gear switching levels under No Action mean greater negative impacts from action, lower levels reduce impacts, potentially to close to zero.	Loss greater than Alts 1 and 3 because of dispersion of any-gear QP across accounts (low likelihood of reaching GS max).	Loss of income and job compared to historic conditions under No Action (years greater than 29%), but no losses to the degree that gear-switching would have been less than 29% gear-switching under No Action.	7.9
First Receivers & Processors	Positive benefits to trawl FRs for all alternatives, most under Alt 2, QP Distribution Option 2			
Gear Switching	Negative impacts but provides opportunity for long term access to any-gear QS for GS; includes suboption for qualification for FRs.	Negative impacts and limited ability to secure long term access to any-gear QP.	Negative impacts compared to historic conditions under No Action (years greater than 29%).	4.1.2(h) and 7.10
Communities	Depends on balance of trawling and gear-switching for each port/community. Those more dependent on the trawl fishery and the income and infrastructure it supports will be more benefited by an Action Alternative. Ports more dependent on gear-switching and the income and infrastructure it supports will be more benefited by No Action. Beyond displaying levels of activity in port areas (Table 39), and the identification of specific ports in which each group participates (Table 55), it is not possible to determine how benefits will be distributed.			7.11

Impact Category (Change from No Action)	Impacts Assuming Gear-Switching is Constraining Trawl Attainment and Alternatives Allow 29% Gear Switching			See Section(s)
Governance (Fish Mgmt) NMFS to provide cost estimates for PPA, when selected.	Higher implementation costs, but lower ongoing costs compared to Alt 2. Possibly some complexity to changing GS levels in future, degree and nature depends on approach	Likely lower implementation costs, but higher ongoing costs compared to Alt 1. Potentially simple to change GS level in the future.	Lowest costs across alternatives to implement. Simplest and least costly to change GS level in future, unless GS levels are diminished to the point that season shorten dramatically.	7.12
General Public	Domestic consumers would likely benefit through increases in supply and/or displacement of imports.			7.13
Long-Term				
Total Harvest & Rev, Trawl Vessels, Efficiency, First Receivers, and Communities.	If a limitation on gear-switching encourages investment in more efficient processing (competitive) and marketing, total exvessel revenues and related impacts may increase more over the long term.	Same as Alt 1 plus under QP Distribution Option 2, the amount of gear-switching will diminish to a lower level (18.8%) as legacy participants divest themselves of their QS.	Same as Alternative 1.	
GS Vessels, First Receivers and Communities	Those that are more dependent on gear-switched deliveries than trawl may see some diminishment in investment over time with the reduced opportunity for gear-switching.			
QS Owners	Same as short term.	Effects of higher transaction costs (compared to Alt 1) might be more pronounced b/c less any-gear QPs in each QSA.	Same as short term.	

^a As additional any-gear QS is acquired by gear-switchers, the benefits displayed here for Alternative 1 would decline.

Table 4. Differences from Table 3 if gear-switching is **not** constraining trawl allocations (assuming that the sablefish QP go unused).

Impact Category (Change from No Action)	Impacts Assuming Gear-Switching is NOT Constraining Trawl Attainment		
	Most of the Trawl Benefits Listed in Table 3 Would Not Accrue ^{a/} Costs to Gear Switchers Would Still Accrue Implementation and Ongoing Costs Would Still Accrue		
	Alt 1 Gear Specific QS	Alt 2 Gear Specific QP	Alt 3 Seasonal Management
Socio-economic Impacts			
Total Harvest & Rev <i>Dependent on Conditions Estimates for each alternative are based on comparisons to 2013, 2019, and 2021.</i> <i>Higher levels of gear switching under No Action would result in greater losses under the Action Alternatives. Lower levels of gear switching under No Action would reduce (and potentially eliminate) any losses of the action alternative.</i>	Per year impacts (assuming only any-gear QS received by GS Participants is used for gear switching) Per Year Impacts -0.6- -1.4 mil. lbs -\$0.9- -\$3.0 mil	Per year impacts (assuming only legacy QPs used for gear switching) Per Year Impacts -0.5- -0.9 mil lbs -\$0.7- -\$2.8 mil	Per Year Impacts -0.3 mil lbs -\$0.7 mil
Across categories benefiting from the trawl fishery	Some of the long-term impacts on trawl related investments might still occur if belief about the potential for gear-switching to become a constraint is inhibiting the investment, even though gear-switching is not currently constraining.		
General Public	Net loss in supply of sablefish to consumers		

a/ If trawlers use the sablefish QP to increase the proportion of sablefish in their catch without increasing the amounts of the complex landed, they may still have some financial gain, as discussed in the text of this document for Analytical Scenario 2 (scenarios described in Section 7.1.2).