Revised[1] Executive Summary to the GOA Halibut PSC Limit Analysis

This analysis examines proposed changes to the management of commercial groundfish fisheries in the Gulf of Alaska (GOA) that would occur through an amendment to the GOA Groundfish Fishery Management Plan. Prohibited species catch (PSC) limits on removals of Pacific halibut can limit fishing activity on targeted groundfish fisheries or affect fishing practices. The fisheries that result in the highest halibut PSC in the GOA are the 1) Pacific cod trawl and longline fisheries, 2) shallow-water flatfish complex and arrowtooth flounder trawl fisheries, and 3) rockfish trawl fishery. In some target fisheries, PSC limits are not typically fully utilized, while other fisheries are 'typically' closed prior to attainment of the target TAC because they have fully utilizing its PSC allowance.

Current halibut PSC limits concern the Council because these limits have remained unchanged since their implementation in 1986 for trawl fisheries and revision in 1995 for fixed gear fisheries. Recent declines in halibut exploitable biomass, particularly in the GOA, have exacerbated concerns about levels of PSC in groundfish fisheries because of the potential effect of halibut PSC on other user groups.

This analysis includes an Environmental Assessment/ Regulatory Impact Review/ Initial Regulatory Flexibility Analysis (EA/ RIR/IRFA). The EA is intended to implement an amendment to the GOA Groundfish Fishery Management Plan. The RIR and IRFA are intended to support federal rulemaking.

In April 2011, the Council adopted a range of proposed reductions for analysis that would have been implemented through the GOA groundfish harvest specifications process for 2012/2013 after scoping the issue through a number of discussion papers in 2012 and 2011. In addition to the No Action Alternative, the proposed alternative (Alternative 2) included options for reductions of a) 5 percent, b) 10 percent, and c) 15% of the 2,000 mt halibut PSC limit on trawlers and 300 mt halibut PSC limit on fixed gear groundfish operations. Two suboptions addressed effects on trawl PSC limit apportionments. In June 2011, the Council reviewed the suite of alternatives for analysis and reorganized the suboptions.

In October 2011, the Council initiated a new action to remove GOA halibut PSC limits from the annual harvest specifications process through an amendment to the GOA Groundfish FMP and set halibut PSC limits in federal regulation. Such an action would mirror the process for setting halibut PSC limits in BSAI groundfish fisheries. The Council also modified the options under the proposed alternative for revising GOA halibut PSC limits and held an initial review of the analysis for the revised management approach and alternatives for February 2012. At that time the Council determined that final action will be scheduled for June 2012, with the intention that federal regulations to implement the Council's preferred alternative would be in effect by 2014.

Environmental Assessment

Purpose and Need

Decreases in the amount of Pacific halibut (*Hippoglossus stenolepis*) available to the directed Gulf of Alaska (GOA) halibut fisheries focused public awareness of halibut prohibited species catch (PSC) usage by both the trawl and hook-and-line sectors. In Area 2C, the commercial IFQ sectors have experienced substantial decreases in their allowable harvest since 2007 (e.g., Charter halibut harvests have declined as a result of reductions in bag limits and size limits since 2009 (See Section 4.5.1). Declines in commercial halibut catch limits and charter guideline harvest levels (GHL) reportedly have decreased profitability, or, in some cases, resulted in economic losses. Participants in directed halibut fisheries often site halibut PSC usage as an area that should be examined as a way to reduce halibut removals. The International Pacific Halibut Commission (IPHC) has indicated that future fishery CEYs in Area 3A could decline substantially. If those declines occur, the directed halibut fisheries in Area 3A may face economic conditions similar to those experienced in Area 2C.

[1] Pacific halibut subsection only was revised to include 2012 IPHC information (p. iv-v)

The proposed action would reduce one or more of the halibut PSC limits that have been established for the GOA. Halibut savings would then accrue to the directed fisheries in both the near term and long term. Near term benefits would result from the PSC reductions of halibut that are over 26 inches in length (O26). The legal-size limit for the commercial halibut fishery is 32 inches or greater. The removals of halibut 32 inches or over in total length are known as O32, and removals of halibut under 32 inches in total length are U32. The minimum size limit in the commercial halibut fishery means the O26 component of halibut PSC O32 would be available to the IFQ fishery the year the PSC is foregone, or when the fish reach the 32 inch limit. Longer term benefits in the directed fisheries would accrue from under 26 inches (U26) halibut PSC. Benefits from these smaller halibut would occur as they recruit into the directed fishery.

The purpose of halibut prohibited species catch management in the GOA is to minimize halibut removals when taken in the groundfish fisheries to the extent practicable, while achieving optimum yield. Minimizing halibut PSC while achieving optimum yield is necessary to maintain a healthy marine ecosystem ensure long-term conservation and abundance of halibut, provide maximum benefit to fishermen and communities that depend on halibut and groundfish resources, as well as U.S. consumers, and comply with the Magnuson-Stevens Act and other applicable federal law. National Standard 9 of the Magnuson-Stevens Act requires that conservation and management measures shall, to the extent practicable, minimize bycatch. National Standard 1 of the Magnuson-Stevens Act requires that conservation and management measures prevent overfishing while achieving, on a continuing basis, the optimum yield from each fishery for the United States fishing industry.

The proposed action would modify the GOA PSC limits and the process by which they are set. Currently the PSC limits are set as part of the annual specifications process. Implementing this proposed amendment to the GOA Groundfish Fishery Management Plan (FMP) would establish the PSC limits for the trawl and fixed gear sectors in regulation. GOA PSC limits then could be modified only through an amendment to those regulations. Seasonal and gear apportionments of halibut PSC limits would continue to set through the annual GOA groundfish harvest specifications process.

Council Objective

The Council has long been cognizant of and continues to recognize the extreme importance of halibut to all resource user groups. The Council also acknowledges that, for a wide variety of reasons, the dynamics of the directed and non-directed halibut fisheries have changed significantly since halibut PSC limits were first established. Given concerns with the current halibut PSC limits in the GOA, and the effect this bycatch has on both directed fishing opportunities and productivity of the stock, there is a need to evaluate existing halibut PSC limits and the way in which these limits are established.

The objective of the proposed action is to reduce halibut PSC limits for the GOA groundfish fisheries. Reductions in the PSC limit will generate halibut savings in years of relatively high halibut PSC. In years of low PSC usage, the PSC limit reduction may not be a constraint. Those years the groundfish sectors would be affected by the proposed changes. In years that halibut PSC savings occur, they will benefit the halibut resource and the directed halibut fisheries dependent on the GOA halibut resource. Conversely, groundfish harvesters will have their harvest constrained those years. The reductions in harvest will impact revenue generated from the fisheries. The magnitude of the revenue change will depend on the quantity of groundfish harvest foregone and the price flexibility of those groundfish species.

Problem Statement

The Council has long been cognizant of and continues to recognize the extreme importance of halibut to all resource user groups. The Council also acknowledges that, for a wide variety of reasons, the dynamics of the directed and non-directed halibut fisheries have changed significantly since halibut PSC limits were first established. Given concerns with the current halibut PSC limits in the GOA, and the effect this bycatch has on both directed fishing opportunities and productivity of the stock, there is a need to evaluate existing halibut PSC limits and the way in which these limits are established.

Currently, the GOA Groundfish harvest specifications annually establish a 2,000 mt halibut Prohibited Species Catch (PSC) limit for trawl gear and a 300 mt halibut PSC limit for hook and line gear. The

GOA Groundfish FMP authorizes the Council to recommend, and NMFS to approve, annual halibut mortality limits as a component of the proposed and final groundfish harvest specifications. Halibut PSC limits are set separately for trawl and fixed gear, which may be further apportioned by season, regulatory area, and/or PSC fishery category.

The Council is concerned about the feasibility of revising GOA halibut PSC limits through groundfish harvest specifications and recognizes that addressing halibut PSC limits in this manner on an annual basis is not in the best interest of the Council's deliberative process in the long run.

With the exception of PSC limit reductions in the IFQ sablefish fishery and the Rockfish Pilot Program, the current PSC limits have not been revised since 1989 for trawl gear and 1995 for hook and line gear. Since that time there have been significant changes in groundfish and halibut management programs and fishing patterns, environmental conditions, fishing technology, and knowledge of halibut and groundfish stocks. Halibut is fully utilized in the directed sport, subsistence, and commercial fisheries and is of significant social, cultural, and economic importance to communities throughout the geographical range of the resource. Halibut PSC limits are also critical to the prosecution of many groundfish fisheries operating in the GOA.

Since the existing GOA halibut PSC limits were established, the total biomass and abundance of Pacific halibut has varied and in recent years the stock has experienced an ongoing decline in size at age for all ages in all areas. Exploitable biomass has decreased 50% over the past decade. In recent years, the directed halibut catch limits in regulatory areas 2C, 3A and 3B have declined steadily. From 2002 to 2011 the catch limit for the combined areas 2C, 3A and 3B declined by almost 50% and the Guideline Harvest Level (GHL) to the charter halibut sector in Area 2C has been reduced by a similar percentage.

While the IPHC accounts for bycatch mortality when establishing catch limits for the directed fisheries in order to maintain the halibut stock's productivity, it is the Council's responsibility to manage halibut PSC limits and meet the requirements of National Standard 9 to minimize bycatch.

Alternatives

The Council adopted the following alternatives, options, and suboptions for analysis in October 2011.

Alternative 1. (Status quo). Retain the process for changing GOA halibut PSC limits through the annual groundfish harvest specifications process.

Alternative 2. Amend the GOA Groundfish FMP to remove setting GOA halibut PSC limits from the annual harvest specifications process. GOA halibut PSC limits would be established (and amended) in federal regulation.

Option 1 (Status quo). Retain the existing 2,000 mt trawl and 300 mt hook and line halibut PSC limits and write them into regulation.

Option 2. Revise the current GOA halibut PSC limits and write the new limits into regulation.

Suboption 1. Reduce the halibut PSC limit for hook and line gear CP sector by:

a) 5 percent
b) 10 percent
c) 15 percent

Suboption 2. Reduce the halibut PSC limit for hook and line gear CV sector by:

a) 5 percent
b) 10 percent
c) 15 percent

Suboption 3. Reduce the halibut PSC limit for trawl gear by:

a) 5 percent
b) 10 percent
c) 15 percent

Suboption 3.1. AFA/Amendment 80/Rockfish Program sideboard limits will be:

a) Applied as percentage against the GOA halibut PSC limit (Status quo)
b) Redefined in mt, calculated against the status quo GOA halibut PSC limits

Suboption 3.2. Allow the Amendment 80 sector to roll unused halibut PSC from one season to the subsequent season (similar to the non-Amendment 80 sectors).

Suboption 3.3. Allow available trawl halibut PSC in the second season deep water and shallow water complexes to be aggregated and made available for use in either complex from May 15th through June 30th. Halibut PSC sideboards for the Amendment 80 and AFA sectors would continue to be defined as deep water and shallow water complexes in the second season.

Groundfish

Under the status quo, no groundfish stock has been determined to be overfished or approaching an overfished condition. Annual catch limits (ACLs) and total allowable catches (TACs) generally have been increasing since 2009, and the most recent stock assessments (2011) indicate that the trend is expected to continue into the immediate future. Many groundfish quotas are apportioned spatially and temporally to reduce potential impact on Steller sea lions, and this proposed action would not affect this apportionment. Under Alternative 2, lower PSC limits may result in certain groundfish fisheries closing before the respective TACs or apportionments are reached or the fleets would have to engage in fishing activity to minimize unintended harvests of halibut, while a higher PSC limit would allow for target groundfish fishing at current (or near current) levels, and impacts would likely be similar to the status quo fishery. If groundfish TACs are not fully harvested, fishing would have less impact on the stocks, and there would be no adverse impact on groundfish stocks from the fisheries. Any changes in fishing patterns that may result from the alternatives, however, would be monitored and updated in future stock assessments.

Pacific halibut (Source: IPHC) ***This section was updated to incorporate the status of the stock as of 2012***

The GOA groundfish fishery has an adverse impact on Pacific halibut through direct mortality due to prohibited species catch. Under the status quo, Pacific halibut are a prohibited species and it is incumbent upon fishermen, under the regulations, to avoid catching them. The Groundfish Programmatic EIS considered impacts of the fisheries on the halibut population, reproductive success, and habitat, and concluded that it is unlikely that groundfish fishing has indirect impacts on these aspects of Pacific halibut sustainability. The groundfish fisheries also incidentally catches halibut prey species, including euphausiids, herring, sand lance, capelin, smelt, pollock, sablefish, cod, rockfishes, octopus, crabs, and clams, however the catches of these prey species are very small relative to the overall populations of these species. Thus, groundfish fishing activities are considered to have minimal and temporary effects on prey availability for halibut.

Coastwide exploitable biomass at the beginning of 2012 is estimated to be 260 M lbs, down from the end of 2010 estimate of 317 M lbs. The model chosen for the assessment in 2012 differed from the version used for the past few years. Treatment of survey catchability is the only difference between the two models. The downward revision reflects weaker recruitment of the 1989-1997 cohorts, revised weight per unit effort indices based on late-season data in 2010, and the ongoing retrospective behavior shown in the model. Female spawning biomass is estimated at 319 M lbs at the start of 2012, a decline of nearly 9% over the beginning of 2011 estimate of 350 M lbs. The female spawning biomass shows somewhat lesser retrospective behavior, possibly lending credence to the belief that the ongoing declines in size at age, which strongly affect selectivity-at-age, is one of the root causes of the retrospective behavior. Trawl estimates of abundance are similar to assessment estimates in most areas, and also provide evidence that while exploitable biomass and numbers continue to decline, the total biomass and number of halibut remains level, or slightly increasing.

The halibut stock has declined due to reduced recruitment, reduced size at age, and harvest rates higher than the target rates in most areas. The sharply declining exploitable biomass over the past decade has resulted from small incoming year classes, in combination with reduced growth rates, replacing earlier year classes that were much larger, especially the 1987 and 1988 year classes. Changes to the total biomass can be

attributed, in large part, to the incoming 1998 through 2003 year classes that are estimated to be well above average, particularly the 1999 and 2000 year classes. The extent to which these year classes will contribute to EBio over the next few years depends on size at age which continues to decline.

Projections based on the currently estimated age compositions suggest that both exploitable and spawning biomass may increase over the next several years as these strong year classes recruit to the fishable and spawning components of the population. Projected increases are tempered both by potential ongoing decreases in size-at-age, as well as realized harvest rates which continue to be above target in several regulatory areas. Trawl estimates of abundance are similar to assessment estimates in most areas, and also provide evidence of very large numbers of small halibut as recorded in the eastern Bering Sea Trawl survey.

The time series of abundance illustrates the strength of the celebrated 1987, and to a lesser extent 1988, year classes. As was true for the last several years, the current assessment suggests that three large year classes – 1998, 1999, and 2000 – are poised to enter the exploitable biomass over the next few years. Presently, these year classes look to be larger – in terms of numbers of fish – than the 1987 and 1988 year classes. However, it is important to note again that size at age is much smaller now than it was 20 years ago. This has two important ramifications – first it means that the three strong year classes are only just beginning to reach the exploitable size range and, therefore, their true numbers in the population are still uncertain. Secondly, it also means that for a given number of halibut, their collective biomass will be lower.

Currently, a large fraction of males never reach the minimum size limit and thus never enter the EBio. It remains to be seen just how well these year classes may develop into the exploitable component of the stock. If size at age remains at current values, then the projections for both the EBio and SBio are optimistic and indicate that the declines over the past decade are on the verge of reversing.

The continued problem of reductions in previous estimates of biomass as additional data are obtained has the effect of increasing the realized historical harvest rates on the stock. For 2012, the IPHC approved a 21.5% harvest rate for use in Areas 2A through 3A and a 16.1% harvest rate for Areas 3B through 4. These continued declining harvest rates in several areas has resulted in the IPHC taking aggressive action to reduce harvests. Commercial catch limits adopted by the IPHC for 2012 were lower than in 2011 in all regions of the stock except Areas 2A and 2C.

The impacts of reducing halibut PSC limits for groundfish target fisheries under the proposed actions does not simply reallocate that reduced halibut mortality amounts to directed fishery halibut users. While halibut PSC limits are often closely approached in the GOA groundfish fisheries, these removals are known imprecisely. While all halibut mortality sources are taken into account when commercial IFQ catch limits (and combined catch limits under the proposed Halibut Catch Sharing Plan (CSP)) are set, the negative impacts of these removals on lost spawning biomass and lost yield are not prevented. Incidental catches of halibut result in a decline in the halibut standing stock biomass, reduced reproductive potential of the halibut stock, and reduced short- and long-term halibut yields to the directed hook-and-line fisheries and the charter sector in Area 2C and 3A under the proposed CSP.

Other resource components

Under the status quo, marine mammal and seabird disturbance and incidental take are at low levels and are mitigated by current spatial restrictions on the GOA groundfish fisheries. Under either of the alternatives, disturbance or incidental take is not expected to increase to a level that would result in population level effects on marine mammals or seabirds. Additionally, marine mammals and seabirds may be affected by changes in prey availability or prey density due to fishing, or benthic habitat alteration under the status quo or proposed options under Alternative 2. In years where proposed reductions in halibut PSC limit constrains fishing, Alternative 2 may reduce the potential effects of the groundfish fishery on prey availability. If the fleet spends longer time fishing in areas with low groundfish catch rates to avoid halibut, there may be some increase to benthic habitat impacts and potential removals of marine mammal and seabird prey. However, this increase is unlikely to result in population level effects.

Previous analyses have found no substantial adverse effects to habitat in the GOA caused by fishing activities. Alternative 2 may reduce any effects on habitat that are occurring under the status quo. The

potential effects on an area would be constrained by the amount of the groundfish TACs and by the existing habitat conservation and protection measures. Overall, the combination of the direct, indirect, and cumulative effects on habitat complexity for both living and non-living substrates, benthic biodiversity, and habitat suitability is not likely to be significant under any of the alternatives.

Regulatory Impact Review

The RIR considers the impact of reducing the amount of halibut PSC available to the GOA groundfish fisheries by 5 percent, 10 percent, and 15 percent. Impacts are positive for sectors that rely on halibut IFQ and the guided sport fleet and their clients[2]. Negative impacts are realized by the groundfish fleets and the industry sectors and consumers that rely on GOA groundfish harvests.

To describe the impacts, changes in gross revenue are compared to the status quo to determine how reductions in PSC limits impact various sectors. The analysis acknowledges that comparing changes in gross revenue does not provide information on the profitability of firms or net benefits to the Nation. However, additional data on the costs incurred by the firms that rely on halibut and groundfish from the North Pacific and consumer surplus of U.S. residents that consume these products are needed to generate those estimates. That information is currently unavailable for all sectors that harvest, process, provide support, and consume halibut and groundfish in the Gulf of Alaska.

Proposed halibut PSC reductions may be applied to the trawl, fixed gear, or both fisheries. Currently only the hook-and-line vessels in the fixed gear fishery are operating under halibut PSC limits. Different PSC reductions could be selected for the catcher vessel and catcher processor sectors. It is assumed that the Council has the authority and information, based on this analysis, to select any percentage in the range it considered for any sector.

The retrospective analyses in this document assume that the Status Quo would not cause any change. Therefore, all reductions for the options considered, deduct any change estimated to be contributed by the Status Quo.

Direct comparisons are not made between gross revenue increases in the directed halibut fisheries and the gross revenue foregone in the groundfish fisheries. Estimates for the two sectors were made using different methodologies and assumptions. Direct comparisons may generate misleading results in terms of changes in gross revenue gained or foregone by this action.

The estimates of gross revenue changes assume no modification of fleet behavior as a result of implementing the halibut PSC reductions. If harvesters are able to reduce the halibut PSC rates in the various fisheries considered, the estimates will exceed those that would have actually occurred. Conversely, the analysis assumes the TAC in place historically will not change for the years considered. Stock assessment models and forecasts discussed in the GOA SAFE Report indicate that TACs are projected to increase for Pacific cod and other valuable GOA species. If the TACs increase, and halibut PSC rates do not change, the amount of first wholesale gross revenue foregone will be underestimated. Ex-vessel and first wholesale prices are assumed not to change if the quantity of fish harvested is increased or reduced. These species are sold in a world market for groundfish and the changes in quantities delivered are not expected to influence the world market prices.

Directed Halibut Fishery Impacts

The analysis estimates the increase in pounds of halibut available to the guided sport sector and the commercial IFQ sector, by IPHC area, under each alternative considered by the Council (using tier 1 and tier 2 of the CSP and using the GHL). All halibut projections assumed that the halibut PSC limit change is equivalent to the reduction in halibut PSC taken by the trawl and hook-and-line sectors. Reductions in halibut PSC by the trawl and hook-and-line sectors would reduce the amount of "bycatch" deducted from the total CEY in proportion to the percentage of the total PSC reduction that is assumed to be over 26 inch. For example, if half of the PSC taken in an IPHC area is over 26 inch, half of the PSC taken in that area would be

[2] Benefits to personal and subsistence users are neutral as those halibut harvests are not limited by other removals.

deducted from the total CEY. The over 26 inch "bycatch" is the only component, that is deducted from the total CEY to estimate the fishery CEY, that is assumed to change in this analysis. Finally, benefits that are estimated to accrue to the directed halibut fisheries are for the first year of PSC reductions. Benefits to these sectors will increase over time as U26" halibut recruit into the directed fishery.

HOW TO INTERPRET THE FOLLOWING TABLES

The tables below are provided as an example of how to interpret the data presented in the halibut impact sections. Proposed trawl PSC limits (in mt on the left and 1,000 lb on the right) head columns across the top of each table and proposed hook-and-line PSC limits (in 1,000 lb) head each rows to the left of the same table. The pounds of PSC are converted from metric tons using the following formula: PSC (mt) ÷ 604.7898 ×1000. For example, the 2,000 mt of halibut PSC is equivalent to 3,307 thousand pounds (or 3.3 million pounds) of halibut PSC mortality of fish over 26 inches. These sample tables demonstrate which proposed options for halibut PSC reductions (0/5/10/15 percent) are associated with each proposed PSC limit (in mt and thousand lb).

The matrix of cells represents the increase in halibut available to the guided sport and commercial IFQ sectors under each option. Using the bookends of results from the above table on the right as an example of how to interpret the tables, maintaining the status quo trawl PSC limit (e.g., 0% reduction) and reducing the hook-and-line limit under Alternative 2 Option 1 (e.g., 5%), results in an estimated 18,600 lb increase in the amount of halibut available to the guided sport and commercial IFQ sectors. If both the trawl and hook-and-line sector's PSC limit is reduced under Alternative 2, Option 3 (e.g., 15%), an additional 366,000 lb of halibut is estimated to be available for the guided sport and commercial IFQ sectors.

		Trawl PSC (mt)			
GOA		2,000 (0%)	1,900 (5%)	1,800 (10%)	1,700 (15%)
HAL PSC (mt)	300 (0%)	All combinations of PSC reductions, some tables report weight others report revenue changes			
	285 (5%)				
	270 (10%)				
	255 (15%)				

		Trawl PSC (1000 lb)			
GOA		3307 (0%)	3142 (5%)	2976 (10%)	2811 (15%)
HAL PSC (1000 lbs)	496 (0%)	0.0	103.4	206.7	310.1
	471 (5%)	18.6	122.0	225.4	328.7
	446 (10%)	37.3	140.7	244.0	347.4
	422 (15%)	55.9	159.3	262.7	366.0

The GOA-wide increase in the amount of halibut available to the guided sport sector, during the first year of PSC reductions, will depend on future management of this fishery. Currently the fishery is managed under the GHL. Under the GHL the charter sector will only operate under a larger catch limit if the PSC savings trigger movement to a higher harvest tier. Given the estimated savings, it was unlikely that the Total CEY would increase enough to move the charter sector to a higher tier. Therefore, most years under the GHL, all of benefits from the PSC savings during the first year would be projected to accrue to the commercial IFQ fishery. If the charter sector is managed under a modified catch sharing plan in the future, the charter sector is more likely to receive a higher catch limit. Because it is not possible to project with certainty how the charter sector would be managed under a modified catch sharing plan, the estimates in this analysis are based on the old catch sharing plan split of the combined commercial and charter catch limit. Based on current actions by the Council, the estimates provided in the executive summary of this analysis are likely too low for the charter sector and too high for the commercial IFQ sector. To provide some information on the magnitude of the change, the current CSP percentages[3] would increase the charter allocation by a range of 0 lb under the status quo to 38,700 lb under a 15% PSC mortality reduction applied to both the hook-and-line and trawl sectors (Table ES-1). The vast majority of the increase is projected to occur in Area 3A. In Area

[3] Those approved by the Council, but currently being reconsidered.

2C, the increase ranges from 0 lb to under 100 lb, depending on the option selected. Applying tier 2 of the CSP to the halibut available for use by the guided sport sector and the commercial IFQ sector would slightly decrease the amount of halibut allocated to the guided sport sector. The amount of the decrease is equal to the increase by the commercial IFQ sector, because the CSP percentage that divides the available halibut between the two sectors changes.

Estimates for Area 2C may be underestimates of that expected to occur because the model does not account for halibut migration patterns. If it were possible to include those patterns and the general pattern was movement from west to east, the estimates for Areas 3B and 3A may be too high and the estimate for Area 2C may be too low. However, because the majority of the halibut PSC is taken in Areas 3A and 3B, the greatest impact would be expected there even if migration patterns were included.

Table ES- 1 Increases in halibut (in 1,000 lb net weight) available to the guided sport sector in Areas 2C and 3A, under tier 1 of the current CSP. (Source: IPHC estimates of change in fishery CEY)

		Trawl PSC (1000 lbs)			
GOA		3,307	3,142	2,976	2,811
HAL PSC (1000 lbs)	496	0.0	12.0	24.1	36.1
	471	0.9	12.9	24.9	37.0
	446	1.7	13.8	25.8	37.8
	422	2.6	14.6	26.7	38.7

		Trawl PSC (1000 lbs)			
3A		3,307	3,142	2,976	2,811
HAL PSC (1000 lbs)	496	0.0	12.0	24.1	36.1
	471	0.8	12.9	24.9	36.9
	446	1.7	13.7	25.7	37.8
	422	2.5	14.5	26.6	38.6

		Trawl PSC (1000 lbs)			
2C		3,307	3,142	2,976	2,811
HAL PSC (1000 lbs)	496	0.0	0.0	0.0	0.0
	471	0.0	0.0	0.0	0.0
	446	0.1	0.1	0.1	0.1
	422	0.1	0.1	0.1	0.1

		Trawl PSC (1000 lbs)			
3B		3,307	3,142	2,976	2,811
HAL PSC (1000 lbs)	496	0.0	0.0	0.0	0.0
	471	0.0	0.0	0.0	0.0
	446	0.0	0.0	0.0	0.0
	422	0.0	0.0	0.0	0.0

Note: The Council's proposed changes to the CSP would result in more halibut available to the charter sector. The actual amount cannot be estimated until the Council makes a final decision on the program.

Converting the estimated additional pounds of halibut available to increased gross revenue was done by dividing the increase in halibut to the charter sector by the average weight of halibut harvested per angler. The resulting amount was multiplied by an estimated cost of a charter trip. Based on these assumptions the charter sector was estimated to generate an additional $0 to $290,000 depending on the CSP tier and PSC reduction. Almost all of the benefits would be generated by vessels in Area 3A. These estimates also assume precise management of charter effort, which is unlikely given the current management tools.

Table ES- 2 Estimated GOA wide increase in charter gross revenue under the catch sharing plan.

CSP Step 1		Trawl PSC (1000 lbs)			
GOA		3,307	3,142	2,976	2,811
HAL PSC (1000 lbs)	496	$ -	$ 90,238	$180,475	$270,713
	471	$ 6,279	$ 96,516	$186,754	$276,991
	446	$ 12,557	$102,795	$193,032	$283,270
	422	$ 18,836	$109,074	$199,311	$289,549

CSP Step 2		Trawl PSC (1000 lbs)			
GOA		3,307	3,142	2,976	2,811
HAL PSC (1000 lbs)	496	$ -	$ 82,034	$164,068	$246,102
	471	$ 5,708	$ 87,742	$169,776	$251,810
	446	$ 11,416	$ 93,450	$175,484	$257,518
	422	$ 17,124	$ 99,158	$181,192	$263,226

In the IFQ fishery, estimates of the change in catch were similar, but slightly larger when the GHL method was used versus the CSP. The difference is a result of the entire change in available halibut being assigned to the IFQ sector under the GHL. However, the change would have been greater if the increase in halibut available resulted in moving from one GHL tier to another.

Based on the GHL, each 5 percent decrease in the hook-and-line PSC limit is estimated to increase the IFQ available in the GOA by about 18,600 lb. A five percent reduction in the trawl PSC limit (applied to 2,000 mt) is projected to increase the amount of IFQ halibut by about 103,400 lb (Table ES-3). IFQ pounds are estimated to increase in Area 2C by about 150 lb for each five percent reduction in the hook-and-line PSC

limit. The trawl PSC limit did not impact the estimated IFQ lb that would be available in Area 2C, because of the amount of halibut PSC taken by trawl gear in that area. Estimated increases in IFQ lb ranged from 0 lb under the status quo to 400 lb under a 15 percent reduction to both the hook-and-line and trawl sectors. Halibut IFQ in Area 3A is projected to increase by about 6,900 lb for each five percent reduction in the hook-and-line PSC limit. Each five percent reduction in the trawl PSC limit is projected to increase the amount of halibut IFQ available by 76,700 lb. In Area 3B, a five percent reduction in the amount of hook-and-line halibut PSC is projected to increase halibut IFQ by about 11,600 lb.; and each five percent reduction in the trawl PSC limit is projected to increase the amount of IFQ available by a total of about 26,700 lb. If the estimates were based on the CSP they would be slightly lower.

Table ES- 3 Projected increases in commercial IFQ pounds under each option to reduce the PSC mortality limit (using the GHL).

GOA		Trawl PSC (1000 lbs)			
		3307	3142	2976	2811
HAL PSC (1000 lbs)	496	0.0	103.4	206.7	310.1
	471	18.6	122.0	225.4	328.7
	446	37.3	140.7	244.0	347.4
	422	55.9	159.3	262.7	366.0

3A		Trawl PSC (1000 lbs)			
		3307	3142	2976	2811
HAL PSC (1000 lbs)	496	0.0	76.7	153.4	230.0
	471	6.9	83.6	160.2	236.9
	446	13.8	90.4	167.1	243.8
	422	20.6	97.3	174.0	250.7

2C		Trawl PSC (1000 lbs)			
		3307	3142	2976	2811
HAL PSC (1000 lbs)	496	0.0	0.0	0.0	0.0
	471	0.1	0.1	0.1	0.1
	446	0.3	0.3	0.3	0.3
	422	0.4	0.4	0.4	0.4

3B		Trawl PSC (1000 lbs)			
		3307	3142	2976	2811
HAL PSC (1000 lbs)	496	0.0	26.7	53.4	80.1
	471	11.6	38.3	65.0	91.7
	446	23.2	49.9	76.6	103.3
	422	34.8	61.5	88.2	114.9

Source: IPHC

The analysis multiplied the increases in IFQ pounds by a range of first wholesale values based on the area of harvest. First wholesale prices were derived from COAR data based on the range reported from 2003 through 2010. The prices per pound used for Area 2C were $3.64 and $6.32; for Area 3A they were $3.52 and $6.65; and for Area 3A they were $4.13 and $8.15. Because most of the increase in IFQ pounds was projected to be in Area 3A and Area 3B, most the increase in gross first wholesale revenue was also projected to accrue to QS holders in those areas.

Insufficient data are available to estimate the impacts of reducing the halibut PSC limit for the Southeast Outside District (SEO) demersal shelf rockfish (DSR) fishery on directed commercial harvesters, processors, communities, and consumers. It is not possible to determine historic halibut PSC usage in that fishery, due to low observer coverage. Restructuring the observer program will allow NOAA Fisheries to deploy observers in the SEO DSR fishery. Groundfish observers will collect information on halibut PSC as part of their normal duties. That information, collected over time, will provide better estimates of halibut taken in the directed DSR fishery and their survival rates. NOAA Fisheries would then have the information necessary to estimate halibut mortality, and would determine if the 10 mt limit (under the status quo or a 5 percent reduction) or the 9 mt limit (under a 10 percent or 15 percent reduction) is exceeded. Until that information is available, impacts on the SEO DSR cannot be generated.

DSR taken incidentally to the halibut IFQ fishery will not be affected by changes in the halibut PSC limit. Harvesters have historically utilized much of the DSR fishery as incidental catch in the IFQ fishery. At the current low Area 2C IFQ catch limit (2,330,000 lb or about 1,057 mt), the 10 percent DSR incidental catch rate would allow up to 105 mt of DSR to be taken. Additional DSR may be taken above the incidental catch limit, but it may not be sold. Currently most of the DSR taken above the incidental catch limit is for personal use.

Options considered by the Council would decrease the halibut PSC limit for the groundfish hook-and-line sector (other than SEO DSR and sablefish) to the amounts listed below in metric tons. Table ES-4 assumes

that the current seasonal allowances will continue into the future and the catcher vessel and catcher processor split will also continue.

Table ES- 4. Estimated increased halibut IFQ first wholesale gross revenue under each option, based on high and low IFQ prices (under charter GHL)

GOA	Trawl PSC (1000 lbs) 3307	3142	2976	2811
HAL PSC (1000 lbs) 496	$ -	$ 389	$ 779	$1,168
471	$ 74	$ 463	$ 852	$1,241
446	$ 147	$ 536	$ 926	$1,315
422	$ 221	$ 610	$ 999	$1,389

3A	Trawl PSC (1000 lbs) 3307	3142	2976	2811
HAL PSC (1000 lbs) 496	$ -	$ 279	$ 558	$ 837
471	$ 25	$ 304	$ 583	$ 862
446	$ 50	$ 329	$ 608	$ 887
422	$ 75	$ 354	$ 633	$ 912

2C	Trawl PSC (1000 lbs) 3307	3142	2976	2811
HAL PSC (1000 lbs) 496	$ -	$ -	$ -	$ -
471	$ 1	$ 1	$ 1	$ 1
446	$ 1	$ 1	$ 1	$ 1
422	$ 2	$ 2	$ 2	$ 2

3B	Trawl PSC (1000 lbs) 3307	3142	2976	2811
HAL PSC (1000 lbs) 496	$ -	$ 110	$ 221	$ 331
471	$ 48	$ 158	$ 269	$ 379
446	$ 96	$ 206	$ 317	$ 427
422	$ 144	$ 254	$ 365	$ 475

GHL: IFQ first wholesale higher value

GOA	Trawl PSC (1000 lbs) 3307	3142	2976	2811
HAL PSC (1000 lbs) 496	$ -	$ 727	$1,454	$2,182
471	$ 141	$ 869	$1,596	$2,323
446	$ 283	$1,010	$1,737	$2,464
422	$ 424	$1,151	$1,879	$2,606

3A	Trawl PSC (1000 lbs) 3307	3142	2976	2811
HAL PSC (1000 lbs) 496	$ -	$ 510	$1,019	$1,529
471	$ 46	$ 555	$1,065	$1,575
446	$ 92	$ 601	$1,111	$1,621
422	$ 137	$ 647	$1,157	$1,666

2C	Trawl PSC (1000 lbs) 3307	3142	2976	2811
HAL PSC (1000 lbs) 496	$ -	$ -	$ -	$ -
471	$ 1	$ 1	$ 1	$ 1
446	$ 2	$ 2	$ 2	$ 2
422	$ 3	$ 3	$ 3	$ 3

3B	Trawl PSC (1000 lbs) 3307	3142	2976	2811
HAL PSC (1000 lbs) 496	$ -	$ 218	$ 435	$ 653
471	$ 95	$ 312	$ 530	$ 747
446	$ 189	$ 407	$ 624	$ 842
422	$ 284	$ 501	$ 719	$ 936

Based on these PSC limits and historic usage, estimates of the amount of first wholesale gross revenue foregone under each option was estimated. Data from 2003 through 2010 was used to estimate changes in ex-vessel revenue and first wholesale gross revenue foregone under each option. A five percent reduction in the halibut PSC limit reduced ex-vessel gross revenue for the catcher vessel sector by $120,000 and $50,000 for the catcher processors (2003 through 2010 average). Reducing the non-DSR hook-and-line PSC limit by 10 percent decreased the average catcher processor estimated ex-vessel gross revenue by an average of $150,000 per year and the catcher vessel sector by $240,000 per year. The catcher processor's foregone ex-vessel gross revenue was reduced by $200,000 per year when the PSC limit was reduced by 15 percent. However, the catcher vessel sectors first wholesale revenue was reduced by about $440,000 per year.

Table ES- 5. Seasonal allowances of halibut PSC limits under proposed options.

	Total Allocation	1st season 86 percent (January 1 to June 10)	2nd season 2 percent (June 10 to September 1)	3rd season 12 percent (September 1 to End of Year)
All fisheries except demersal shelf rockfish				
Status quo - both operation types	290	250	5	35
Catcher processor (40.3% of total)				
Status quo	117	101	2	14
Option 1 - 5 % reduction	111	96	2	13
Option 2 - 10% reduction	105	91	2	13
Option 3 - 15% reduction	100	86	2	12
Catcher vessel (59.7% of total)				
Status quo	173	149	3	21
Option 1 - 5 % reduction	165	142	3	20
Option 2 - 10% reduction	156	134	3	19
Option 3 - 15% reduction	148	127	3	18
Demersal Shelf Rockfish				
Status quo	10	(no seasonal distribution)		
Option 1 - 5 % reduction	10			
Option 2 - 10% reduction	9			
Option 3 - 15% reduction	9			
All values are metric tons.				

Table ES- 6 Estimated gross revenue foregone by hook-and-line vessels under proposed options.

Year	Percentage reductions			
	Status Quo	5%	10%	15%
	Ex-vessel			
Catcher Processor	$0.00	$0.05	$0.15	$0.20
Catcher Vessel	$0.00	$0.12	$0.24	$0.44
	First Wholesale			
Catcher Processor	$0.00	$0.12	$0.32	$0.43
Catcher Vessel	$0.00	$0.22	$0.46	$0.84

A five percent reduction in the halibut PSC limit reduced ex-vessel gross revenue by $50,000 for catcher processors and $120,000 for catcher vessels. First wholesale gross revenue for the catcher processors was reduced by $120,000 and catcher vessel sector by $220,000 (2003 through 2010 average). Reducing the non-DSR hook-and-line PSC limit by 10 percent decreased the average catcher processor first wholesale gross revenue by an average of $320,000 ($150,000 ex-vessel) per year and the catcher vessel sector by $460,000 ($240,000 ex-vessel) per year. The catcher processor's foregone first wholesale gross revenue was reduced by $430,000 per year ($200,000 ex-vessel) when the PSC limit was reduced by 15 percent. However, the catcher vessel sectors first wholesale gross revenue was reduced by about $840,000 per year ($440,000 ex-vessel).

Treatment of the Central Gulf of Alaska Rockfish Program halibut Prohibited Species Catch limit reductions for the trawl sector under the Council's June 2012 proposed action

Summary The Central Gulf of Alaska Rockfish Program was implemented in 2012. A direct apportionment of 191.4 mt of halibut prohibited species catch (PSC) limit was allocated to Rockfish Program participants for use in this trawl fishery from May 1 through November 15. The third seasonal allowance to the deep-water species fishery was reduced by 1) 191.4 mt to fund the rockfish program apportionment and 2) 27.4 mt which may not be used as PSC limit by any sector. However, the 2,000 mt trawl halibut PSC limit was not reduced to reflect the 27.4 mt PSC limit reduction. It was "left in the water" and subject to reallocation to the directed halibut IFQ fixed gear fishery by the International Pacific Halibut Commission. Therefore, the trawl halibut PSC limit is now 1,972.6 mt (2,000 mt – 27.4 mt). And the portion of the halibut PSC limit *outside of the Rockfish Program is reduced by 191.4 mt to 1,781.2 mt to fund the halibut PSC needs of the Rockfish Program.* This amount will be increased if any of the 191.4 mt PSC limit is unused on November 15th. By regulation 55 percent of the unused amount of trawl halibut PSC limit of the 191.4 mt is added to the fifth season unspecified halibut PSC limit total. The remaining 45 percent of the unused amount is not available for use by any sector, effectively reducing the overall trawl PSC limit that year.

The Council analysis assumes, based on the Council's June 2011 motion[4], to exclude the Rockfish Program from any further proposed reductions (i.e., beyond the 27.4 mt PSC limit reduction that was made in 2012, which results in a total of 191.4 mt of PSC limit allocated to the CGOA Rockfish Program). The effect is that the proposed percentage reductions of 5%, 10%, or 15% would be applied to the amount of halibut PSC limit available to all trawl sectors except for the GOA Rockfish Program (2,000 mt – (27.4 mt + 191.4 mt) = 1,781.2 mt). This would result in PSC limit reductions, in addition to those already established in the new Rockfish Program[5], of: a) 89 mt (5%); b) 178 mt (10%); or c) 267 mt (15%). To achieve reduction equal to 5/10/15 percent of the 2,000 mt PSC limit (100/200/300 mt) would require applying a larger percentage reduction to GOA trawl fisheries outside of the Rockfish Program (see more detail below). Note that the Council could select any amount of halibut PSC limit reduction within the range analyzed (0 mt to 267 mt).

The analysts provide an example to illustrate the impacts of halibut PSC limit reductions on trawl fisheries not exempted from the proposed action. At the June 2011 Council meeting the Council indicated that when the proposed reductions would be applied, the CGOA Rockfish Program trawl halibut PSC limit apportionments were to be exempt from the proposed reductions of 5/10/15 percent. The Council's rationale was that the Rockfish Program participants already had their halibut PSC limit apportionment reduced by 27.4 mt and the roll-over of the unused portion of the 191.4 mt would be reduced by 45 percent. In 2011 about 65 percent of the 208 mt halibut PSC limit apportionment to the Rockfish Pilot Program was unused. The Rockfish Pilot Program sunset at the end of 2011 and was replaced by the revised CGOA Rockfish Program in 2012. For example, if half the 191.4 mt apportionment is not used in the future, a 45 percent reduction applied to the roll-over of the unused portion to the unspecified trawl halibut PSC limit would equal 43 mt, or a 22.5 percent reduction of the Rockfish Program apportionment. In June 2011 the Council stated its intent that the 27.4 mt and 191.4 mt of rockfish program halibut PSC limit were not subject to the proposed PSC limit reduction. Therefore, all of the tables in the analysis reflect the removal of the 27.4 mt (halibut PSC limit savings left 'in the water') and the 191.4 mt Rockfish Program apportionment from the third season deep-water species fishery allowance before the proposed 5/10/15 reductions are applied. Alternatively, if the Council intent was to apply the proposed percentage reductions to the entire historic 2,000 mt PSC limit (not reducing the Rockfish Program apportionment, but taking additional reductions from the non-Rockfish apportionment to compensate for keeping the current Rockfish Program allocation), the overall

[4] http://www.alaskafisheries.noaa.gov/npfmc/PDFdocuments/halibut/GOAHalibutPSC_Motion.pdf

PSC limit reduction would increase by the amounts shown below and would increase the effect on trawl vessels when not operating in the CGOA Rockfish Program. The impact on the trawl fleets depend on how the reductions associated with the Rockfish Program halibut PSC limits are distributed among the rest of the fleet.

Table ES- 7 Additional halibut PSC limit reduction in metric tons if the reduction was also applied to the Rockfish Program

	Reduction also applied to		
% Reduction	191.4 mt	27.4 mt	Both
5%	9.6	1.4	10.9
10%	19.1	2.7	21.9
15%	28.7	4.1	32.8

Note: It is assumed that the intent was not to reduce the 27.4 mt set aside that is not available for use as PSC limit. It was included for completeness to compare to the 2,000 mt halibut PSC limit.

Because the Council's proposed alternatives and options do not further reduce the Rockfish Program halibut PSC limits beyond how its apportionments were reduced when the program was restructured, applying the above reductions to the other fleets reduces their PSC limits by more than 5 percent, 10 percent, or 15 percent. In order to exempt the Rockfish Program and achieve a full 5/10/15 percent reduction of the current 2,000 mt limit, the reductions applied to halibut PSC limits on trawl sectors not in the Rockfish Program would need to be 5.5 percent, 11.1 percent, or 16.6 percent. Depending on how the reductions to the CGOA rockfish program halibut PSC limit are applied, they will change the PSC limit available by species fishery and season.

If the Council intent is different from that outlined in the summary above, and the 5%, 10%, or 15% halibut PSC limit reduction instead is applied to the current trawl halibut PSC limit, while not affecting the CGOA Rockfish Program halibut PSC limit apportionment of 191.4 mt, the Council should indicate how it intends to distribute the additional reduction associated with the 191.4 mt (and the 27.4 mt if the reduction is also applied to halibut PSC limit no longer available for use) to the non-Rockfish Program trawl sectors. If the Council clarifies in June 2012 that its intent is different than that assumed by staff in the public review draft analysis, staff can provide additional analysis in a subsequent draft.

The analysts seek Council clarification that the Council intent is to reduce the overall 2,000 mt GOA trawl halibut PSC limit to the new limit set at final action. For example, under Alternative 2, option 1 (5 percent reduction) the new limit would be set in federal regulations at 1,911 mt (or 1,884 mt if the 27.4 mt is removed from the overall limit and the percentage allocated to the third season is adjusted, 2,000 mt – 27.4 – 89 mt = 1,884 mt), recognizing that an additional reduction in halibut PSC limit could occur that would equal 45 percent of any unused amount of the 191.4 mt roll-over.

Because federal regulations that implement the Rockfish Program halibut PSC limit apportionments reference the 2,000 mt halibut PSC limit as the basis for the halibut PSC limit apportionments, *the analysts also seek clarification that the Council intent is to revise the percentages that establish the halibut PSC limit apportionments in regulation using the GOA trawl halibut PSC limit that is selected at final action in order to leave their PSC limit apportionment unchanged and to reflect the new (reduced) limit. For example, a new trawl halibut PSC limit would be 1,911 mt if the Council adopts a 5 percent reduction under the proposed action (2,000 mt – 89 mt = 1,911 mt). The 27.4 mt would continue to be removed from the third season before the allowance is released and would not be subject to the proposed percentage reductions.*

The proposed trawl halibut PSC limits for the options considered are presented in Table ES-8. For the analysis it is assumed that the same seasonal and complex percentages of the overall limit will continue in the future.

Table ES- 8 Trawl halibut PSC limits under the proposed options

	Total allowance	1st season January 20 to April 1	2nd season April 1 to July 1	3rd season* July 1 to September 1	4th season September 1 to October 1	5th season October 1 through December 31
Total Allowance						
seasonal share		27.5 percent	20 percent	30 percent**	7.5 percent	15 percent
Status quo	2000^	550	400	381	150	300
Deep-water complex						
seasonal share		12.5 percent	37.5 percent	50 percent**	0 percent	
Status quo	773	100	300	181		NA
Option 1 - 5 % reduction	734	95	285	172	0	
Option 2 - 10% reduction	695	90	270	163		
Option 3 - 15% reduction	657	85	255	154		
Shallow-water complex						
seasonal share		50 percent	11.1 percent	22.2 percent	16.7 percent	
Status quo	900	450	100	200	150	NA
Option 1 - 5 % reduction	855	428	95	190	143	
Option 2 - 10% reduction	810	405	90	180	135	
Option 3 - 15% reduction	765	383	85	170	128	
Undesignated						
seasonal share						100 percent
Status quo	300	NA				300
Option 1 - 5 % reduction	285					285
Option 2 - 10% reduction	270					270
Option 3 - 15% reduction	255					255

All values are metric tons, except where noted as percentages.

* Excludes 191.4 metric ton rockfish program halibut PSC allowance and 27.4 metric ton reduction from Rockfish pilot program

** Includes rockfish program allocations in the percentage.

^Only 1,973 metric tons are available for the fleet to harvest

On average (from 2003 through 2010) the first wholesale gross revenue from trawl gear vessels in the deep-water complex was estimated to decrease by $730,000, $2.49 million, and $3.35 million under a 5 percent, 10 percent, and 15 percent reduction in the deep-water trawl PSC limit, respectively. Average reductions in first wholesale gross revenue for trawl gear vessels in the shallow-water complex were estimated to be $1.02 million, $2.74 million, and $5.10 million, under a 5 percent, 10 percent, and 15 percent reduction in the PSC limit, respectively. Summing these reductions in estimated first wholesale gross revenue yields the estimates in Table ES- 9. Each cell in the matrix of Table ES- 9 shows the estimated average reduction in first wholesale gross revenue to the groundfish industry for an option considered by the Council. Placing the results in the matrix format allows each of the combinations considered by the Council to be easily compared. The smallest reduction ($330,000), other than the Status Quo, results from a 5 percent halibut PSC reduction applied to the catcher vessels and catcher processors in the hook-and-line fleet. Hook-and-line first wholesale revenue reductions are greatest when the halibut PSC limit is reduced by 15 percent ($1.26 million). Adding those values to the first wholesale gross revenue reductions from the trawl fleet provides the remaining estimates. So, a 5 percent decrease in the trawl halibut PSC limit was estimated to reduce the first wholesale gross revenue from the trawl fishery by $1.75 million. Adding that value to the first wholesale gross revenue reduction estimated for a 10 percent halibut PSC reduction to the hook-and-line fleet ($790,000), yields the $2.54 million estimate in that cell of the matrix (where the hook-and-line and trawl reductions intersect). The greatest annual reduction was estimated to be $9.71 million when a 15 percent reduction was applied to both the trawl and hook-and-line PSC limits.

Table ES- 9 Estimated annual average first wholesale gross revenue foregone in groundfish fisheries ($million)

		Trawl PSC Reductions			
		Status Quo	5%	10%	15%
Hook-and-Line Reductions	Status Quo	0	$ 1.75	$ 5.23	$ 8.45
	5%	$0.33	$ 2.08	$ 5.56	$ 8.78
	10%	$0.79	$ 2.54	$ 6.02	$ 9.24
	15%	$1.26	$ 3.01	$ 6.49	$ 9.71

Source: AKFIN summaries of NOAA Fisheries catch accounting and COAR data, 2003-2010

The Council requested in February that staff also provide estimates of the gross revenue foregone at the ex-vessel level. Table ES- 10 is a summary of the gross ex-vessel foregone under each option. Ex-vessel gross revenue reductions range from $0 under the status quo to $4.15 million when both hook-and-line sectors and the trawl sector's PSC allocation are reduced under the 15 percent option.

Table ES- 10 Estimated annual average ex-vessel gross revenue foregone in groundfish fisheries ($million)

		Trawl PSC Reductions			
		Status Quo	5%	10%	15%
Hook-and-Line Reductions	Status Quo	$ -	$ 1.57	$ 2.34	$ 3.51
	5%	$0.17	$ 1.74	$ 2.51	$ 3.68
	10%	$0.39	$ 1.97	$ 2.73	$ 3.90
	15%	$0.64	$ 2.21	$ 2.98	$ 4.15

Source: AKFIN summaries of NOAA Fisheries catch accounting and COAR data, 2003-2010

The estimates are intended to provide information on the amount of first wholesale revenue that would have been foregone if the halibut PSC reductions had been in place from 2003 through 2010. Actual reductions in revenue that occur in the future will differ from these estimates as halibut PSC rates and TACs change. Given all the factors that contribute to those changes, projecting revenue changes for future fishing years would generate estimates with sizable levels of uncertainty. Therefore, those estimates are not provided in this analysis.

Even if the analysts were able to accurately estimate the amount of revenue that would be foregone in the future, it is currently not possible to determine how individual firms would be affected by the changes. These estimates are fleet-wide averages of changes in gross revenue. Information is currently unavailable to determine the effect that reductions in gross revenue have on the net revenue of firms. It is the overall profitability of the firms and net benefits to the Nation that are of greatest interest for the RIR, because they indicate whether individual firms will remain viable in the long run, if revenues decline, and whether the Nation generates positive economic benefits from the proposed action. That information is not currently being collected for all industry sectors included in this analysis.

Halibut PSC Sideboard Limits

Sideboards have been implemented limiting the amount of the GOA trawl halibut PSC available to participants in the rockfish program, Amendment 80 program, and non-exempt AFA catcher vessels. These sideboards were adopted as part of catch share programs to limit program participants from fully using the flexibility provided by catch share allocations to increase their harvests in other fisheries.

NOAA Fisheries manages fleets to maintain their catches below the proscribed sideboard limits. The management approach differs with the sizes of the sideboard amount and the subject fleet, as well as the fleet's fishing practices. In fisheries with small sideboard limits that are deemed unmanageable, given the size of the sideboarded fleet, NOAA Fisheries may choose not to open the fishery. Fisheries that are never opened are listed in Table ES- 11.

Table ES- 11 GOA groundfish fisheries that are not opened to directed fishing.

AFA	Amendment 80	Rockfish Program*
Eastern Pacific cod (inshore and offshore)	No directed fishing closures	CV Western pelagic shelf rockfish
Western deep-water flatfish		CV Western Pacific ocean perch
Eastern and Western rex sole		CV Western northern rockfish
Eastern and Western arrowtooth flounder		CV deep-water complex fisheries
Eastern and Western flathead sole		CP shallow-water complex fisheries
Western Pacific ocean perch		
Western Northern rockfish		
Entire GOA pelagic shelf rockfish		
SEO District demersal shelf rockfish		
Entire GOA sculpins		
Entire GOA squids		
* For the month of July		

Proposed halibut PSC reductions would not affect the fisheries that are never opened to directed fishing. Fisheries with sideboard limits that can be managed by NOAA Fisheries will be permitted to target groundfish in the open fisheries. Members of these fleets, through cooperative agreements, may also be required to monitor their catches to stay within their sideboard limits. AFA non-exempt catcher vessels are most active in the shallow-water complex, particularly the first, third, and fourth seasons. The fleet is also active in the fifth season, but the halibut PSC sideboard limit is undesignated during the fifth season and therefore not apportioned between the deep-water and shallow-water complex fisheries. Only three times during 2003 through 2010 did seasonal halibut usage exceed the current seasonal sideboard limit. Those three cases were all in the deep-water complex and would have exceeded any of the proposed limits. Given that halibut PSC sideboard usage by the AFA non-exempt catcher vessel fleet is, in most cases, well below the applicable current sideboard limits, the halibut PSC reduction options would appear to minimally constrain the fleet, assuming current fishing practices continue.

Amendment 80 vessels are most active in the deep-water complex, which includes the rockfish and flatfish fisheries (e.g., rex sole, arrowtooth flounder). The third season has the largest number of participating Amendment 80 vessels. Most of these vessels are also qualified for the rockfish program in the Central Gulf. Participation in the shallow-water complex by the Amendment 80 sector is far more limited with only one to three vessels targeting these fisheries. When looking at the impacts of applying the entire halibut PSC reduction in the fifth season, the Amendment 80 fleet could be constrained more by the reduction in the overall halibut PSC limit than by the reduction in its sideboard limit, depending on the percentage reduction selected. The relatively small halibut PSC limit is likely insufficient to support opening a fifth season fishery (for details see Section 4.6.3.5).

The prohibition on sideboard rollovers from season-to-season for the Amendment 80 sector will increase the potential for the deep-water complex and shallow-water complex fisheries to close to Amendment 80 vessels as a result of the sideboards prior to the end of a season, especially the deep-water complex during the second and third season. If the deep-water species TACs were to increase significantly in the future, there is the possibility that the sector may have an insufficient halibut PSC sideboard limit to harvest the deep-water complex TACs. In the shallow-water complex, historical halibut PSC usage by the Amendment 80 sector indicates the first season could be constrained by the halibut PSC sideboard limit in the future.

With the exception of apportionment of halibut PSC to the Rockfish Program, trawl halibut PSC in the GOA is not apportioned between the different sectors. Given that halibut PSC is shared by all trawlers, the Amendment 80 sector is often racing other trawlers in their GOA groundfish fisheries. In general, the proposed reductions of halibut PSC limits will likely increase the race for fish in the GOA amongst all the trawlers.

Catcher processor fleet vessels participating in the Central GOA rockfish program will be limited in their catch of deep-water and shallow-water halibut PSC under a sideboard limit that is intended to constrain harvests from fisheries that are typically halibut constrained. This sideboard limit applies only during the month of July. Effort by the GOA Rockfish Program catcher processors during the month of July is centered

on the deep-water complex with the number of vessels ranging from 6 in 2010 to 11 vessels in 2009. Halibut PSC usage by these vessels has ranged from 30 mt in 2010 to 67 mt in 2008. The rockfish program vessels, operating under sideboard limits, focus most of its effort during the month of July on Western GOA and West Yakutat rockfish with some effort in the rex sole fishery. By comparison, effort by the Rockfish Program catcher processors in the shallow-water complex during the month of July is nearly non-existent. One catcher processor participated in the shallow-water complex in 2009.

During 2007, 2008 and 2009 halibut PSC usage by the catcher processors exceeded the 50 mt halibut PSC sideboard limit under the new Rockfish Program and therefore would have triggered a premature closure in the deep-water complex fisheries under all of the halibut PSC sideboard limit reduction options. Given that deep-water halibut PSC sideboard usage exceeded the status quo three times in the last four years, there is a high likelihood that the deep-water complex fisheries will be constrained by a reduced halibut PSC sideboard limit during the month of July. Catcher processors who are limited by the Rockfish Program halibut PSC sideboard limit race other trawlers before a halibut PSC forced shut down occurs during the month of July. A reduction of the halibut PSC will only increase this race for fish during the third season, and would likely result in a shortened third season in most years.

Suboption 3.2 was added to the list of proposed options at the February 2012 Council meeting. This suboption proposes treating the Amendment 80 sector like all other sectors, in that their unused halibut PSC sideboards could roll-over to the next season. The Amendment 80 sector would still be subject to deep-water and shallow-water sideboard designations.

Amendment 80 GOA groundfish sideboard limits are set for pollock (seasonal), Pacific cod (seasonal), Pacific ocean perch (annual), Northern rockfish (annual), and pelagic shelf rockfish (annual). However, the GOA flatfish fisheries are not subject to Amendment 80 sideboard limits, since those fisheries are traditionally limited by the halibut PSC. Because flatfish in the deep-water complex are primarily fished during the second and fifth seasons, the greatest benefit of roll-overs would likely be derived in the fifth season. Increased flexibility of halibut PSC usage will become more important as PSC limits are reduced.

In summary, roll-over privileges would provide the Amendment 80 sector the ability to take advantage of excess halibut from previous seasons. It would also treat the Amendment 80 sector like all other sectors, in terms of roll-overs. If the Amendment 80 sector were able to modify their fishing patterns by delaying deep-water fisheries until later in April or May PSC rates could be reduced (e.g., fishing deep-water species after halibut migrate to shallower water). This is currently unlikely as a result of the competition between the catcher vessels and the Amendment 80 fleet for deep-water halibut during the second season. Reducing PSC usage rates may result in more target groundfish species catches for the Amendment 80 sector and potentially for the overall trawl fleet. Increased harvesting flexibility may provide some opportunity for the Amendment 80 sector to increase their fishing activity in the GOA, particularly in the fifth season, which could result in less halibut PSC available for other participants.

Potential risks to other sectors are decreased by not altering the deep-water and shallow-water complex structure for the five seasonal sideboards. Increased flexibility of rolling Amendment 80 sideboards may also help that sector respond more efficiently to recent changes to GOA groundfish management that includes GOA cod sector splits, the Central Gulf rockfish program, Chinook salmon PSC limits, and potentially reduced halibut PSC limits. Likewise, it may also help the sector respond to changes in BSAI management.

Suboption 3.3 allows available trawl halibut PSC in the second season deep water and shallow water complexes to be aggregated and made available for use in either complex from May 15th through June 30th. Halibut PSC sideboards for the Amendment 80 and AFA sectors would continue to be defined as deep water and shallow water complexes for the entire second season. **The Council must also select a method for determining how to account for unused halibut after the second season.** From May 15 through the end of June, the deduction for halibut PSC could either be from:

1) the species fishery where it was used, or
2) the species fishery where it was initially available.

NOAA Fisheries staff has indicated that Option 1 is the only method that would not require the agency to revise their catch accounting system. Revising the catch accounting system would require funds that are currently not budgeted for that purpose. Given the budget constraints that the agency is currently operating under, they have indicated a preference that Option 1 be selected. Depending on the method selected, an overage of the second season PSC limits could significantly decrease the amount available for the third season and later fisheries. An example of the halibut PSC deducted from the species fishery where it was used (option 1) would be if the deep-water fisheries close on their second season halibut PSC limit, 400 mt in 2012, prior to May 15. As of May 15, the shallow-water fisheries have 100 mt of halibut PSC limit remaining. The trawl fleet starts fishing deep-water species on May 15 instead of waiting until the third season halibut PSC allocation becomes available July 1[6]. All 100 mt remaining in the shallow-water fisheries PSC limit is caught by participants targeting deep-water fisheries. This would reduce the third season deep-water fishery halibut PSC limit by 100 mt to 81 mt instead of 181 mt (400 mt minus 191.4 mt allocation and 27.4 mt set-aside for the Rockfish Program). For this example, no programming changes would be necessary in the catch accounting system.

Applying the example above to option 2 would reduce the third season shallow-water fishery halibut PSC limit by 100 mt (even though it was used in deep-water complex targets). For this example, programming changes would be necessary in the catch accounting system to deduct the May 15 to July 1 halibut PSC from the shallow-water species fishery instead of the deep-water fishery where it was actually caught.

In conclusion, the halibut PSC during May 15 to July 1 must accrue to either the deep-water species fishery or the shallow water species fishery since NMFS must continue to manage the halibut PSC limits by these species fisheries from July 1 to October 1. Any underage or overage for the second season would need to be added or subtracted from the species fishery where it was used or initially available. Depending on where it is deducted it will impact the amount of halibut available for use in that complex in the 3rd (rockfish fisheries in the deep-water complex) and 4th season (primarily when shallow-water fisheries occur for Pacific cod and pollock).

Selecting suboption 3.3 would give members of the trawl industry increased flexibility to utilize their halibut PSC during the second season. Increased flexibility could provide some sectors with the ability to reduce halibut PSC rates by fishing target fisheries at times of year when the PSC rates are lower and halibut PSC is not available. The deep-water complex is typically closed because the halibut PSC limit in late April. The shallow-water complex typically does not close during the second season. Because the shallow-water complex has remained open after May 15th, halibut PSC assigned to the shallow-water complex could be used by vessels to target species in the deep-water complex.

Because of when the deep-water complex closes, there are no recent data on halibut PSC usage rates in the GOA deep-water trawl flatfish fisheries in May or June. Since quantitative data are unavailable, the analysis of this option is primarily based on qualitative information. Adult halibut are thought to migrate annually from shallow summer feeding grounds to deeper areas to spawn from November to March (St-Pierre, 1984). Halibut movement into shallow-water during warmer months may result in lower halibut usage in the deep-water complex after May 15th. At a minimum, having both the shallow-water complex and deep-water complex either open or closed during the second half of May and June provides the trawl fleet's greater flexibility regarding the best use of the limited halibut PSC.

A retrospective analysis of the amount of shallow-water complex halibut PSC available under each of the options indicates that from 2009 forward, between 126 mt and 330 mt of shallow-water complex halibut was estimated to be available on May 15th, depending on the year used and the option selected. Even after all the shallow-water complex used in the second season is considered, at minimum of 34 mt remained unused in 2010 and 173 mt was unused in 2011.

Selecting May 15th as the date to remove the deep-water and shallow-water halibut PSC restrictions allows a cooling-off period before the deep-water complex is anticipated to reopen. The time between closing and

[6] Except Central GOA Rockfish Program participants who would be utilizing their halibut PSC allocation.

reopening the fisheries is estimated to be between three and four weeks, using historic data. For vessels that are not dependent on flatfish or local to the GOA, this gap in fishing opportunities may cause the vessels to leave for other fisheries or ports. It was also suggested that closing the flatfish grounds may have the beneficial effect of allowing flatfish to reaggregate.

Fleets operating under sideboards will continue to be constrained by their deep-water and shallow water sideboard limits for the entire second season. Amendment 80 catcher processors and non-exempt AFA catcher vessels will benefit from the undesignated halibut PSC in that they may utilize any unused PSC after May 15th to harvest deep-water species if they have room under their deep-water sideboard limit.

Implementation

Table ES- 12 depicts the most likely timeline for implementation of the Council's preferred alternative, now that final action is anticipated to occur in either April 2012 or June 2012. This time line suggests that mid-2013 implementation of revised PSC limits under Alternative 2 is unlikely.

Table ES- 12 Schedule for analytical, GOA FMP, and harvest specification revision process necessary to support change to the GOA halibut PSC limits mid-season.
(Source: NMFS AKRO SF)

Action	Jan-2012	Feb - May	June	Jul – Mar 2013	Apr - Oct
Initial review of FMP amendment to set GOA Halibut PSC and Council selects preliminary preferred alternative (January 2012)					
Final action of FMP amendment to set GOA Halibut PSC					
NMFS prepares and publishes proposed rule					
NMFS prepares and publishes file rule and revised harvest specifications for PSC limit apportionments					

Industry Tools to Reduce PSC and Fleet Responses

The analysis provides a discussion of the recent Council actions taken and the industry programs that have to been used to limit halibut PSC. Members of industry have provided public testimony that they are currently developing or have tried to utilize the tools available to them to reduce halibut PSC. They indicated that some efforts were unsuccessful because of the race for halibut PSC that occurs in the GOA fisheries and their inability to control the behavior of individuals unwilling to comply with the proposed tools (e.g., stand downs). Efforts to refine other tools are still underway but will require additional time and expense to determine if they can be effective solutions. They have stressed that there are no simple measures that they are aware of that have not been considered or tried.

Halibut avoidance measures and their effects will differ across gear and operation types. The analysis considered both the potential for measures to be effective in the various area and target fisheries and the potential for interactions between those fisheries to affect the propensity of participants to adopt avoidance measures.

Hook and line catcher processors

Under the recent action dividing the GOA Pacific cod TAC among different gear and operation types, the catcher processor longline sector and catcher vessel longline sector each receives not only a portion of the Pacific cod TAC, but also an apportionment of halibut PSC. Because of the almost complete overlap of the sector's participants in the BSAI with participants in the GOA Pacific cod fisheries and the relatively few participants in the sector – fewer than 20 vessels participate each year, members of the catcher processor sector have been able to extend their cooperative agreement from the BSAI fishery to a less formal agreement in the GOA fisheries. Despite the lack of a sector allocation, the sector agreed to a variety of measures intended to reduce the chance that its halibut PSC results in a fishery closure. Beginning in 2012, the sector will receive an allocation of Pacific cod and a halibut PSC limit that are not accessible to any other sector. Under its agreement, the hook and line catcher processor sector has agreed to individual limits on halibut PSC. These contractual limits operate as an additional constraint on cooperative members, who also must stop fishing any time regulators announce a fishery closure based on its determination that a hook and line halibut PSC limit will be reached, regardless of whether a member's cooperative limit is reached. Since these non-member vessels are not limited by the agreement, the cooperative must assume those vessels could take a disproportionate share of the available PSC, effectively imposing a disproportionate cost of the PSC limit on the cooperative's members. In practice, participants in the cooperative have historically consolidated their cooperative limits on few vessels that have prosecuted the GOA Pacific cod fishery.

In addition to establishment of member PSC limits based on the current total hook and line halibut PSC limit, the cooperative has also adopted a variety of other measures to reduce halibut mortality. In general, these efforts are focused on avoiding fishing in areas and at times of relatively high mortality rates. Information pooled under this effort is used to manage the cooperative limits, but also result in some degree of peer pressure for vessels with high rates. The fleet is also using informal, on-the-grounds communication among captains. Also under the terms of the agreement, vessels moving into a new area are limited in the amount of gear that may be set, until it is determined that halibut rates are below an acceptable level. The effectiveness of these measures to further reduce PSC is uncertain, as the fleet already uses a variety of measures to reduce halibut mortality.

Hook and line catcher vessels

The GOA hook and line catcher vessel sector uses halibut PSC primarily in the target Pacific cod fishery, along with some catches in the rockfish target fisheries. The hook and line catcher vessel sector has many more participants than the hook and line catcher processor sector, with hundreds of vessels participating annually. A core group of approximately 100 vessels make up the primary fleet, with most of the other vessels making only a few trips in a target fishery subject to the halibut PSC limits. Organization of such a large fleet to divide the PSC limit is unlikely, as vessels may perceive an opportunity to gain an advantage by remaining outside of the agreement. Despite this potential advantage, some catcher vessels currently undertake efforts to avoid halibut through informal arrangements. Under these arrangements vessels share on the grounds information concerning halibut mortality rates, helping vessels to avoid areas with relatively high halibut rates. Measures adopted by the hook and line catcher vessels are unlikely to extend beyond these informal arrangements (or to more costly measures, such as stand downs that delay fishing) under any of the proposed reductions, because of the potential for persons outside the agreement to realize gains by increasing their share of total halibut mortality.

Trawl vessels

The shared seasonal apportionments of the halibut PSC limits may affect the propensity of a vessel operator to avoid halibut, since the usage of halibut mortality is shared with a large fleet (including both catcher vessels and catcher processors) fishing in multiple target fisheries and over a large area (including multiple management areas). These conditions can be a barrier to formation of agreements among participants to address halibut mortality, as participants may have a variety of competing interests and little historical relationship. In addition, policing any agreement would be complicated by the diversity of the fleets and the geographic distribution of their activities. Despite these circumstances, in some cases agreements have been reached and practices adopted to avoid halibut mortality among segments of the fleets.

Section 4.6.6.3.2 provides a more detailed breakdown the catcher vessel sector. Information in that section describes the AFA catcher vessels and non-AFA catcher vessels. It also provides a discussion of catcher vessels by community where deliveries are made. Additional information on catcher vessels by owner's reported residence is provided in Appendix 7.

Trawl catcher processors

Most of the trawl catcher processors that fish in the GOA are also qualified for the Amendment 80 program. All but one of these Amendment 80 vessels is limited by sideboards. Amendment 80 cooperative members communicate halibut mortality rates to cooperative managers. These reports are compiled by the cooperative manager and reported to the fleet on a weekly basis. Occasionally, halibut mortality hot spots are identified through these reports. In addition, cooperative members may use small tows when beginning fishing in a new location to assess whether halibut rates are acceptably low and will move from areas of relatively high halibut rates. Most of the vessels in the Amendment 80 fleet that fish in the GOA flatfish and Pacific cod fisheries use halibut excluders originally developed for the fleet's use in the Bering Sea. These excluders are believed to be more effective in the GOA, as halibut tend to be larger there than in the Bering Sea. Excluders, however, are not believed to be fully effective and are not used on all vessels at all times. In addition, the effectiveness of the excluder will depend on fishing practices, which may reduce target species catch rates. The incentive to adopt practices reducing the effectiveness of an excluder is likely greatest when the vessel operator believes the fleet is approaching a halibut prohibited species catch limit that will inevitably close the fishery.

Some trawl catcher processors would prefer to delay targeting of certain species during periods of known relatively high halibut mortality rates. These delays would likely result only in forgone catches of the target species, as other vessels (including those in other targets) may continue to fish. At times, Amendment 80 participants are likely to have an additional incentive to fish during periods of high halibut mortality rates, as Amendment 80 halibut PSC sideboard limits that are unused in a season do not rollover to the next season.

Given the number of vessels eligible for GOA trawl fisheries, the adoption of halibut avoidance measures (which often reduce target catch rates) are likely to reduce a vessel's revenues from the fisheries. The proposed PSC limit reductions alone are unlikely to induce any notable additional halibut avoidance by trawl catcher processors. Most vessels participating in an Amendment 80 cooperative are likely to continue to communicate with other members of that cooperative concerning halibut mortality rates and continue to use informal arrangements to reduce halibut mortality. These measures are instigated largely by the Amendment 80 sideboards, rather than halibut PSC limits that apply to the trawl fleet, as a whole.

Trawl catcher vessels

Trawl catcher vessels also face substantial competition for the available halibut PSC limits for prosecuting their target fisheries. While this competition creates a disincentive for the adoption of halibut avoidance measures, catcher vessels have adopted a variety of such measures in recent years. These measures are generally adopted at the prompting of NOAA Fisheries, who are likely unable to manage the fleet effort to remain within the halibut prohibited species catch limit in the absences of the measures.

The Pacific cod fisheries (in the Central GOA and Western Gulf) are the fisheries of the greatest value that are likely to be subject to closures because of the halibut PSC limit being reached. As may be expected, these fisheries also draw substantial numbers of the eligible participants. In the mid-2000s, managers had difficulty managing halibut PSC during the Pacific cod B season, primarily because of the rate at which the fleet prosecuted the fishery and the delay in processing observer data reports. To address this difficulty, managers moved to a system of short openings (of 12 hours and 24 hours), after each of which halibut PSC data would be processed and reviewed. If halibut PSC remained available an additional opening would be announced. This change successfully addressed the immediate problem of managing halibut PSC. Yet, short openings, several days apart made fishing less efficient for participants. To address this loss of efficiency, the fleet has worked with NOAA Fisheries managers to develop several measures to avoid halibut and improve the timeliness of observer data coming available to managers. These efforts have allowed managers to extend the B season Pacific cod openers to a few days.

In addition, participants in the Pacific cod fishery worked to develop a halibut excluder that can be used on the smaller trawl vessels that participate in the GOA fisheries. Although the excluder tests had mixed results, some participants believe it effectively reduces halibut prohibited species catch without unacceptable decreases in target catch (particularly in the Pacific cod fishery). Currently, the Central GOA trawl catcher vessel fleet shares halibut PSC information that is used both for identifying hot spots and for releasing weekly reports of halibut mortality by vessel. Reports identifying vessels with high PSC may create peer pressure to reduce their rates.

In the Western Gulf, halibut avoidance is less well coordinated in the fleet. A few factors likely contribute to this difference. The Western GOA fleet primarily delivers into two locations, Sand Point and King Cove; whereas, the Central GOA fleet delivers almost exclusively into Kodiak. In addition, the Western GOA fleet tends to be smaller vessels than Central gulf vessels and operate with a greater degree of independence. Few of the Western GOA participants have any experience with cooperative programs. Halibut avoidance in the Western GOA has generally consisted of moving from areas of high halibut mortality. To some degree, vessels exchange information concerning areas of high mortality to aid in these efforts. While these practices are likely to continue, the potential for substantially greater effort to avoid halibut arising from this action is limited. It is possible that this action together with other aspects of the trawl catcher vessel fisheries and their management may collectively lead to more coordinated efforts to limit halibut mortality and achieve greater returns from the fisheries.

Community Analysis

For the purposes of community analysis, a two-pronged approach to analyzing the community or regional components of changes associated with the implementation of proposed Gulf halibut PSC revisions was utilized. First, tables based on existing quantitative fishery information for the period 2003-2010 (inclusive) were developed to identify patterns of participation, by community, in the various components of the relevant fisheries. There are, however, substantial limitations on the data that can be utilized for these purposes, based on confidentiality restrictions. The second approach involved selecting a subset of Alaska communities shown in the data as most heavily engaged in the relevant Gulf groundfish fisheries for characterization to describe the range, direction, and order of magnitude of social- and community-level engagement and dependency on those fisheries, and a series of profiles were compiled for those communities, which included Anchorage, Chignik Lagoon, Homer, Juneau, King Cove, Kodiak, Petersburg, Sitka, and Sand Point. A number of other Alaska communities are substantially engaged in the potentially affected Gulf groundfish fisheries, but none have the range and/or level of engagement of the communities profiled, particularly in terms of steady local fleet participation, especially in the last few years, although Cordova, Akutan, and Unalaska/Dutch Harbor shore-based processors have been steadily engaged in Gulf groundfish processing over the 2003-2010 period. The locally owned fleet of Chignik was identified as relatively dependent on hook-and-line Gulf groundfish fisheries participation compared to other Alaska communities not included in the series of community profiles; no Alaska community outside of those profiled was identified as substantially engaged in the relevant Gulf groundfish fisheries through trawl participation on the part of the locally owned fleet.

In general, it is not possible to quantitatively differentiate potential impacts of the different Gulf halibut PSC reduction alternatives on an individual community basis. Qualitatively, however, it is possible to anticipate the communities where adverse impacts, if any, would most likely take place, along with the nature, direction, and at least rough order of magnitude of those impacts. Adverse impacts would likely be felt at the individual operation level for at least a few vessels in a number of Alaska communities due to increased costs and/or a drop in revenues associated with either changing fishing patterns and/or practices to reduce halibut bycatch or because of season-ending closures based on a particular gear- or species-based sector hitting a (revised) halibut PSC limit earlier in the season than would have been the case under previous/existing (higher) halibut PSC thresholds. Additionally, recent community and social impact assessments for North Pacific fishery management actions suggest that as locally operating vessels experience adverse impacts, indirect impacts are also soon felt by at least some local support service providers to the degree that those individual enterprises are dependent upon customers who participate in the specific fishery or fisheries affected (and the relative dependence of those customers on those specifically affected fisheries). Given the

scope of overall impacts anticipated to result from any of the management alternatives assessed for the proposed Gulf halibut PSC revisions, however, community-level impacts would likely not be discernible for most of the engaged communities. The three communities where community-level impacts are a greater possibility are King Cove, Sand Point, and Kodiak, based on the relative involvement with the trawl sector, both on a local fleet and processing basis.

Potential mitigating factors for possible adverse impacts in King Cove and Sand Point, however, include the specific gear, species, and seasonal nature of the Gulf groundfish trawl-related efforts in those communities, such that any Gulf halibut PSC revisions that affected any season other than the cod "A" season (January 1 through June 9) in the Western Gulf would have minimal impacts to King Cove and Sand Point.

Kodiak, however, is substantially engaged in a wide range of Gulf groundfish fisheries in terms of spatial and seasonal distribution of effort, species targeted, and gear types utilized with respect to its local fleet, and Kodiak processing operations are very much the center of Gulf groundfish shore-based processing. Kodiak would be especially more likely to experience any adverse impacts related to Gulf groundfish trawl fisheries in the later part of the year, particularly with respect to flatfish-related operations. A potential mitigating factor for adverse community-level impacts in Kodiak is that the community is substantially engaged in and dependent upon a wide range of fisheries, not just the Gulf groundfish fisheries, and multiple gear types within the Gulf groundfish fisheries. For the local Gulf groundfish fleet, exvessel gross revenues are roughly comparable for the fixed gear and trawl segments of the fleet. For processing operations, a lack of flatfish toward the end of the year in particular could create a range of challenges with respect to continuity of operations and processing labor issues. For Kodiak shore-based processors, flatfish (year-round) accounted for roughly 10 percent of combined flatfish and other groundfish first wholesale gross revenues on an annual average basis in recent years and roughly 5 percent of first wholesale gross revenues for all species combined.

In general, adverse community-level impacts are not likely to be significant for any of the involved communities and the sustained participation of these fishing communities would not be put at risk by any of the proposed Gulf halibut PSC revision alternatives being considered. For some individual operations, however, especially within the Gulf groundfish trawl sector in Kodiak and those processing operations in Kodiak substantially dependent upon Gulf groundfish trawl deliveries of flatfish in particular, adverse impacts may be felt at the operational level, particularly if the fleet cannot effectively modify behavior to reduce historical halibut PSC rates.

Additionally, there is the potential for community-level beneficial impacts to result from the proposed Gulf halibut PSC reductions. Within the community analysis, it is assumed that direct halibut fisheries would potentially benefit from the proposed Gulf halibut PSC revisions relative to the degree that the Gulf halibut stock itself would potentially benefit from these proposed actions. In both the quantitative indicators and community profile summaries, information is presented on community engagement in the commercial halibut, sport halibut, and subsistence halibut fisheries. The communities profiled as most heavily engaged in the relevant Gulf groundfish fisheries, however, are not always the communities most centrally engaged in/dependent upon the various Gulf halibut fisheries; therefore, the individual communities that have the potential to experience the greatest adverse impacts to the groundfish fisheries may or may not be the same communities as those that have the potential to experience the greatest beneficial impacts to the halibut fisheries. In general, the potential beneficial impacts to the various halibut fisheries, especially the commercial and subsistence halibut fisheries, would be more widespread among communities than the potential adverse impacts to the groundfish fisheries, although potential beneficial impacts to individual halibut fishery participants may be modest compared to potential negative impacts to individual groundfish fishery participants likely to be directly affected by the proposed Gulf halibut PSC reductions. This potential differential distribution of adverse and beneficial impacts among communities is primarily addressed in the quantitative indicators discussion, but engagement in the different halibut fisheries is also discussed in each of the community profiles, where potential negatively affected and positively affected populations are most likely to overlap.

Raw Fish Taxes

There are three fisheries taxes that are levied on GOA groundfish catch/landings by the State of Alaska. A Fisheries Business Tax is levied on persons who process or export fisheries resources from Alaska. The tax is based on the price paid to commercial fishers or fair market value when there is not an arms-length transaction. The tax rate varies by the type of processor and whether the species being delivered is classified as established or developing. A Fishery Resource Landing Tax is levied on fishery resources processed outside the 3-mile limit and first landed in Alaska or any processed fishery resource subject to sec. 210(f) of the American Fisheries Act. The tax is based on the unprocessed value of the resource, which is determined by multiplying a statewide average price (determined by the Alaska Department of Fish and Game (ADF&G) data) by the unprocessed weight. The Fishery Resource Landing Tax is collected primarily from factory trawlers and floating processors which process fishery resources outside of the state's 3-mile limit and bring their products into Alaska for transshipment. The tax rate is 3% for established species and 1% for developing species (as designated by ADF&G). A Seafood Marketing Assessment is levied at a rate of 0.5% of the value of seafood products processed first landed in, or exported from Alaska.

The statewide tax foregone by reductions in groundfish harvests and tax increases from halibut harvests were calculated. The two estimates are not directly comparable because of the different methodologies used to calculate revenue foregone in the groundfish fishery and increase in revenue in the guided sport and commercial IFQ fishery. Alaska statewide average prices used to determine tax liability (2010) were used for both halibut and groundfish. Under Alternative 2 Option 1 (a 5 percent reduction in halibut PSC), the 2010 tax revenues were projected to increase by the amount of the tax applied to halibut landings. This is due to the fact that under the 5 percent reduction in halibut PSC, the groundfish fishery was estimated not to forego any revenue in 2010 (2010 was a low halibut PSC year). No ex-vessel revenues foregone in the groundfish fishery and $30,000 increase in halibut tax revenues were estimated under the 5 percent reduction. When the PSC limit was reduced by 10 percent the state tax was estimated to have increased by $59,000 from halibut landings. The linear calculation for the change in halibut tax liability resulted in an increase of $89,000 in taxes at when the 15 percent reduction to the PSC limit was applied. Statewide taxes forgone from groundfish were estimated to be $17,000 (10 percent reduction in PSC) and $114,000 (15 percent reduction in the PSC limit).

Community level taxes are also impacted by changes in landings. King Cove was the only city to charge a Fisheries Impact Tax which is set at a flat rate of $100,000. The Fisheries Impact Tax is levied against the local processor to help pay for city resources used by the plant. The cities of King Cove, False Pass, and Sand Point impose a 2% fish tax in addition to the 2% fish tax imposed by the Aleutians East Borough. Chignik imposes a 2% fish tax on vessels and a 1% fish tax on processors. Unalaska imposes a 2% fish tax. Estimates of the city fish taxes cannot be reported because less than three groundfish processors are located in each community. Several communities where GOA groundfish are landed do not charge a raw fish tax.

Instead of a raw fish tax, the Kodiak Borough imposed a severance tax of 1.05% on harvested natural resources, including commercial fishing, timber sales, sand or gravel extraction, and mining activities that was in place during 2010. In June 2011, Kodiak lawmakers increased the Borough’s severance tax rate to 1.25%. In general, the reductions in raw fish taxes assessed by municipalities would, potentially, have the greatest impact on the community of Kodiak. Under this proposed action, their groundfish tax revenues would be reduced by changes in the halibut PSC limit. Increases in halibut tax revenue may partially or completely offset these decreases.

ROADMAP TO THE DOCUMENT

The document begins by describing the purpose for this proposed action (Section 1.1) and a description of the alternatives considered (Section 2.1). Section 3 contains the Environmental Assessment. Section 3.2.1 describes the Pacific halibut resource and fisheries and the biological impacts analysis of proposed alternatives on halibut. Section 3.3 describes the groundfish resources and fisheries and the biological impacts analysis of proposed alternatives on groundfish. It describes how fleet behavior may change as a result of the alternatives. Status of, and effects of the proposed action on, marine mammals (Section 3.4), seabirds (Section 3.5), habitat (Section 3.6) and the ecosystem (Section 3.7) are addressed. The cumulative

effects section is provided under Section 3.8. The NEPA summary is provided under Section 3.8.5. Section 4 contains the Regulatory Impact Review, which evaluates the economic and socioeconomic impacts of the proposed action. It summarizes information on potential effects of the proposed action on GOA coastal communities, which is included in greater detail under Appendix 7. The community impact analysis was expanded through field work conducted in early 2012, based on recommendations by the Council which incorporated comments by the Scientific and Statistical Committee, Advisory Panel, and public testimony. The Initial Regulatory Flexibility Analysis evaluates the impact of the action on small businesses. Section 6 reviews the alternatives with respect to the requirements of the Magnuson-Stevens Act and other analytical considerations. Section 5 presents the IRFA. Section 6 covers FMP and MSA requirements, including the National Standards. Section 7 discusses the environmental impacts of the proposed action and alternatives. Section 8 contains a list of contributors to this analysis.

Modifications have been made throughout the EA and RIR to reflect changes in the proposed alternatives being considered by the Council since it was reviewed in February 2012. Editorial changes, clarifications, and corrections have also been made.

Major revisions to the EA since February 2012 include the following:

- Information already included in the Initial Review Draft of the EA was reorganized to strengthen sections addressing the Purpose and Need and Cumulative Effects;
- The suite of alternatives and option was revised to reflect Council action;
- The timeline for implementation was revised to no sooner than 2014;
- New IPHC bluebook information and CEY from the 2012 annual IPHC meeting, including expanded discussion on a) the methods and assumptions used in the lost yield and migration models that are briefly described within the analysis; and b) the methods used by IPHC staff to apportion bycatch among the U26, O26-U32, and O32" size categories; and
- Joint NPFMC/IPHC Halibut Bycatch Workshop description and agenda was included. The meeting summary will be provided to the Council separately.

Major revisions to the RIR since February 2012 include the following:

- New information on the status of the Pacific halibut stock;
- Removing the suboption to take the entire trawl halibut PSC reduction from the fifth season;
- Add suboption 3.2 to allow the Amendment 80 sector to roll unused halibut PSC from one season to the subsequent season (similar to the non-Amendment 80 sectors). See Section 4.6.3.6.6;
- Add Suboption 3.3 to allow available trawl halibut PSC in the second season deep water and shallow water complexes to be aggregated and made available for use in either complex from May 15th through June 30th. Halibut PSC sideboards for the Amendment 80 and AFA sectors would continue to be defined as deep water and shallow water complexes in the second season. See section 4.6.3.6.7.
- Revise the hook-and-line sector PSC limits that were implemented under the GOA Pacific cod sector splits (see Section 4.6.3.2);
- A more detailed discussion of the treatment of the CG Rockfish Program halibut program allocation was included (see executive summary);
- Provide additional information on the estimated gross revenue reductions at the ex-vessel level.
- Additional analysis of the trawl catcher vessel fleet. (see Section 4.6.6.3.2)
- The community impacts section was updated to reflect additional information requested by the Council (Appendix 7), including the addition of a Kodiak field methodology discussion and an expansion of the Kodiak processing labor discussion. Appendix 7 was also updated to include data for 2010 for shore-based groundfish processing, halibut sport charter permits and harvests, and halibut subsistence fishery participation and harvest levels.