Central GOA
Rockfish Program Review

Prepared by

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Executive Summary

A review of the Central GOA Rockfish Program (Rockfish Program) is required under the Magnuson-Stevens Fisheries and Conservation Act. This paper fulfills that review requirement, focusing on the goals and objectives of the program defined by the North Pacific Fishery Management Council, Magnuson-Stevens Fisheries and Conservation Act limited access privilege program requirements, and NOAA Fisheries guidance for program reviews. This review includes quantitative measures of the effectiveness of the program meeting the goals and objectives when data allows. A qualitative discussion of the impacts is provided when sufficient data are unavailable.

The intent of the Rockfish Program was to retain the conservation, management, safety, and economic gains created by the Rockfish Pilot Program. In addition to those objectives, specific elements of the Pilot Program were modified under the Rockfish Program so that program could be improved or the Rockfish Program would comply with legal authority granted to NOAA Fisheries.

Table E.1 provides a brief summary of the goals and objectives of the Rockfish Program, based on the Council's motion - as analyzed in the Environmental Assessment and Regulatory Impact Review for the program. The information provided in the tables indicates that the almost all of the Council's goals and objectives were met. Additional detail on these objectives is provided in the text after the table. The reader is also referred to the Summary and Conclusions section of this document for a discussion of the impacts of the program on harvesters, processors, and communities.

Table E-1. Summary table of stated goals and objectives of the Rockfish Program.

Goal/Objective	Successful?	Description
Allow full retention of allocated species	Yes	• Cooperative quota (CQ) allocations eliminate regulatory discards when fishing in cooperatives. • The CQ allocations include full retention requirements. • Retention rates in the Pilot Program and Rockfish Program are very high compared to the limited access fisheries.
Reduce halibut bycatch	Yes	• Catcher vessel halibut rates are approximately 10 percent of the pre-Pilot Program limited access fishery rate. • Catcher/processors have reduced their halibut mortality by about 50 percent.
Reduce Chinook salmon bycatch	Some years	• Chinook salmon bycatch remains highly variable year-to-year. • Chinook salmon bycatch ranged from a low of 158 fish to a high of 1,802 fish under the Rockfish Program and Pilot Program. • Industry members continue to try new methods to reduce Chinook salmon bycatch.

Goal/Objective	Successful?	Description
Rockfish Program removed disincentives for some catcher/processor operators to join cooperatives	Yes	• All catcher/processor LLP licenses with QS are assigned to a cooperative under the Rockfish Program.
Allow for a more rational distribution of effort	Yes	• The Central GOA rockfish fishery has changed from an approximate 3-week fishery in July to one that primarily occurs in May and June.
Improved NMFS' ability to conserve and manage the species in the program	Yes	• Cooperative management and removing the entry level trawl fishery has eliminated NMFS management of small Central GOA trawl rockfish TACs.
Increased vessel accountability	Yes	• Vessel accountability is addressed through private contracts within the cooperative. • Individual cooperatives monitor the harvest of their members to ensure that no member exceeds their limit for an individual species.
Controlled capacity of the fleets	Yes	• The Central GOA rockfish fisheries are a relatively small component of the fleet's annual fishing cycle but cooperatives are able to control fishing power. • Success of the cooperative structure has also allowed voluntary cooperatives to be formed in the Central GOA pollock fishery some years.
Controlled consolidation	Yes	• Ownership and use caps are imposed to limit consolidation of QS and CQ. • About the same number of vessels, processors and crew, participate in the fishery now as in the past.
Reduced trawl gear contact with the sea floor	Yes	• The fleet employs greater use of pelagic gear. • The 2017 Fishing Effects Model indicates that the percentage habitat reduction for each target species has declined since 2003.
Improved safety at sea	Yes	• There were no work-related crewmember fatalities or vessel disasters under the Pilot Program or Rockfish Program. • The good safety record may be due to an extended fishing season that reduce pressure to fish when weather is bad and can reduce crewmember fatigue.
Kodiak and shorebased processing sector have benefited from stabilization of the work force	Yes	• Local workers that may have had to rely on unemployment compensation during May and part of June have increased access to work in the plants.

Goal/Objective	Successful?	Description
More stable markets	Uncertain	• World market conditions for whitefish and currency exchange rates have a greater impact on markets than the Rockfish Program.
More shoreside deliveries of rockfish	Yes	• The Central GOA Pacific ocean perch TAC has increased, discards of rockfish species have declined, and the rockfish fishery has not closed because of halibut PSC limits being reached. • A greater percentage of the primary species TAC is allocated to the CV sector. • Regulations allow CQ transfers from the catcher/processor sector to the catcher vessel cooperatives, but not vice versa.
Additional non-rockfish deliveries with the halibut savings	Yes	• The amount is difficult to quantify. • The amount of halibut PSC that could be rolled over under the Rockfish Program (up to 55 percent of the unused amount) ranged from 55mt to 71mt depending on the year. • Additional halibut could be used to increase groundfish harvests, especially when it was a binding constraint (2016).
Increased rockfish quality and diversity of rockfish products	Yes and No	• Raw fish delivered under the Pilot Program and Rockfish Program were of higher quality than under the limited access fishery. • Product diversity has not changed noticeably because the high cost of value added processing and shipping, and the relatively low product prices for rockfish.
Resolved Pilot Program issues in the management and viability of the entry level fishery	Yes	• The trawl entry level fishery was eliminated. • Three LLP license that fished with trawl gear in the entry level fishery were issued QS in Rockfish Program. • The longline entry level fishery allocation formula was changed and the allocation is now is adjusted based on catch. • Dusky rockfish is the only species whose entry level longline allocation has been increased under the Rockfish Program.
Fishery Allocation Review	Yes	• Based on the information presented by stakeholders, information presented in the Rockfish Program Review, and discussion with fishery managers, no evidence has been presented that suggests revisiting the Rockfish Program allocations is needed.

Full retention is mandated under the Rockfish Program. CQ allocations eliminate regulatory discards that are imposed when fisheries are closed to directed fishing and bycatch is managed using maximum retainable amounts (MRAs). Under the Rockfish Program, cooperatives manage their allocation and all cooperative fishing closes when the cooperative checks out of the rockfish fishery or their allocation is taken. CQ allocations include full retention requirements. Full retention requires harvesters to retain all the CQ species that they catch and that catch is deducted from the cooperative's allocation. Because of these provisions, retention rates in the Pilot Program and Rockfish Program are very high, with rates approaching 100 percent for each fishery most years. Retention rates were slightly lower in 2011. That was the only year when reported rates dropped slightly below 99 percent for Pacific ocean perch and Northern rockfish. Dusky rockfish retention rates remained above 99 percent that year. Discards are reported in the Rockfish Program cooperative reports and typically only occur because of safety issues. Discards of sablefish and secondary rockfish species are also very low under the Pilot Program and Rockfish Program. Pacific cod discards have been low over the entire period since retention is required in the Improved Retention/Improved Utilization Program. For the primary and secondary species retention rates are lower in the open access fisheries where these species are taken as bycatch.

The catcher vessel and catcher/processor sectors have reduced their halibut mortality in the Central GOA rockfish fishery. Halibut mortality rates in the Central GOA Pilot Program and Rockfish Program have decreased about 90 percent in the catcher vessel sector when compared to 2003 through 2006 levels. Halibut mortality rates before the Pilot Program ranged from 1.5 to 3.0 kg of halibut per metric ton of total groundfish basis species. After the Pilot Program was implemented the rates decreased to about 0.25 kg of halibut per metric ton of total groundfish basis species each year. The catcher/processor sector also realized reductions in amounts and rates. The catcher/processor rate was about 0.4 kilograms of halibut PSC per metric ton of total groundfish basis species, or about half the rate prior to the Pilot Program.

It is difficult to quantify increases in groundfish deliveries associated with the additional halibut PSC availability as a result of less halibut usage in the Central GOA rockfish fishery. Generating those estimates would require many assumptions that may or may not hold. However, the Pilot Program and Rockfish Program have used between 23 percent and 48 percent of their allocation over the years 2007 through 2016. The amount of halibut PSC that could be rolled over under the Rockfish Program (up to 55 percent of the unused amount) ranged from 55mt to 71mt, depending on the year. That additional halibut may be used to increase groundfish harvests. In 2016 the GOA trawl fisheries closed on October 22 because the halibut PSC limit was reached. That year about 65mt of halibut PSC was available to roll over for use in any GOA trawl fishery and could have been used to increase the catch of groundfish species in the deep-water and shallow-water complexes.

Chinook salmon bycatch amounts remains variable from year-to-year. Industry members have attempted to reduce Chinook salmon bycatch by modifying gear, improving communication within the cooperatives, and avoiding areas with high bycatch rates. The variability of bycatch rates between tows in an area have hampered the fleet's ability to consistently reduce bycatch. Basket sampling methods to estimate total number of Chinook salmon caught in a tow are also thought to inflate the official bycatch estimates in some years (e.g., 2007) and may reduce it in other years.

Since the Rockfish Program was implemented all catcher/processor LLP licenses with QS have been assigned to a cooperative by their owners. The increased participation is due to reducing the number of LLP licenses required to form a cooperative and the elimination of the limited entry fishery. Creating incentives to join cooperatives has eliminated the management burden associated with Central GOA trawl limited access fisheries.

The Central GOA rockfish fisheries are a relatively small component of the fleet's annual fishing cycle. Individual allocations are monitored by the cooperatives. The cooperatives and their members are able to match fishing power to the amount of rockfish program quota available. However, the limited access fisheries that the vessels participate in can still create incentives to increase overall harvesting capacity, but

those incentives are external to the Rockfish Program. The success of the cooperative structure has also stimulated voluntary cooperatives to be formed in the Central GOA pollock fishery some years, but those agreements are difficult to reach and maintain, and are most likely to form when the harvesting capacity of the fleet would not allow a 24-hour opening without exceeding the TAC.

The Central GOA rockfish fishery has changed from an approximate 3-week race to fish starting at the beginning of July, to a fishery that primarily occurs in May and June, with smaller harvest amounts occurring until November. The reduced conflicts with salmon fisheries provided the opportunity to more efficiently time deliveries, reducing offload times and increased the quality of fish delivered.

Consolidation has not occurred under the Rockfish Program. Ownership and use caps are imposed to limit consolidation of QS and CQ. The caps were developed to balance the goals of improving economic efficiency by allowing entities to take advantage of economies of scale relative, maintaining employment opportunities for vessel crew, and providing financially affordable access opportunities for new participants. About the same number of vessels, processors and crew, participate in the Central GOA rockfish fishery now as before the Pilot Program was implemented. CQ transfers can occur within the cooperative, but consolidation has not been reported as an issue, in part because of the use caps.

LLP license transfers and processing plant sales do not appear to have occurred at a greater rate under the Pilot Program or Rockfish Program relative the limited access years. Discussions with stakeholders suggested that part of the motivation for one of the processing plant sales was changes in the cooperative structure between the Pilot Program and Rockfish Program, which altered bargaining power between harvesters and processors.

The Rockfish Program includes several community protection features designed to provide for the sustained participation of Kodiak, the fishing community historically most closely associated with the Central GOA rockfish fishery. As measured by multiple indices, the level of Kodiak's engagement in and dependence on the fishery has increased under the Rockfish Program. While not all participants in all sectors have benefitted equally from the changes between the Rockfish Pilot Program and the Rockfish Program, no Rockfish Program-related adverse community impacts have been identified for Kodiak or any other community substantially engaged in or dependent upon the fishery.

A trend toward greater use of pelagic gear that started in the period leading up to implementation of the program has continued under the Pilot Program and Rockfish Program. There are two relevant gear alterations that have led to less bottom contact since 2003. First, a move towards semi-pelagic bottom trawl gear (doors off bottom) since about 2008 decreased the bottom contact from the heaviest portion of the gear. In 2014, mandatory sweep modifications for flatfish trawls were implemented that raise the majority of the trawl off the bottom have been used in other fisheries as well, as sweeps are difficult to replace for specific target species trips. The Fisheries Effects model was used to quantify habitat impacts. The 2017 model assumed no bottom contact for GOA slope rockfish. For Pacific ocean perch and Northern rockfish, the percentage habitat reduction for each target species' Essential Fish Habitat area of concentration has declined (since 2003).

The ability to deliver higher quality products at both the ex-vessel and first wholesale level has helped foster more stable markets. However, world market conditions for whitefish and currency exchange rates have a substantial impact on buyers of rockfish products. The stronger US dollar in recent years has made substitute products from other countries less costly, relative to rockfish, which tends to destabilize markets for rockfish and other fish caught in the US.

Shoreside deliveries of rockfish have increased because Central GOA Pacific ocean perch TAC has increased, discards of rockfish species have declined, the rockfish fishery has not closed because of halibut PSC limits being reached, and regulations allow CQ from the catcher/processor sector to be leased to

catcher vessel cooperatives - but catcher vessel CQ cannot be transferred to the catcher/processor sector. Together these factors have resulted in increased shoreside deliveries of rockfish.

The Pilot Program trawl entry level fishery was eliminated under the Rockfish Program and participants were allowed to apply for QS based on the number of years they participated in the trawl entry level fishery from 2007 through 2009. Three LLP license that fished with trawl gear in the entry level fishery were granted QS in Rockfish Program. The longline entry level fishery allocation formula was changed from 2.5 percent of the Central GOA primary rockfish species TACs under the Pilot Program to a fixed amount that is adjusted based on whether the sector harvests 90 percent or more of their allocation in the previous year. Increases in catch of dusky rockfish by vessels using jig gear in 2016 resulted in the first increase in the entry level longline allocation under the Rockfish Program. They entry level longline allocation all remain well under their maximum allocation limit which is set as a percentage of the TAC.

1 Introduction

This paper provides a review of the Central GOA Rockfish Program (Rockfish Program), which is required under both the Magnuson-Stevens Fisheries and Conservation Act and the Council's motion when the action was passed. The review includes consideration of the program in terms of general quantitative measures, based on catch and participation data, as well as how the action has addressed its problem statement. The Council's Rockfish Program problem statement is provided below:

"The intent of this action is to retain the conservation, management, safety, and economic gains created by the Rockfish Pilot Program to the extent practicable, while also considering the goals and limitations of the Magnuson-Stevens Fisheries Conservation and Management Act Limited Access Privilege Program (LAPP) provisions.

The existing CGOA Rockfish Pilot Program (RPP) will sunset after 2011. Consequently, if the management, economic, safety, and conservation gains enjoyed under the RPP are to be continued, the Council must act to create a long term CGOA rockfish LAPP. For both the onshore and offshore sectors, the RPP has improved safety at sea, controlled capacity of the fleets, improved NMFS' ability to conserve and manage the species in the program, increased vessel accountability, reduced sea floor contact, allowed full retention of allocated species and reduced halibut bycatch. In addition, the rockfish fishery dependent community in the CGOA and the shorebased processing sector have benefited from stabilization of the work force, more shoreside deliveries of rockfish, additional non-rockfish deliveries with the RPP halibut savings, and increased rockfish quality and diversity of rockfish products. Moreover, the CGOA fishermen, and the shorebased processing sector have benefited from the removal of processing conflicts with GOA salmon production. The Council needs to resolve identified issues in the management and viability of the entry level fishery.

The portion of the catcher processor sector currently participating in the rockfish cooperatives has also benefitted from the RPP. These benefits include greater spatial and temporal flexibility in prosecuting the fishery, which result in lower bycatch, a more rational distribution of effort, and more stable markets. Certain provisions of the current RPP act as disincentives to some CP operators from joining the cooperative sector and achieving these benefits. These disincentives should be eliminated to the extent practicable in the new RPP."

2 History of the Central Gulf of Alaska Rockfish Fishery Management

This section provides a brief history of the Central GOA Rockfish Fishery. The first section describes the fishery prior to implementation of the Pilot Program. The second section describes the Congressional action that initiated development of the Pilot Program. The third and fourth sections, respectively, describe the Pilot Program and the Rockfish Program.

2.1 Limited Access Fishery (Prior to 2007)

The Final EA/RIR developed for the Pilot Program provides a summary of the Gulf of Alaska rockfish fishery prior to implementation of that program (North Pacific Fishery Management Council, 2006). That RIR is relied on heavily to provide a summary of the fishery prior to 2007.

Gulf of Alaska rockfish fisheries opened on January 1st for non-trawl gear participants and the trawl gear fishery opened around July 1st. The trawl opening was generally timed to coincide with the availability of the third quarter halibut PSC allocation, accommodate the sablefish longline survey that occurred later in the summer, and typically coincided with the openings of the Aleutian Islands Pacific Ocean perch and Bering Sea flathead sole fisheries to distribute effort among the fisheries.

Both the trawl and non-trawl fisheries were prosecuted from a single TAC, with the harvest from the trawl fishery limited to the remaining available TAC after the non-trawl fleet has prosecuted the fishery from its January 1st opening. Limited effort in the longline fishery meant that most of the TAC was harvested by the trawl fleet.

Table 2-1 summarizes trawl openings and closings for all gear types in the Central GOA directed rockfish fishery prior to implementation of the Pilot Program, by species, from 1996 through 2006. This table was presented in the Pilot Program RIR through 2003. The information is extended in this paper to include the four years immediately preceding implementation of the Pilot Program. The closings show the general progression of participation in the rockfish fisheries. Most participants targeted Pacific Ocean perch first, until the TAC of that species was fully harvested. Pacific Ocean perch are a larger biomass (see Figure 5-1) and typically are easier to target than the other two species. The season for Pacific Ocean perch usually lasted between one and two weeks. Once the Pacific Ocean perch fishery was closed, vessel operators usually moved on to the northern rockfish or pelagic shelf rockfish directed fisheries[1], although some vessels moved on to other fisheries in and outside of the Central GOA. The directed fisheries for northern rockfish and pelagic shelf rockfish typically lasted less than one month, closing before the end of July. Fishery managers exercised caution, occasionally closing the fisheries to ensure that the TAC was not exceeded. When sufficient TAC remained available, managers reopened the fisheries later to allow participants to complete the harvest. In earlier years, the fisheries typically closed because the rockfish TACs were harvested. In the later years halibut PSC in the deep-water complex closed the fisheries. In 2000, halibut PSC closed the pelagic shelf rockfish fishery. In 2001 2004, and 2005 halibut PSC closed both the northern rockfish and pelagic shelf rockfish fisheries in July. The fisheries were reopened when later halibut PSC limits became available. The fisheries closed again near the end of October, after harvest of the deep-water halibut PSC allocation.

[1] Pelagic shelf rockfish included dusky rockfish, dark rockfish, yellowtail rockfish, and widow rockfish. Yellowtail, dark, and widow rockfish make up a very small proportion of the biomass and starting in 2012 a separate TAC was set for dusky rockfish and that species was allocated as primary species in the Rockfish Program.

Until 1998, the Federally-managed rockfish fisheries in the Central GOA included nearshore pelagic shelf rockfish (i.e., black and blue rockfish), which are prosecuted primarily in State waters. These species were targeted predominantly with non-trawl gear. In 1997 non-trawl effort in the nearshore pelagic shelf rockfish fishery closed that fishery on June 7th, prior to the trawl opening. In 1998, the State took over management of the nearshore pelagic shelf rockfish fisheries. Those fisheries are currently prosecuted exclusively in State waters.

Table 2-1 Season openings (trawl) and closures (all gear types) of the Central GOA primary rockfish species (1996 – 2006)

			Closures			
Year	Opening for Species	Opening date	Pacific Ocean Perch	Northern Rockfish	Pelagic Shelf Rockfish	Reason
1996	all	1-Jul	11-Jul	20-Jul	none	TAC (POP, Nor)
1996 closure		-	15-Jul			PSC
1997	all (incl. PSR nearshore)	1-Jul	7-Jul	10-Jul	7-Jun	TAC
1997	PSR offshore	1-Jul			15-Jul	TAC
1997 closure	POP	-	19-Jul			PSC
1998	all	1-Jul	6-Jul	14-Jul	19-Jul	TAC
1998 reopen	POP	12-Jul	14-Jul			TAC
1998 closure	POP	-	27-Jul			PSC
1999	all	4-Jul	11-Jul	19-Jul		TAC (POP, Nor)
1999 reopen	POP, Nor	6-Aug	8-Aug	10-Aug		TAC (POP, Nor)
1999 closure		-	3-Sep	3-Sep	3-Sep	PSC
2000	all	4-Jul	15-Jul	26-Jul	26-Jul	TAC (POP, Nor) HAL(PSR)
2001	all	1-Jul	12-Jul	23-Jul	23-Jul	TAC (POP) HAL(Nor,PSR)
2001 reopen	Nor, POP	1-Oct	n/a	21-Oct	21-Oct	HAL
2002	all	30-Jun	8-Jul	21-Jul	21-Jul	TAC
2002 closure		-	5-Aug			HAL
2003	all	29-Jun	8-Jul	31-Jul	29-Jul	TAC
2004	all	4-Jul	12-Jul	25-Jul	25-Jul	TAC (POP) HAL(Nor,PSR)
2004 reopen	PSR, Nor	1-Oct		1-Oct	1-Oct	HAL
2005	all	5-Jul	14-Jul	24-Jul	24-Jul	TAC (POP) HAL(Nor,PSR)
2005 closure	Nor			30-Aug		TAC
2005 reopen	PSR	1-Sep			4-Sep	HAL
2005 reopen	PSR	8-Sep			10-Sep	HAL
2005 reopen	PSR	1-Oct			1-Oct	HAL
2006	all	1-Jul	6-Jul	21-Jul	21-Jul	TAC
2006 closure	POP, Nor		3-Aug	3-Aug		PSC
2006 reopen	PSR	2-Oct			8-Oct	HAL

Source: NMFS SF summary of fishery closures
Abbreviations used in table: PSR=Pelagic Shelf Rockfish, POP=Pacific ocean perch, Nor=Northern rockfish, HAL=halibut PSC limit, PSC=prohibited species catch status, and TAC=total allowable catch was reached.

Information on activity in the fishery prior to the Pilot Program is presented in Section 5. That section includes information on Total Allowable Catch (TACs), the number of vessels, processors, and reported catch.

2.2 Section 802 of the Consolidated Appropriations Act of 2004

Congress granted NMFS specific statutory authority to manage the Central GOA rockfish fisheries in Section 802 of the Consolidated Appropriations Act of 2004 (Public Law 108-199; Section 802). In Section 802, Congress required the Secretary of Commerce (Secretary) in consultation with the Council to establish the Central GOA Rockfish Pilot Program. The Pilot Program was developed by the Council and recommended to the Secretary to meet the requirements of Section 802, which states:

> *The Secretary of Commerce, in consultation with the North Pacific Fishery Management Council, shall establish a pilot program that recognizes the historic participation of fishing vessels (1996 to 2002, best 5 of 7 years) and historic participation of fish processors (1996 to 2000, best 4 of 5 years) for Pacific ocean perch, northern rockfish, and pelagic shelf rockfish harvested in Central Gulf of Alaska. Such a pilot program shall (1) provide for a set-aside of up to 5 percent for the total allowable catch of such fisheries for catcher vessels not eligible to participate in the pilot program, which shall be delivered to shore-based fish processors not eligible to participate in the pilot program; (2) establish catch limits for non-rockfish species and non-target rockfish species currently harvested with Pacific ocean perch, northern rockfish, and pelagic shelf rockfish, which shall be based on historical harvesting of such bycatch species. The pilot program will sunset when a Gulf of Alaska Groundfish comprehensive rationalization plan is authorized by the Council and implemented by the Secretary, or 2 years from date of implementation, whichever is earlier.*

2.3 Amendment 68 – Rockfish Pilot Program (2007 through 2011)

The Pilot Program was designed, based on the guidelines described in Section 802 of the Consolidated Appropriations Act, to improve resource conservation and improve economic efficiency by establishing cooperatives that receive exclusive harvest privileges. Four goals of the program were to 1) reduce bycatch and discards; 2) encourage conservation-minded practices; 3) improve product quality and value; and 4) provide stability to the processing labor force.

The Pilot Program allowed CPs to form their own cooperatives. Catcher vessels were allowed to form cooperatives in association with shoreside processors located in Kodiak. Catcher vessel cooperative contracts defined the requirements for deliveries to the associated cooperative processor. It is assumed that these contracts required delivery by member catcher vessels to the associated processor except under conditions agreed to by both parties. The cooperative agreements allowed shoreside processors and their associated catcher vessels to better time deliveries of rockfish and directed salmon harvests during the summer months.

The Pilot Program allocated harvest privileges to holders of LLP groundfish licenses with a history of legal Central GOA rockfish landings during the period defined in Section 802 of the Consolidated Appropriations Act. Table 1 of the proposed rule (71 FR 33043) defines the specific dates for each year that define the qualifying landings. Once Pilot Program Quota Shares (QS) were assigned to a specific LLP license they could not be divided or transferred separately from that LLP license. The LLP holder was allowed to assign the license and associated QS for use in a rockfish cooperative, limited access fishery, or opt–out fishery. After the LLP license holder assigned the LLP license to a cooperative and the cooperative application was submitted to NMFS, NMFS would allocate each cooperative an amount of cooperative quota (CQ) that was generated by the QS assigned to the cooperative.

Vessels were allocated a portion of the third season halibut PSC limit based on their aggregate use of halibut PSC during the qualifying years. The specific allocation method used by NMFS was described in the proposed rule for the Pilot Program. In summary, the sector's halibut mortality was the sum of all vessels PSC during the directed fishery for any primary rockfish species during all qualifying season dates determined sector PSC amount. The total halibut mortality was determined summing the halibut mortality

by all vessels in the Central GOA Regulatory Area from January 1, 1996 through December 31, 2002. Sector PSC amounts were divided by the total mortality to determine the portion of the halibut mortality assigned to each sector in the rockfish fishery. The amount of halibut PSC assigned to each cooperative was derived from the QS units assigned to that rockfish cooperative. To determine the CQ assigned to a cooperative, NMFS multiplied the halibut PSC amount allocated to that sector by the percentage of the aggregate primary rockfish species QS held by that cooperative in that sector.

Chinook salmon PSC limits were not set for cooperatives as part of the Pilot Program. Chinook salmon PSC limits had not been established for non-pollock fisheries in the GOA when the Pilot Program was implemented[2].

Pilot Program cooperatives were allowed to transfer all or part of their annual CQ allocation to other rockfish cooperatives. These transfers required that NMFS was notified of the transfer amount and who received the transfer so each cooperative's harvest limits could be determined. Transfers of CQ are only allowed for that calendar year, since QS may not be separated from the LLP license.

Post delivery transfers were allowed between cooperatives so CQ holdings could be adjusted to account for harvest overages. At the end of the calendar year a cooperative could not have a negative balance of CQ for any species or it would be in violation of the regulations governing the program. All post delivery transfers had to be completed by December 31 of the year fishing occurred. Vessels in a cooperative could not begin a new fishing trip for that cooperative unless the cooperative held unused CQ for all rockfish primary species and secondary species. This prevented cooperative members from speculatively fishing and assuming they could acquire CQ to cover that harvest prior to the end of the calendar year.

The Pilot Program provided an opportunity for a person not in a rockfish cooperative, but who holds an LLP license with QS, to fish in a limited access fishery for their sector. A separate limited access fishery was established for the catcher vessel and catcher/processor sector. The person assigning their LLP license to the limited access fishery was not granted a specific amount of fish to harvest, but competed with all eligible harvesters for TAC assigned to that limited access fishery. The TAC assigned to the limited access fishery was the total amount of fish assigned to all LLP licenses designated for the limited access fishery.

Section 802 specifically provided for ''a set-aside of up to 5 percent for the total allowable catch of such fisheries for catcher vessels not eligible to participate in the pilot program'' during the 1996 through 2002 eligibility time period. The Pilot Program established the entry level fishery. Entry level fisheries were established for both trawl and longline harvests of Central GOA rockfish. After deducting the ICA from the TAC, 5 percent of the primary rockfish species was set aside for the entry level fishery. Each gear type was allocated 2.5 percent of the available amount of the aggregate primary species. All of the Northern rockfish and pelagic shelf (dusky) rockfish in the entry level fishery was available for catch with longline gear. Trawl gear vessels were given access to the POP set-aside minus the amount needed for the longline fishery to have 2.5 percent of the primary species aggregate total. The longline sector set-aside was available for use on January 1 and the trawl set-aside May 1. Trawl participants were permitted to harvest any residual longline allocation after September 1. This was accomplished by allowing both sectors to fish off the combined remaining TACs beginning on September 1.

Vessels fishing the Pilot Program entry level allocation in Federal waters must have an LLP and must have registered for the entry level fishery. All vessels (both trawl and longline entry level vessels) that fished in the Federal fishery were prohibited from delivering their entry level species catch to a processor in a rockfish cooperative. Longline vessels that fished exclusively in parallel waters and did not have an LLP

[2] Sector limits for Chinook salmon PSC are currently part of the Rockfish Program, because PSC limits for Chinook salmon in the GOA non-pollock fisheries were established Amendment 97 to the GOA Fishery Management Plan and implemented for the 2015 fishing year.

or a federal fisheries permit were not required to register for the program, and they were allowed to deliver their catch to any processor - including processors qualified for the main program.

The Pilot Program required processors to meet eligibility requirements to receive any primary or secondary species harvested by a rockfish cooperative, or in a limited access fishery. Processors that do not meet these eligibility requirements could receive only primary rockfish harvested from the Central GOA under the entry level fishery. A shoreside processor or stationary floating processor must have received at least 250 metric tons in round weight equivalent of legally landed primary rockfish species each calendar year in any four of the five calendar years from 1996 through 2000 during the directed fishing season to qualify. The eligibility criteria for processors gave them an exclusive privilege to receive and process primary rockfish species and secondary species allocated to LLP licenses assigned to their cooperative.

Processors were limited in their ability to process catch outside the communities in which they have traditionally processed primary rockfish species and associated secondary species. This limitation was imposed to help protect the community of Kodiak from adverse impacts of a catch program that could increase flexibility of where catch was landed and processed.

Catcher/processor LLP license holders were allowed to opt–out of the Pilot Program, with certain limitations (e.g., sideboard limits). Any amount that would have been allocated to cooperatives by holders of LLP licenses that would have opted-out is redistributed among catcher/ processor sector participants in rockfish cooperatives and the limited access fishery. Eligible catcher/processors fishing in the limited access fishery were required to apply for that fishery by a defined date, in part to ensure NMFS could allocated TAC to appropriate. The allocation of rockfish primary species, and apportionment of a halibut PSC allowance to the limited access fishery, would be based on the rockfish histories of LLP licenses registered for participation in the fishery.

The Pilot Program established sideboard limits restricting LLP license holders with qualifying catch history from increasing harvests in specific fisheries outside the Central GOA rockfish fisheries. A more complete discussion of sideboard limits in both the Pilot Program and Rockfish Program are presented in Section 14. Sideboard limits were included as part of the program because it was understood that the cooperative structure would provide economic advantages to harvesters. Harvesters could use these economic advantages to increase their participation in other fisheries, adversely affecting the participants in those fisheries. Sideboards limited the total amount of catch in other groundfish fisheries that could be taken by eligible harvesters to historic levels, including harvests made in the State of Alaska parallel groundfish fisheries. Parallel fisheries are authorized by the State in its waters concurrent with the Federal fishery. Parallel fishery catches are deducted from the Federal TAC. Sideboards limit harvest in specific rockfish fisheries and the amount of halibut bycatch that can be used when fishing in rockfish cooperatives. General sideboards apply to all vessels and LLP licenses with associated legal landings that generated Rockfish QS. Additionally, specific sideboards apply to rockfish program catcher/processors, catcher vessels, and LLP licenses. Participants that fished in the limited access fishery and who accounted for less than 5% of the allocated catcher/processor history of Pacific ocean perch, were not subject to sideboard or stand-down restrictions, beyond the aggregate sector sideboards. Limited access fishery participants who accounted for 5% or more of the sector's Pacific ocean perch were required to stand down in the GOA, until 90% of the limited access Pacific ocean perch was harvested. Participants that fished in the limited access fishery and who accounted for less than 5% of the allocated catcher processor history of Pacific ocean perch, were not be subject to sideboard or stand-down restrictions, beyond the aggregate sector sideboards. Limited access fishery participants that accounted for 5% or more of the sector's Pacific ocean perch were required to stand down in the GOA, until 90% of the limited access Pacific ocean perch was harvested.

The Pilot Program also established monitoring and enforcement provisions to ensure that harvesters maintain catches within annual allocations and do not exceed sideboard limits. Provisions included, but were not limited to, increased observer coverage levels, new reporting requirements, and requirements to

check in and out of cooperatives. These specific provisions are described in greater detail in Section 17, primarily in terms of how they are currently being applied under the Rockfish Program.

The Pilot Program limited access fishery was supported by the third season trawl deep-water halibut PSC limit. No PSC limit was set for Chinook salmon as part of the Pilot Program or the limited access fishery, in part because there was no GOA Chinook salmon PSC limit established for non-pollock fisheries when the program was in place. PSC limits and PSC usage in the rockfish fisheries are described in greater detail in Section 7 and Section 6, respectively.

2.4 Amendment 88 – Rockfish Program (2012 through present)

The Rockfish Program is authorized for 10 years from January 1, 2012, until December 31, 2021. If the Council does not take positive action recommending continuation of the Rockfish Program management of the Central GOA rockfish fisheries will revert to the LLP license management structure.

2.4.1 Elements the same as the Pilot Program

The Council designed the Rockfish Program to meet the requirements for LAPPs in section 303A of the MSA. The Rockfish Program includes some similar implementation, management, monitoring, and enforcement measures to those developed under the Pilot Program. Measures that are similar to the Pilot Program are that the Rockfish Program (1) continues to assign QS and CQ to participants for primary and secondary species, (2) allows a participant holding an LLP license with rockfish QS to participate in forming a rockfish cooperative, (3) allows holders of catcher/processor LLP licenses to opt-out of rockfish cooperatives for a given year, (4) includes an entry level longline fishery, (5) establishes sideboard limits, and (6) includes additional monitoring and enforcement provisions beyond those required under management of the License Limitation Program.

2.4.2 Changes from the Pilot Program

Changes were made from the Pilot Program to improve the functionality of the Rockfish Program. Key differences between the Pilot Program and the Proposed Rockfish Program are described below as well as presented in Appendix 3, a summary table taken directly from the Final Rule for GOA Amendment 88[3].

Change the qualifying years for QS eligibility and allocation. For the Pilot Program, eligibility to receive QS of primary and secondary species was based on targeted legal qualifying landings made during the years 1996 through 2002. A person's primary species allocation was based on best 5 of 7 years of landings during the eligibility period. The Rockfish Program QS qualification was based on targeted legal landings during the years 2000 through 2006 or fishing in the entry level fishery during 2007, 2008, or 2009. The allocation of QS was based on the best 5 of 7 years from 2000 through 2006, or the number of years fished during the qualifying period for entry level fishery participants that did not qualify for QS based on history from 2000 through 2006.

The percentage of the primary species Central GOA TACs that were assigned to cooperatives under the Pilot Program and Rockfish Program vary. The changes are due to the amount of the ICA, which has increase over the years the program has been in place, and the entry level fishery set-asides. The entry level set-aside for the trawl fishery was removed under the Rockfish Program. The longline set-aside was decreased under the Rockfish Program. The formulas used to calculate the amount of the TAC assigned to cooperatives are presented below:

[3] 76 FR 81247

Pilot Program Allocation = TAC – ICA – Trawl Entry Level Fishery – Longline Entry Level Fishery
Rockfish Program Allocation = TAC – ICA - Longline Entry Level Fishery.

Assign primary and secondary species to rockfish cooperatives. Primary species QS is allocated to cooperatives based on the members QS. NMFS does not issue separate QS to an LLP license for the rockfish secondary species or halibut PSC under the Rockfish Program, nor did NMFS under the Pilot Program. The amount of those species allocated to a cooperative is based on the amount of primary species QS. Under the Pilot Program Pacific cod, sablefish, and thornyhead rockfish were allocated to cooperatives based on QS assigned to LLP license during the qualifying years. Shortraker/rougheye were allocated as a maximum retainable amount (MRA) that could not exceed 9.72 percent of the TAC. Pacific cod, trawl sablefish, and thornyhead rockfish are catcher vessel secondary species assigned to cooperatives under the Rockfish Program based on the percentage of the TAC assigned to the Rockfish Program and the percentage of the QS assigned to a person's LLP license. Shortraker and rougheye rockfish are managed under a maximum retainable amount (MRA). The percentage of the secondary species TACs assigned to the Rockfish Program are presented in Table 2-2.

Table 2-2 Allocations of secondary species under the Pilot Program and Rockfish Program

Sector/Species	Pilot Program	Rockfish Program
CV/Pacific cod	CQ based on primary species QS holdings within the sector	3.81 percent of Central GOA TAC
CV/rougheye rockfish	MRA: shortraker/rougheye may not exceed 2.0 percent of trip.	MRA: shortraker/rougheye may not exceed 2.0 percent of trip.
CV/trawl sablefish	CQ based on primary species QS holdings within the sector	6.70 percent of Central GOA TAC
CV/shortraker rockfish	MRA: shortraker/rougheye may not exceed 2.0 percent of trip or 9.72 percent of shortraker TAC	MRA: shortraker/rougheye may not exceed 2.0 percent of trip or 9.72 percent of shortraker TAC
CV/thornyhead rockfish	CQ based on primary species QS holdings within the sector	7.84 percent of Central GOA TAC
CP/Pacific cod	MRA 4.0 percent of trip	MRA 4.0 percent of trip
CP/rougheye rockfish	58.87 percent of Central GOA TAC	58.87 percent of Central GOA TAC
CP/trawl sablefish	CQ based on primary species QS holdings within the sector	3.51 percent of Central GOA TAC
CP/shortraker rockfish	30.03 percent of Central GOA TAC	40.0 percent of Central GOA TAC
CP/thornyhead rockfish	CQ based on primary species QS holdings within the sector	26.5 percent of Central GOA TAC

Sources: 71FR33048 and 76FR52168

The Pilot Program and Rockfish Programs managed catcher/processor Pacific cod using an MRA that is based on historic harvest rates. An MRA provided the fleet greater flexibility than a fixed allocation. Catcher/processors were also reported to have markets for rougheye and shortraker rockfish and as a sector retain a greater proportion of those species than catcher vessels. As a result the catcher/processor sector

was allocated a percentage of the TAC. Catcher/processors were reported to have harvested 43.2 percent of the Central GOA TAC of shortraker rockfish was harvested using 2000 through 2006 qualifying years. The Rockfish Program slightly reduced the percentage of the TAC to 40 percent of the Central GOA TAC to provide slightly more harvest opportunities for vessels in the catcher vessel sector and non-Rockfish Program participants. Concern was expressed that without the slight reduction catches by Rockfish Program catcher vessels and non-Rockfish Program fisheries could need to be constrained to prevent overharvest of the shortraker rockfish TAC. The MRA percentages recommended for the catcher vessel sector for shortraker and rougheye rockfish provide some flexibility for the harvesters in these sectors yet maintain harvests within historic levels.

The Pilot Program allocation of 58.87 percent of Central GOA TAC for rougheye rockfish was retained under the Rockfish Program, which was greater than the 34.3 percent of the rougheye rockfish catch retained by eligible catcher/processor LLP licenses from 2000 through 2006. Retaining the limit prevented unnecessary constrains on the catcher/processor cooperatives while targeting primary species.

Modify halibut PSC limits to cooperatives and create a conservation set aside that will remain unallocated. The halibut PSC limits for the Rockfish Program were modified to balance the need to provide adequate halibut PSC for use by rockfish cooperatives while recognizing LAPPs could reduce halibut PSC use. From 2000 through 2006, average halibut PSC mortality averaged 84.7 mt in the catcher/processor sector, and 134.1 mt in the catcher vessel sector. The Rockfish Program created a 74.1 mt halibut PSC limit for the catcher/processor sector and a 117.3 mt halibut PSC limit for the catcher vessel sector. Those amounts represent a 12.5% reduction from the amount of halibut mortality associated with each sector during the 2000 through 2006 qualifying period, which was prior to the LAPP being implemented. The remaining 27.4 mt (16.8 mt from the catcher vessel sector and 10.6 mt from the catcher/processor sector) that would otherwise have been allocated is not available for use by any trawl or fixed gear fishery and remains ''in the water'' to contribute to the halibut biomass. Like under the Pilot Program, halibut PSC limits are assigned to cooperatives based on the primary species QS attached to the LLP license.

Sideboard limits (in effect July 1 through July 31). Catcher vessels that were subject to AFA sideboard limits were exempted under the Pilot Program. That same exemption carried over into the Rockfish Program, but sideboard exemptions were also applied to vessels that were voluntary excluded from the Rockfish Program and vessels assigned an LLP license that was excluded from the Rockfish Program. Catcher vessels that were subject to crab program sideboard limits did not receive that exemption when the Pilot Program or Rockfish Program were implemented. When the Council considers future actions associated with the Rockfish Program it may want to consider removing crab sideboard limits associated with the Rockfish Program, since vessels harvesting Rockfish in the Central GOA are constrained by the Rockfish Program allocations.

Under the Pilot Program catcher vessels were prohibited from fishing in specific BSAI groundfish fisheries, rockfish in the West Yakutat and Western GOA areas, and deep and shallow-water complex halibut that was not set-aside for use in the Pilot Program. The Rockfish Program modified those sideboard limits to include just the primary rockfish species in the West Yakutat and Western GOA areas and just the non-rockfish deep-water complex species (arrowtooth flounder, deep water flatfish, and rex sole) that are harvested using the deep-water halibut PSC limit.

Catcher/processors were prohibited from fishing in the BSAI groundfish fisheries and the non-Pilot Program groundfish fisheries in the GOA. Those vessels were also prohibited from fishing species that would use halibut PSC in the deep and shallow-water complexes outside the Pilot Program PSC limit. The Rockfish Program maintained the prohibition on fishing species that would use halibut PSC in the deep and shallow-water complexes outside the Pilot Program PSC limit. However, the groundfish fishing restrictions were limited to primary rockfish species in the West Yakutat and Western GOA areas for Amendment 80 catcher/processors. Non-Amendment 80 catcher/processors were prohibited from fishing for primary rockfish species in those areas.

Restrict the entry level fishery to longline gear only. The entry level fishery for trawl vessels was eliminated under the Rockfish Program. Trawl vessels that took advantage of the entry level fishery during 2007, 2008, or 2009 were allocated QS.

The entry level fishery continues for harvesters that wish to fish for Rockfish Program primary species using longline gear. Longline gear includes hook-and-line, jig, troll, and handline. Any vessel that may legally fish with one of those gear types may fish in the entry level longline fishery. The start date for the entry level longline fishery is January 1 of each year. Participants are not be required to apply annually. The vessel operators were required to apply annually under the Pilot Program.

The initial allocation to the entry level longline fishery was smaller than under the Pilot Program. Under the Pilot Program, longline harvests never exceeded one percent of the TAC for any of the target species during the qualifying years. The Pilot Program amount was based on 2.5 percent of the primary species TACs. The Rockfish Program allocates a fixed amount of each species annually. Until 2017, the annual longline limit was 5mt of Pacific ocean perch, 5mt of northern rockfish, and 30mt of dusky/pelagic shelf rockfish. If the entry level fishery vessels harvest ≥90 percent of a species NMFS increases the next year's allocation by 5mt for Pacific ocean perch, 5mt for northern rockfish, or 20mt for dusky rockfish. Allocations to the limited entry fishery is limited to 1 percent of the Pacific ocean perch TAC, 2 percent of the northern rockfish TAC, or 5 percent of the dusky rockfish TAC. Because ≥90 percent of dusky limit was harvested in 2016, the entry level fishery limit for that species was increased to 50mt in 2017.

The final rule for the Rockfish Program stated that unlike catcher vessels fishing in cooperatives, participants in the entry level longline fishery may deliver their harvest to any shorebased processing facility in any community and are not restricted to delivery to a Kodiak processor. Requirements to deliver within the boundaries of Kodiak were thought to potentially discourage participants from attempting to develop the entry level longline fishery. Requiring entry level participants to comply with a landing requirement within the boundaries of Kodiak might present too great of an expense for the participants located around other Central GOA port and expose those participants, which typically fish with smaller vessels, to unacceptable safety risks.

Cooperative formation requirements. The Rockfish Program relaxed cooperative formation requirements to balance encouraging cooperative formation and providing flexibility for LLP license holders to form cooperatives with persons of their choice. To achieve these objectives the minimum number of LLP licenses with affixed rockfish QS required to form a cooperative was eliminated. However, only CQ could only be transferred to a cooperative with a minimum of two LLP licenses. There was no requirement that the LLP licenses are held by different persons. These changes were implemented to encourage cooperative formation by providing greater flexibility to transfer CQ to meet operational demands. The Rockfish Program also modified the Pilot Program that LLP license holders with rockfish QS designated for the catcher vessel sector form a cooperative only with the processor to whom a majority of their catch was delivered during 1996 through 2000. The Council modified this requirement because the specific requirement and authority provided in section 802 expired with the Pilot Program, and the Council determined their program goals could be achieved without that provision.

Kodiak delivery requirement. To address concerns raised by processors that the Rockfish Program would provide harvesters an undue competitive advantage and that they could use that potential advantage to deliver outside of the traditional port of Kodiak, the Rockfish Program included a requirement that all primary and rockfish secondary species CQ in the catcher vessel sector be delivered to a shorebased processor within the City of Kodiak. In addition to protecting traditional processors, the requirement is intended to protect the fishing community of Kodiak. During the 2000 through 2006 period, all catch landed shoreside was delivered within Kodiak.

Harvesters in a catcher vessel cooperative are not required to deliver to a specific processor. The Pilot Program permitted catcher vessels to form a cooperative only with the processor the catcher vessel made a majority of their deliveries during 1996 through 2000. The Rockfish Program modified the

requirement to allow catcher vessels to annually join the Kodiak based cooperative of their choice, regardless of where they had delivered rockfish in the past. This provision was modified because the specific requirement and authority provided by Congress to create that linkage in section 802 expired with the Pilot Program and NOAA GC has determined that the MSA does not provide that authority.

During the development of the Rockfish Program, the Council reviewed and considered a range of other options to address concerns raised by shorebased processors. Management measures considered included the linkage between shorebased processors and catcher vessel cooperatives required under the Pilot Program, allocations of harvest shares to processors, annual cooperative/processor linkages (which may be changed, without penalty or forfeiture), and caps on the amount of landings that may be processed by any single processor. Ultimately, the Council chose to recommend a specific landing requirement within the City of Kodiak and processing caps to preserve flexibility for harvesters to deliver to multiple markets. The Council's recommendation sought to maintain the traditional shorebased processing activity within Kodiak and limit the consolidation of processing effort among rockfish processors that was thought to potentially have detrimental impacts on processors traditionally active in the fishery and harvesters.

During development of the Rockfish Program the Council determined that harvester/processor linkages and allocation of harvesting quota to processors was not necessary or appropriate to meet the overall goals it established for the Rockfish Program. Harvesters and processors were thought to be able to coordinate/cooperate as they did under the Pilot Program. Maintaining those relationships would continue to reduce processing capacity conflicts with the salmon fishery that is active during summer months and provide a stable processing workforce by ensuring rockfish deliveries during May and June when other GOA fisheries are less active.

During development of the Rockfish Program it was assumed the program's structure would benefit processors since each cooperative is required to associate with a processor on an annual basis. That limited duration association would make it possible to define delivery arrangements. While those arrangements may limit where catcher vessels may deliver during the year they would only continue the next year if they are advantageous to the various cooperative members. Depending on the agreements reached by cooperative members, processors could develop markets and products to maintain annual associations.

Historical relationships between harvesters and processors are expected to influence the formation of cooperative/processor associations. Since the Rockfish Program deliveries are a relatively small component of the annual GOA deliveries for many catcher vessels, it will be important for those vessel operators to maintain a strong working relationship with their processor for other species (i.e., pollock, Pacific cod, and flatfish). These relationships are likely to be tested, if a processor fails to offer a competitive price.

Processors were thought to have an incentive to vertically integrate, if needed to secure a stable supply of landings in the rockfish fisheries. Vertical integration will be limited by excessive share caps. Changes in vertical integration will be reviewed in the changes in ownership section.

Implement a cost recovery program, except for the entry level longline fishery. The Rockfish Program is established under the provisions of section 303A of the MSA. Section 303A requires that NMFS collect fees for limited access programs to recover the actual costs directly related to the management, data collection and analysis, and enforcement activities. NMFS uses a portion of the cost recovery fees collected under the Rockfish Program to hire personnel to monitor rockfish landings. The rockfish catch monitoring and control plan (CMCP) specialist will monitor program deliveries to ensure compliance with the CMCP by any processor receiving program landings, assist processors with rockfish species identification to ensure accurate catch sorting and quota accounting, and report the findings to NMFS. Section 304(d)(2) of the MSA also limits the cost recovery fee so that it may not exceed 3 percent of the ex-vessel value of the fish harvested using CQ issued under the Rockfish Program. NMFS assess fees on the ex-vessel value of rockfish primary species and rockfish secondary species CQ harvested by rockfish cooperatives in the Central GOA when rockfish primary species caught by that vessel are deducted from the Federal TAC. The

cost recovery fees will not apply to the entry level longline fishery and opt-out vessels because those participants do not receive rockfish CQ.

NMFS determines the fee percentage that applies to landings made in the previous year by dividing the total Rockfish Program management, data collection and analysis, and enforcement costs (direct program costs) during the previous year by the total standard ex-vessel value of the rockfish primary species and rockfish secondary species for all rockfish CQ landings made during the previous year (fishery value). NMFS captures the direct program costs through an established accounting system that allows staff to track labor, travel, contracts, rent, and procurement. Using the fee percentage formula described above, the estimated percentage of program costs to value for the 2016 calendar year is 2.54 percent of the standard ex-vessel value. The fee percentage for 2016 is a decrease from the 2015 and 2014 fee percentage of 3.0 percent (81 FR 10591, March 1, 2016). The 2013 fee of 2.5 percent was about the same as the 2016 fee percentage. The fee percentage was the lowest (1.4 percent in 2012). Program costs for 2016 were lower than in 2015, in part because of reduced costs associated with observer coverage as a result of efficiencies achieved in the deployment of observers in the Rockfish Program. Additional information is provided in Section 17.3.

Establish a catch monitoring and control plan (CMCP) specialist. A shoreside processor receiving groundfish Rockfish Program rockfish must be a facility operating under an approved CMCP. The CMCP describes how landings can be monitored effectively by one individual, how scales will be tested and used, and ensures that adequate equipment/facilities are made available for individuals authorized by NMFS. NMFS uses a portion of the cost recovery fees to fund the CMCP specialist positions. Because cost recovery fees were not available at the start of the Rockfish Program NMFS funded the CMCP specialist position(s) until cost recovery fees were available.

The CMCP specialist monitors rockfish landings to provide impartial verification of a processor's adherence to its CMCP. The duties of the rockfish CMCP specialist does not overlap with those of the fishery observer. The rockfish CMCP specialist monitors program deliveries and is not be trained as an observer or requested to complete any observer duties such as verifying non-rockfish fish tickets, assisting vessel observers, or collecting biological or scientific data. The duties of the rockfish CMCP specialist are to monitor rockfish deliveries to ensure compliance with the CMCP of any processor receiving program landings, to assist processors with rockfish species identification to ensure accurate catch sorting and quota accounting, and to report the findings to NMFS. A shoreside processor is required to include a description in the CMCP of how the CMCP specialist would be notified of rockfish CQ deliveries. The CMCP specialist establishes a monitoring schedule so all or most deliveries are monitored. In the event of conflicting deliveries, the CMCP specialist determines which program deliveries will be monitored. Additional information on the impacts of the CMCP specialist are presented in Section 16.1.3.10.

3 Rockfish Program Duration and Review

The Rockfish Program was authorized for 10 years, until December 31, 2021. Consequences of including a sunset date were considered when the program was developed. Some of the issues discussed included:

- Analytical burdens.
    - a detailed review of the Rockfish Program prior to its expiration would be required after 5-years and would be required whether the program expired after 10-years or not.
    - a Council analysis to extend the Rockfish Program would substantially increase Council and Agency staff workloads. The formal extension of the program will require the normal process for amending FMPs.
- Regulatory burdens include the potential development of FMP or regulatory amendments to address proposed changes in the program, this includes drafting the proposed rule, final rule, and amending regulatory language. The change would be as simple as amending the sunset date or as complicated as restructuring the entire program.
- Uncertainty over the future management of the fishery would affect the rockfish industry and how it operates within the Rockfish Program.
    - limited duration could affect planning by both harvesters and processors
    - limited duration could affect investments by the sectors that may be beneficial under the Rockfish Program management, but less useful under LLP management.

The duration of the Rockfish Program is twice as long as the Pilot Program. The extra time was anticipated to allow for the opportunity to better evaluate the program's effectiveness. The Council determined that a formal review process was essential to the Rockfish Program to assess whether the Rockfish Program was achieving the goals of the MSA and the problem statement as identified in the EA/RIR. Review of the program will help determine whether the allocation of rockfish and associated incidental harvests were fair and equitable given participation in the fishery, historical investments in and dependence upon the fishery, and employment in the harvesting and processing sectors. Assessing changes in annual cooperative formation, changes in product value, the number and distribution of processing facilities, and stability or use of annual processor associations among catcher vessels. The Council would focus on the impact of this action on the harvesting and processing sectors, as well as on fishery dependent communities.

4 Cooperative Contracts and Reports

Under the Pilot Program and Rockfish Program all cooperatives have complied with the requirements for cooperative contracts and reports. Only cooperative members may harvest the rockfish cooperative's CQ. Membership is determined by the rockfish cooperative contract which must be signed by all its members. Violations of Rockfish Program contracts by a cooperative member may be subject to private civil claims by other members of the rockfish cooperative. NMFS does not enforce the cooperative contracts.

The rockfish cooperatives formed under the Rockfish Program are intended to conduct and coordinate harvest activities for their members. Rockfish cooperatives formed under the Rockfish Program are subject to antitrust laws. Collective price negotiation by a rockfish cooperative must be conducted within existing antitrust laws.

4.1 Overview of Rockfish Program Cooperatives

Five catcher/processor cooperatives were created under the Pilot Program (Table 4-1). Two catcher/processor cooperatives were active during the first three years of the Pilot Program and they consisted of five total LLP licenses and vessels. A third cooperative was formed in 2010. All five Pilot Program catcher/processor cooperatives were active during 2011, the last year of the Pilot Program.

Table 4-1 LLP licenses (vessels) assigned to each cooperative during the Pilot Program and Rockfish Program.

		Year										
Vessel	**Cooperative**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
CP	Cascade Unimak Rockfish Cooperative					2(2)						
	FCA Cooperative	3(3)	3(3)	3(3)	3(3)	3(3)	3(3)	3(3)	3(3)	3(3)	3(3)	5(4)
	Gulf of Alaska Rockfish Best Use Cooperative				2(2)	2(2)	8(7)	8(7)	8(7)	8(7)	8(7)	6(6)
	Trident Offshore Rockfish Cooperative Association	2(2)	2(2)	2(2)	3(3)	3(3)						
	USS Rockfish Cooperative					2(2)						
CP Total		5(5)	5(5)	5(5)	8(8)	12(12)	11(10)	11(10)	11(10)	11(10)	11(10)	11(10)
CV	Global Rockfish Cooperative						3(3)	2(2)	3(3)	3(3)	3(3)	3(3)
	I.S.A. Rockfish Cooperative	9(9)	9(9)	9(9)	10(10)	10(10)	6(6)	6(6)	6(6)	5(5)	6(5)	6(6)
	North Pacific Rockfish Cooperative	6(6)	6(6)	6(6)	6(6)	6(6)	10(9)	11(10)	12(11)	12(11)	12(11)	12(11)
	Ocean Beauty Seafood Incorporated Cooperative	8(7)	8(7)	8(7)	8(7)	8(7)	9(8)	8(7)	7(6)	7(6)	6(5)	6(5)
	Pacific Rockfish Cooperative						2(2)	2(2)	2(2)	2(2)	2(2)	2(2)
	Star of Kodiak Rockfish Cooperative	11(11)	12(12)	12(12)	12(12)	12(12)	11(10)	11(10)	11(10)	11(10)	11(10)	11(10)
	Western Alaska Fisheries Rockfish Cooperative	10(10)	10(10)	10(10)	10(10)	10(10)	5(5)	6(6)	5(5)	6(6)	6(6)	6(6)
CV Total		44(43)	45(44)	45(44)	46(45)	46(45)	46(43)	46(43)	46(43)	46(43)	46(42)	46(43)
Total all sectors		49(48)	50(49)	50(49)	54(53)	58(57)	57(53)	57(53)	57(53)	57(53)	57(52)	57(53)

Source: NMFS RAM Division Cooperative data

A total of 15 catcher/processor LLP licenses were issued primary species quota during the Pilot Program. Because of the change in the qualifying years, five of those LLP licenses were not issued QS under the Rockfish Program, and one catcher/processor LLP license that was not issued QS under the Pilot Program was issued QS under the Rockfish Program. These changes resulted in 11 catcher/processor LLP licenses being issued QS under the Rockfish Program.

Not all the catcher/processor LLP licenses that were issued quota during the Pilot Program were assigned to a cooperative. Modifying the program rules to create incentives for these LLP licenses to be assigned to a cooperative was a goal of the Rockfish Program. During 2011, 12 catcher/processor vessels and 12 catcher/processor LLP licenses were assigned to cooperatives.

Since the Rockfish Program was implemented, two catcher/processor cooperatives formed each year and all the catcher/processor LLP licenses issued primary species quota were assigned to one of those cooperatives. The LLP licenses and vessels were assigned to the same cooperatives each year until 2017. During 2017 two LLP licenses were moved from the Best Use Cooperative to the FCA Cooperative. Those licenses were held by M/V Savage and American Seafoods, Inc. The movement between cooperatives was

in part due to the sale of the Fishing Company of the Alaska and the need for one of the buyers to divest of an LLP license because the QS assigned to the LLP licenses they would have held would have put them over ownership cap.

A total of 55 CV LLP licenses were allocated primary species during either the Pilot Program (47 CV LLP licenses) or the Rockfish Program (46 CV LLP licenses). The CV LLP licenses were assigned to five cooperatives during the Pilot Program and seven cooperatives during the Rockfish Program. Nine CV LLP licenses that were issued primary species quota under the Pilot Program did not have a primary species allocation under the Rockfish Program. Eight CV LLP licenses that did not have an allocation under the Pilot Program were issued quota under the Rockfish Program. The difference in the number of LLP licenses with primary quota under the two programs was due to the different qualifying years to determine quota allocations and the inclusion of the limited entry fishery under the Pilot Program that allowed LLP licenses to be issued quota under the Rockfish Program.

4.2 Cooperative Contracts

A rockfish cooperative must have a membership agreement, or contract, that specifies how the rockfish cooperative intends to harvest its CQ. A copy of this agreement or contract must be submitted to NMFS with the cooperative's application for CQ. Those contracts allow NMFS to determine the annual allocation of CQ among the cooperatives that are formed each year.

Contracts are also used to enforce good fishing practices by its members. For example, contracts set acceptable halibut PSC rates by target fishery in the rockfish program fisheries. Halibut use rates are determined by cooperative members based on what the membership determines is achievable, while taking into account the rates necessary to harvest all CQ. Individual accountability is enforced through the cooperative. If a vessel exceeds the specified halibut PSC rates, the vessel operator is required to stop fishing until the vessel's fishing practices can be assessed by the appropriate representatives of the cooperative[4]. The catcher vessel cooperatives also implemented measures to minimize Chinook salmon PSC. For example, at the start of the fishing year each cooperative allowed only one or two vessels to fish at a time to gauge Chinook salmon encounters. The catcher vessel sector also implemented individual vessel Chinook salmon bycatch standards through the cooperatives contracts that were based on fish ticket counts of Chinook salmon. Cooperative avoidance plans assumed that controlling individual vessel behavior using fish ticket counts will keep the cooperative under the sector's Chinook limit. Recall that Chinook salmon is not allocated to cooperatives by NMFS, but is managed as a sector limit.

Cooperative contacts also define penalties when a person harvests more than their allocation within the cooperative. While cooperative contracts are not public documents, the 2016 catcher vessel cooperative reports indicate that when an individual exceeds their individual cooperative quota share (except by prior agreement) the person exceeding their harvest is required to pay 100 percent of the ex-vessel revenue generated from the overage directly to the member vessel company that covers the overage. This discourages all cooperative members from harvesting in excess of their portion of the CQ (Alaska Groundfish Data Bank, Inc, 2016).

4.3 Cooperative Reporting Requirements

The Pilot Program did not include a requirement for annual cooperative reports, but the Rockfish Program includes specific reporting requirements. All rockfish cooperatives must submit an annual cooperative

[4] Julie Bonny's April 2017: Rockfish Program catcher vessel cooperative report to the NPFMC for the 2016 fishing year

report to NMFS by December 15 of each year. Annual rockfish cooperative report must include at a minimum:

- The rockfish cooperative's CQ
- Sideboard limits (if applicable)
- Rockfish sideboard fishery harvests made by the vessels in the rockfish cooperative on an area and vessel level
- The rockfish cooperative's actual retained and discarded catch of CQ
- A description of the method used by the rockfish cooperative to monitor fisheries in which rockfish cooperative vessels participated
- A description of any private civil actions taken by the rockfish cooperative in response to any members that exceeded their allowed catch.

Each of the annual cooperative reports for all LAPPs, including the Rockfish Program, are available on the NPFMC website[5]. Because the Pilot Program did not require an annual cooperative report, that link currently has information for each catcher vessel and catcher/processor cooperative for the 2012 through 2016 fishing years.

[5]https://www.npfmc.org/cooperative-reporting/

5 TACs, Allocations, Harvests, and Transfers

5.1 TACs

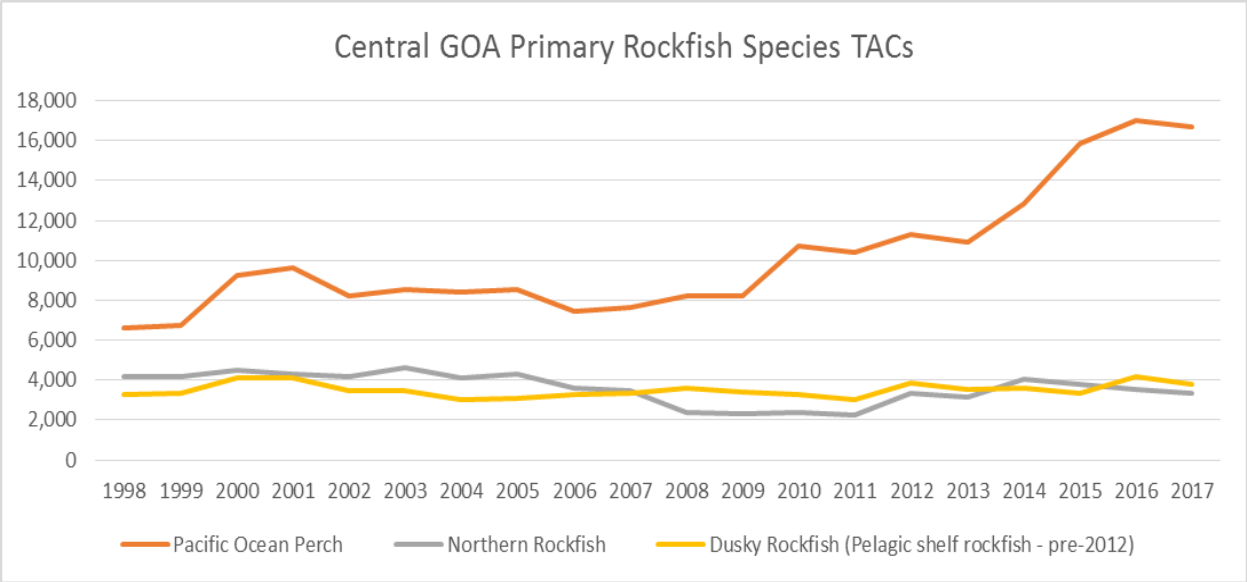
Total Allowable Catch (TAC) for species allocated under the Central GOA Rockfish Program are reported in this section for 1998 through 2017. Primary Rockfish Program species TACs are set equal to the Allowable Biological Catch (ABC). Over Fishing Levels (OFL) are set GOA-wide for Northern rockfish and dusky rockfish. OFLs for Pacific ocean perch are set for Southeast Outside and the combined Western, Central, and West Yakutat areas. Because there is no OFL set for the Central GOA it is not reported and the ABCs are not reported since they are equal to the TAC.

5.1.1 Primary Species

Central GOA TACs set for POP, Northern rockfish, and dusky/pelagic shelf rockfish are reported in Figure 5-1. Central GOA POP TACs ranged between 6,000 mt and 10,000 mt until 2010 and increased to over 17,000 mt in 2016. The TAC increases in TAC began in 2006 (the start of the Pilot Rockfish Program) and increased each year through 2016. The 2017 TAC decreased slightly from the 2016 TAC, but was the second largest TAC reported in the figure. Over the time period considered POP TACs ranged from 6,600 mt to 17,033 mt and the 2017 TAC was 6,518 mt above the 20-year average.

The Northern rockfish and dusky rockfish TAC remained fairly steady over the 20 years considered. Northern rockfish TACs ranged from 2,281 mt to 4,640 mt and the 2017 TAC was 242 mt below the 20-year average. Dusky rockfish TACs ranged from 3,010 mt to 4,147 mt and the 2017 TAC was 287 mt above the 20-year average.

Figure 5-1 Central GOA TACs (mt) for primary Rockfish Program species (1998 through 2017)



Source: NMFS Harvest Specifications Tables

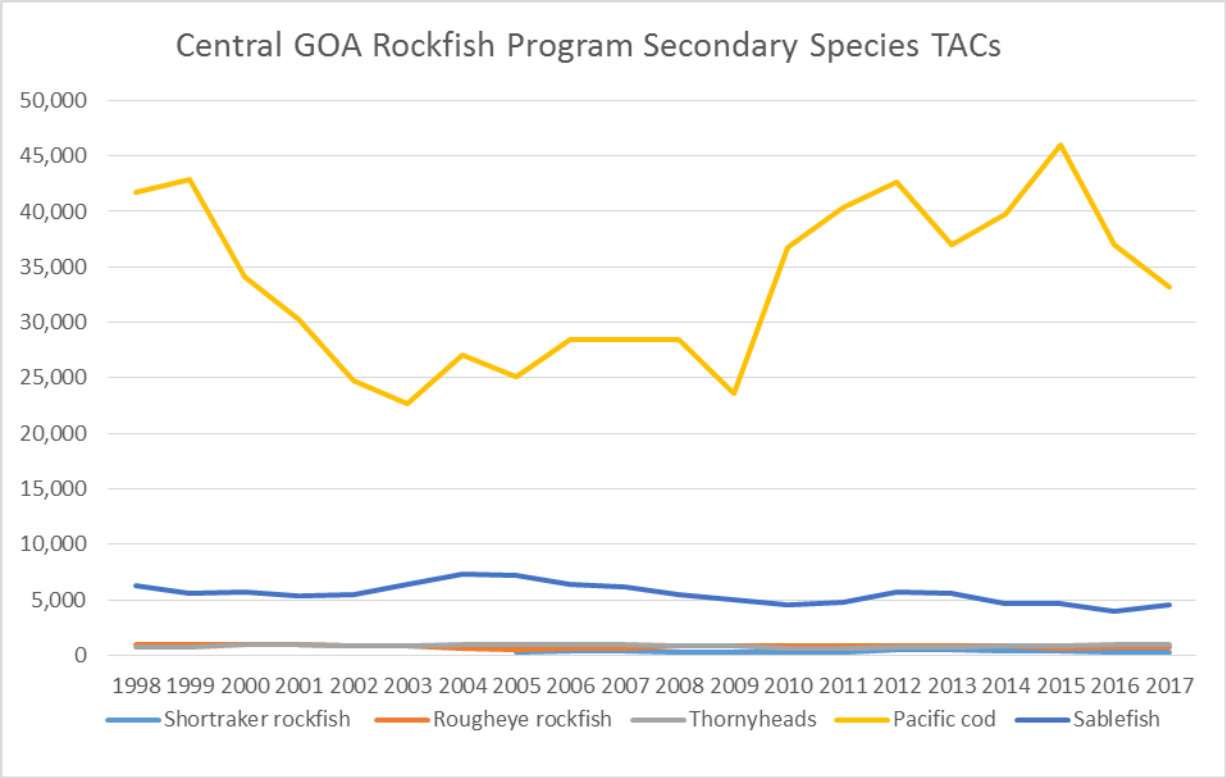
Primary species TACs are divided into four parts for the management of the Central GOA fishery. An Incidental Catch Allowance (ICA) is set to cover the catch of these species in other target fisheries. The 2017 ICA for POP, Northern rockfish, and dusky rockfish was 1,500mt, 300mt, and 250mt, respectively. The remainder of the TAC, after setting the ICA, is allocated to the longline gear entry level fishery, catcher

vessel cooperative quota, and catcher/processor cooperative quota. The quotas allocated to cooperatives and the entry level set-aside are discussed later in this chapter.

5.1.2 Secondary Species

Secondary species allocated under the Rockfish Program include three rockfish species, Pacific cod, and sablefish. The three rockfish species TACs are shown in Figure 5-2. Separate TACs for shortraker rockfish and rougheye rockfish are presented for 2005 through 2017. Prior to 2005 the TACs for the two species were combined. Pacific cod and sablefish are also included in the figure and the TACs are substantially larger than the rockfish species TACs. The amount of the Pacific cod TAC assigned to the Rockfish Program is relatively small (less than 4% of the TAC in 2017) and the size of the TAC (33,135 mt in 2017). The trawl portion of the sablefish TAC is included from the figure and accounts for about 10 percent of the 2017 TAC.

Figure 5-2 Central GOA TACs (mt) for secondary Rockfish species (1998 through 2017)



Source: NMFS Harvest Specifications Tables

Secondary Rockfish Program TACs varied over the periods considered. Thornyhead rockfish TAC in 2017 was closer to its high over the period than the other two species, shortraker was closer to its low, and rougheye was closer to its median. These species do not show a consistent trend of increase or decrease relative to each other over the period.

Secondary species TACs are divided between the cooperative quota and the non-Rockfish Program fisheries. A portion of the Pacific cod TAC is allocated to the CV cooperatives and the remainder is available to non-Rockfish Program participants. A portion of the shortraker and rougheye TACs are allocated to C/P cooperatives with the remainder available to the non-Rockfish Program fisheries. Portions of the sablefish and thornyhead rockfish TACs are allocated to the CV and C/P cooperatives, with the

remainder being allocated to the non-Rockfish Program fishery. Vessels that are members of the cooperatives may utilize the available non-Rockfish Program portion of the TACs after their cooperative checks out of the Rockfish Program by notifying NMFS.

5.2 Allocations

Allocations of Central GOA rockfish species are discussed in this section. Sector allocations are presented for both the longline entry level fishery and the trawl sectors. Allocations to LLP licenses and cooperatives are resented for the trawl fisheries. Tables for the trawl catcher vessels and trawl catcher/processors compare publicly available information on the change in the initial allocation they received under the Pilot Program and the Rockfish Program.

5.2.1 Entry Level Longline Fishery

The Rockfish Program includes a small entry level longline gear allocation that may be harvested by vessels using hook-and-line, troll, hand line, or jig gear. Pot gear is not included as a legal gear in this fishery. Entry level longline fishery vessels are not eligible to join cooperatives, are not allocated exclusive harvest privileges, and are not subject to cost recovery.

The trawl entry level fishery was eliminated when the Rockfish Program was implemented. Participants in the trawl entry level fishery under the Pilot Program were allocated Rockfish Program quota shares. As a result of that action, the Pacific ocean perch trawl allocation in Table 5-1 is listed as "n/a".

The amount of primary species available to the Rockfish Program entry level fishery is set annually in metric tons. The entry level fishery was set as a percentage of the TAC under the Pilot Program. When this change was made under the Rockfish Program the amount available to the entry level longline fishery was reduced, because it had not been harvested under the Pilot Program.

As noted in Table 5-1 the dusky rockfish allocation was increased in 2017 from 30 mt to 50 mt[6]. This was done to accommodate the increased catch that had been realized by the jig gear vessels harvesting from the entry level allocation during the previous year. Given that the dusky rockfish TAC is currently about 4,000 mt (Figure 5-1), the 50 mt allocation is about 1.3 percent of the TAC and about 25 percent of the maximum entry level allocation (200 mt at a TAC of 4,000 mt) allowed. The allocations of the other two species are also allowed to increase, but the entry level longline fishery has not taken 90 percent of the allocation of Pacific ocean perch or Northern rockfish, as of 2016.

Table 5-1 Entry Level Fishery Allocations (mt)

		Year										
		Pilot Program					Rockfish Program					
Species	Gear	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Dusky (pelagic shelf)	Fixed	161	176	165	157	148	30	30	30	30	30	50
Northern rockfish	Fixed	169	115	110	115	109	5	5	5	5	5	5
Pacific ocean perch	Fixed	17	54	63	120	119	5	5	5	5	5	5
Pacific ocean perch	Trawl	347	345	339	392	375	n/a	n/a	n/a	n/a	n/a	n/a
Pacific ocean perch	Total	364	399	402	512	494	5	5	5	5	5	5

Source: NMFS annual specifications tables

[6] The dusky rockfish (Pelagic Shelf Rockfish) allocation is increased by 20 mt if ≥ 90 percent of the allocation is harvested the previous year. The allocation is capped if the longline fishery reaches 5 percent of the TAC after deducting the incidental catch allowance. Pacific ocean perch and Northern rockfish allocations increase by 5 mt if ≥ 90 percent of the allocation is harvested the previous year, and is capped at 1 percent and 2 percent of the TAC, after deducting the incidental catch allowance, respectively.

"n/a" means it is not applicable because the allocation is no longer part of the program

Table 5-2 shows the reported catch of the primary Rockfish Program species in the Central GOA using longline gear. Catch and number of vessels in the table includes both directed catch in the state and federal rockfish target fisheries and incidental rockfish catch in the IFQ fisheries and state water Pacific cod fisheries. This method is used because catch of primary rockfish species taken in those fisheries is currently used to determine the overall longline entry level fishery catch. In the community impacts section of this document, the focus in on vessels and communities that are most directly impacted by the Rockfish Program. The vessels considered in that section are those vessels that target rockfish from the open access fisheries, as opposed to vessels that report small amounts of primary rockfish bycatch in other directed fisheries.

Table 5-2 Longline catch (mt) of primary species in the Central GOA, 2003 through May 23, 2017

	Hook-and-Line		Jig		Longline Total		% of 2017
Year	Catch	Vessels	Catch	Vessels	Catch	Vessels	Allocation
Pacific Ocean Perch							
2003	1	7			1	7	20%
2004	0	33			0	33	3%
2005	13	4			13	4	253%
2006	1	3			1	3	10%
2007	1	7			1	7	14%
2008	Conf.	Conf.			Conf.	Conf.	Conf.
2009	Conf.	Conf.			Conf.	Conf.	Conf.
2010	Conf.	Conf.	Conf.	Conf.	1	104	22%
2011	1	44			1	44	11%
2012	2	69			2	69	42%
2013	1	85			1	85	19%
2014	1	68			1	68	13%
2015	0	60			0	60	5%
2016	1	155			1	155	15%
2017	0	18			0	18	n/a
Dusky Rockfish (PSR)							
2003	2	17	7	17	9	33	19%
2004	1	15	52	23	53	37	107%
2005	18	12	19	19	37	29	74%
2006	0	14	12	16	12	30	24%
2007	2	32	33	17	36	48	71%
2008	2	27	14	14	17	41	33%
2009	2	28	6	22	8	49	17%
2010	4	43	7	18	11	59	21%
2011	3	41	10	26	14	66	27%
2012	3	58	3	20	6	78	12%
2013	8	162	16	24	24	181	48%
2014	5	223	14	21	20	240	39%
2015	9	232	19	34	28	257	55%
2016	11	286	46	45	57	318	113%
2017	5	67	11	21	16	87	n/a
Northern Rockfish							
2003	0	18			0	18	2%
2004	Conf.	Conf.	Conf.	Conf.	2	59	31%
2005	12	5			12	5	240%
2006	Conf.	Conf.	Conf.	Conf.	1	45	21%
2007	Conf.	Conf.	Conf.	Conf.	1	44	12%
2008	2	16			2	16	36%
2009	2	78			2	78	37%
2010	2	74			2	74	36%
2011	Conf.	Conf.	Conf.	Conf.	6	108	116%
2012	0	3			0	3	6%
2013	Conf.	Conf.	Conf.	Conf.	4	111	79%
2014	Conf.	Conf.	Conf.	Conf.	1	132	16%
2015	1	78			1	78	27%
2016	Conf.	Conf.	Conf.	Conf.	2	71	44%
2017	4	20			4	20	n/a

Source: AKFIN Summary of NMFS CAS data

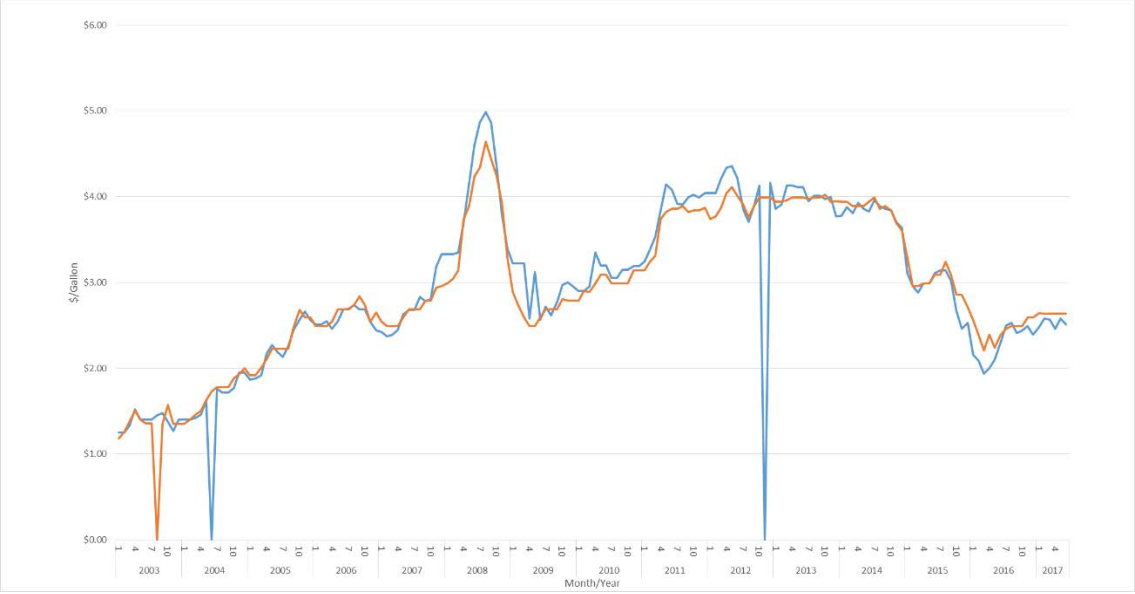
Note: "Conf." means that 3 or fewer vessels reported landings.

The catch of dusky rockfish in 2016 exceeded the sector's allocation, even when the increased allocation was considered. If that trend continues in 2017, the entry level longline fishery could again be increased in 2018 by 20 mt, to 70 mt. However, if dusky rockfish catch increases at the rate experienced in 2016, the allowed increase may be insufficient to meet the demand from the longline entry level fishery. When the Council considers reimplementation of the overall program this may be an issue it could consider.

Diesel prices are also an important component in determining whether it is profitable for longline (jig) vessels to target rockfish. Figure 5-3 shows the reported price per gallon by month from 2003 through May 2017 from one dock in Kodiak (orange line) and one dock in Homer (blue line). Prices from the two ports tend to track closely. A price of $0/gallon is reported in some months when PSMFC staff were unable to collect the price via the phone survey.

During years when diesel prices are lower, jig vessels tend to have more directed rockfish catch. Prior to 2006 and after 2014 diesel prices were relatively low and those years tended to have the greatest reported catch of rockfish species. Based on these trends, and assuming rockfish prices do not decrease dramatically, allocations to the longline sector are most likely to be under pressure to increase when diesel prices are in the $3/gallon range or less.

Figure 5-3 Dollars per gallon for commercial #2 diesel before tax as reported by dock in Homer and Kodiak, 2003 through May 2017



Source: PSMFC survey of dockside fuel prices
(http://www.psmfc.org/cgi-bin/download-file.cgi?url=http://www.psmfc.org/efin/data/fuelak.xls)

Table 5-3 provides greater detail on the catch of dusky rockfish in the Central GOA vessels using longline gear. The information indicates that when 2016 months are compared to 2017 months that are complete, the catch for 2017 is ahead of the pace in 2016. The data for May is not complete, so it is not appropriate to compare that month. However, as discussed earlier, the longline allocation of dusky rockfish may need to be increased again in 2018.

Table 5-3 Monthly catch (mt) of Central GOA dusky rockfish (PSR) by longline vessels, 2003 through May 23, 2017

	Month												
	1	2	3	4	5	6	7	8	9	10	11	12	Total
Year	Vessels (#)												
2003	c	5	5	4	16	4	c	c	c	c			33
2004	c	c	c	6	19	7	8	10	4	c			37
2005		c	c	17	7	4	10	5	4	c	c		29
2006	c	c	7	9	7	6	4	7	c	3	c	c	30
2007	c	6	c	4	10	16	7	7	6	8	5	c	48
2008	c	6	6	5	9	10	6	6	5	4	4		41
2009	5	8	9	8	7	9	10	5	13	8			49
2010	c	5	c	11	8	12	11	8	15	9			59
2011	10	5	10	19	18	14	6	5	11	7	c	c	66
2012	c	10	25	11	17	7	11	13	4	6	c		78
2013	40	40	18	21	14	11	17	29	27	78	32	20	181
2014	26	47	30	12	23	57	c	98	45	57	11	c	240
2015	15	58	61	59	117	38	31	75	39	9	5	7	257
2016	38	51	72	96	158	95	31	75	57	34	c	c	318
2017	38	53	45	29	10								87
	Catch (mt)												
2003	c	0	0	0	6	1	c	c	c	c	0	0	9
2004	c	c	c	1	16	3	8	20	3	c	0	0	53
2005	0	c	c	6	5	1	21	3	1	c	c	0	37
2006	c	c	0	3	3	1	2	0	c	0	c	c	12
2007	c	1	c	6	8	13	2	2	1	0	0	c	36
2008	c	0	3	1	3	3	1	6	0	0	0	0	17
2009	0	3	0	0	0	0	1	1	2	0	0	0	8
2010	c	3	c	0	0	2	3	0	1	0	0	0	11
2011	2	0	0	2	2	5	2	0	0	0	c	c	14
2012	c	1	1	0	0	0	1	1	2	0	c	0	6
2013	0	0	0	4	5	3	2	3	1	5	1	0	24
2014	2	3	1	1	1	0	c	5	2	2	2	c	20
2015	1	2	1	4	3	2	4	3	6	1	0	0	28
2016	1	2	3	4	12	8	7	5	6	8	c	c	57
2017	2	7	3	4	1								16

Source: AKFIN Summary of NMFS CAS data
Note: “c” means that 3 or fewer vessels reported landings and the data cannot be released

Table 5-4 shows the catch of dusky rockfish by management program. When the Rockfish Program was implemented, the Council’s action and the implementing regulations did not clearly define whether bycatch in the IFQ fishery, or other fisheries, should be included in the calculation of the total use in the entry level fishery. NMFS has included catch from the IFQ and State managed fisheries in the total catch. Including the IFQ fishery in the total catch has not had an impact in the decision to increase the catch limit to date. Also it is worth noting that the substantial increase in the number of vessels included in the IFQ fishery since 2013 is, at least in part, due to changes in the Catch Accounting System and the ability to track groundfish bycatch in the IFQ fishery.

Table 5-4 Catch of dusky rockfish with longline gear by management program, 2003 through May 23, 2017

	Year														
Fishery	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
IFQ Fishery															
Dusky Rockfish (mt)	2.4%	1.3%	4.4%	c	c	c	3.2%	6.4%	9.4%	32.7%	29.5%	22.7%	19.4%	13.8%	c
Vessels	5	8	8	10	28	16	24	34	27	45	131	194	201	268	38
Open Access															
Dusky Rockfish (mt)	97.6%	98.7%	95.6%	72.8%	21.2%	8.5%	23.1%	29.6%	45.8%	8.7%	39.0%	11.1%	40.2%	65.7%	28.8%
Vessels	28	29	21	20	12	11	10	11	20	16	58	59	68	67	53
State Manged Groundfish (other)															
Dusky Rockfish (mt)				c	14.4%	c	6.8%	60.1%	42.5%	48.2%	28.6%	61.7%	15.8%	13.8%	59.3%
Vessels				2	6	2	5	14	17	13	22	16	19	23	19
State Manged Pacific Cod															
Dusky Rockfish (mt)				20.5%	56.4%	13.7%	14.3%	c	c	c	c	c	c	c	c
Vessels				6	13	12	19	7	14	15	8	14	20	38	2
State Manged Sablefish															
Dusky Rockfish (mt)					c			c	c	c	c	c	c	c	
Vessels					1			1	1	3	3	2	1	3	

Source: AKFIN summary of CAS data
Note: "c" means that 3 or fewer vessels reported landings and the data cannot be released

5.2.2 Initial Allocations of Quota Shares to LLP Licenses

As described in Section 2.2, Section 2.3 and Section 2.4, the formula used to calculate the assignment of quota shares to LLP licenses was different under the Pilot Program and the Rockfish Program. The Pilot Program allocation was based on the historic participation of fishing vessels from 1996 to 2002 using the best 5 of 7 years and historic participation of fish processors from 1996 to 2000 using the best 4 of 5 years for primary species harvested in Central Gulf of Alaska. Allocations to LLP licenses under the Rockfish Program used targeted legal landings during the best 5 of 7 years from 2000 through 2006 (97.5 percent of the allocation) and the remaining 2.5 percent was allocated to LLP licenses that that participated in the entry level fishery during 2007, 2008, or 2009 and applied for a share of that quota.

5.2.2.1 Catcher Vessels

Allocations of primary species to catcher vessel LLP licenses under the Pilot Program and Rockfish Program are presented in Table 5-5. The initial allocation percentages were calculated by dividing the QS units of each primary species by the entire QS pool. The top line of the table show the percentage of the QS pool that is assigned to catcher vessel LLP licenses[7]. The "change" column is the difference between the percent of the QS pool assigned to that LLP license (sector in the top row of the table) under the Pilot Program and the Rockfish Program. The "change" column is highlighted to show whether the percentage of the QS pool for that species increased or decreased under the Rockfish Program. When the cell is shaded red the LLP license's percentage of the QS pool decreased under the Rockfish Program; when the cell is green the LLP license's percentage of the QS pool increased. There were two cases when the change cell was not shaded. A cell was not shaded when there was no change in the percentage of the QS pool assigned to the LLP license under the two programs. In both cases the LLP license was assigned zero QS units for that primary species under both programs.

Catcher vessel LLP licenses were assigned a slightly lower percentage of the Rockfish Program Northern Rockfish QS pool (a decrease of 2.18 percent). The percentage of the QS pool assigned to catcher vessel LLP licenses increased for Pacific ocean perch (10.35 percent) and dusky rockfish/pelagic shelf rockfish (16.27 percent). The change results in more total weight and value of rockfish being assigned to the catcher vessel sector under the Rockfish Program relative to the Pilot Program.

[7] Transfers between sectors played a role in the change in sector allocations.

At the LLP license level, 31 catcher vessel LLP licenses were allocated a smaller percentage of the Northern rockfish QS pool under the Rockfish Program than the Pilot Program, one LLP license was allocated no QS under both programs, and 23 LLP licenses were allocated a larger percentage of the QS pool. The percentage changes ranged from -3.05 percent to 2.60 percent. LLP licenses issued Pacific ocean perch QS showed that 21 had a reduced percentage allocation (up to -1.02 percent) and 34 had an increase in the percent of the QS pool they were allocated (up to 1.87 percent). The numbers were similar for pelagic shelf rockfish/dusky rockfish, with 20 LLP licenses allocated a smaller percentage (up to -1.14 percent), one receiving no allocation under either program, and 34 LLP licenses being allocated a larger percentage of the QS pool (up to 2.11 percent). These changes represent different levels of catch associated with the LLP license under the two qualifying periods.

Table 5-5 Allocations of primary species to CV licenses as percentage of primary species QS

		Northern Rockfish			Pacific Ocean Perch			Pelagic Shelf Rockfish		
	LLP	Pilot	RP	Change	Pilot	RP	Change	Pilot	RP	Change
	CV	61.36%	59.17%	-2.18%	49.61%	59.97%	10.35%	45.30%	61.57%	16.27%
ALASKA BEAUTY LLC	1590	0.26%	0.72%	0.46%	0.63%	0.95%	0.32%	0.45%	0.98%	0.53%
ALEUTIAN SPRAY REVERSE LLC	2554	0.36%	0.00%	-0.36%	0.37%	0.00%	-0.37%	0.14%	0.00%	-0.14%
ALVIN BURCH	2165	0.46%	0.66%	0.20%	1.04%	1.26%	0.22%	0.70%	1.07%	0.37%
ALVIN BURCH	2487	2.24%	1.70%	-0.54%	1.14%	1.35%	0.20%	1.90%	2.59%	0.69%
AMERICAN SEAFOODS CO LLC.	2394	0.00%	0.00%	0.00%	0.14%	0.00%	-0.14%	0.00%	0.00%	0.00%
B & N FISHERIES COMPANY	3594	3.58%	4.07%	0.49%	1.76%	3.62%	1.87%	1.09%	3.19%	2.11%
B & N FISHERIES COMPANY	3756	0.21%	0.00%	-0.21%	0.78%	0.00%	-0.78%	0.40%	0.00%	-0.40%
BAY ISLANDER, INC.	3504	0.23%	0.36%	0.12%	0.18%	0.00%	-0.18%	0.06%	0.14%	0.08%
BLACK SEA FISHERIES, INC.	2550	5.03%	7.63%	2.60%	2.14%	2.64%	0.50%	4.32%	5.75%	1.42%
CHANDLER FISHERIES, INC.	2535	3.68%	2.86%	-0.81%	1.73%	1.98%	0.25%	2.30%	3.35%	1.05%
CHELLISSA FISHERIES, LLC	1554	0.00%	0.51%	0.51%	0.00%	0.51%	0.51%	0.00%	0.51%	0.51%
DAVID DAHL	2319	0.00%	0.16%	0.16%	0.00%	0.97%	0.97%	0.00%	0.29%	0.29%
DEFIANT FISHERIES, INC.	2603	0.67%	1.44%	0.77%	0.62%	1.23%	0.61%	0.88%	2.00%	1.12%
DONA MARTITA LLC	2164	0.40%	0.00%	-0.40%	0.70%	0.00%	-0.70%	0.17%	0.00%	-0.17%
ELIZABETH F, INC.	1271	1.02%	0.59%	-0.43%	1.99%	2.22%	0.22%	0.95%	1.04%	0.09%
ELIZABETH F, INC.	1273	0.30%	0.18%	-0.12%	2.18%	1.76%	-0.42%	0.94%	0.79%	-0.15%
ENTERPRISE FISHERIES, LLC	1755	0.00%	0.13%	0.13%	0.00%	0.17%	0.17%	0.00%	0.07%	0.07%
EVENING STAR, INC.	2683	1.05%	0.93%	-0.12%	1.67%	2.45%	0.79%	0.67%	0.98%	0.31%
EVENING STAR, INC.	3600	1.80%	0.58%	-1.22%	1.85%	0.83%	-1.02%	0.94%	0.43%	-0.51%
EVENING STAR, INC.	3904	0.12%	0.00%	-0.12%	0.00%	0.00%	0.00%	0.01%	0.00%	-0.01%
EXCALIBUR II, LLC	3521	2.01%	1.53%	-0.48%	0.57%	1.82%	1.25%	0.88%	1.18%	0.29%
F/V GOLD RUSH FISHERIES LLC	3987	2.39%	1.83%	-0.56%	2.14%	2.26%	0.12%	0.95%	1.15%	0.20%
FUTURA FISHERIES, INC.	2565	1.80%	0.23%	-1.57%	1.87%	2.34%	0.47%	1.41%	0.75%	-0.65%
GILBERT, WILLIAM T JR	1905	0.16%	0.00%	-0.16%	0.06%	0.00%	-0.06%	0.00%	0.00%	0.00%
GOLDEN WEST FISHERIES, INC.	2973	0.64%	1.86%	1.22%	0.71%	1.26%	0.56%	0.72%	1.95%	1.24%
GREEN HOPE LLC	2188	3.57%	0.52%	-3.05%	1.42%	0.47%	-0.95%	2.28%	1.14%	-1.14%
ISLAND COHO, LLC	4851	0.56%	1.30%	0.74%	0.81%	1.10%	0.29%	0.46%	0.82%	0.36%
JAMES SCHONES	1523	1.84%	1.58%	-0.26%	1.11%	1.11%	0.01%	0.80%	0.95%	0.15%
LADY JOANNE, INC.	2222	0.16%	0.00%	-0.16%	0.32%	0.00%	-0.32%	0.04%	0.00%	-0.04%
LAURA FISHERIES JOINT VENTURE	3665	1.74%	2.76%	1.03%	1.68%	2.51%	0.83%	1.58%	2.45%	0.87%
LESLIE LEE, INC.	1183	1.98%	0.51%	-1.47%	2.20%	1.76%	-0.45%	0.70%	0.33%	-0.37%
LOUGHBEG FISHERIES, INC	1619	0.00%	1.53%	1.53%	0.00%	1.53%	1.53%	0.00%	1.53%	1.53%
M/V DEFIANT, INC.	3496	1.02%	2.04%	1.02%	0.65%	0.97%	0.32%	1.10%	2.10%	0.99%
MAGIC FISH CO.	1541	0.00%	0.21%	0.21%	0.00%	1.11%	1.11%	0.00%	0.25%	0.25%
MAR DEL NORTE, INC.	1841	0.92%	1.63%	0.72%	1.21%	1.48%	0.27%	0.57%	1.38%	0.81%
MAR PACIFICO, INC.	2696	1.44%	2.67%	1.24%	1.48%	1.97%	0.49%	1.33%	2.47%	1.13%
MARATHON FISHERIES, INC.	4465	3.73%	2.18%	-1.55%	2.45%	1.90%	-0.56%	2.48%	2.32%	-0.16%
MARCY J., INC.	2278	1.59%	2.17%	0.58%	0.72%	1.43%	0.71%	2.92%	3.69%	0.77%
MISS LEONA, INC.	1710	0.44%	0.00%	-0.44%	0.17%	0.00%	-0.17%	0.09%	0.00%	-0.09%
NEW LIFE FISHERIES, INC	1367	0.00%	1.40%	1.40%	0.05%	0.84%	0.79%	0.00%	1.53%	1.53%
NEW LIFE FISHERIES, INC	5201	2.05%	1.68%	-0.38%	1.78%	1.30%	-0.48%	1.80%	2.03%	0.22%
OCEAN STORM FISHERIES, INC.	3658	0.00%	0.01%	0.01%	0.00%	0.31%	0.31%	0.00%	0.23%	0.23%
PAC STAR, INC.	4852	4.54%	3.65%	-0.89%	1.99%	2.75%	0.75%	2.56%	3.30%	0.74%
PACIFIC DAWN LLC	2608	0.20%	0.00%	-0.20%	0.31%	0.00%	-0.31%	0.23%	0.00%	-0.23%
PACIFIC STORM FISHERIES, LLC	2882	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
PELAGIC RESOURCES, INC.	3764	0.30%	0.02%	-0.28%	0.37%	0.40%	0.03%	0.12%	0.06%	-0.06%
RELIANCE FISHERIES INC	2653	0.00%	0.00%	0.00%	0.12%	0.19%	0.08%	0.01%	0.02%	0.02%
RONDYS, INC.	3896	3.30%	1.33%	-1.97%	2.15%	1.95%	-0.20%	1.87%	1.25%	-0.62%
ROSELLA INC	2364	0.92%	0.61%	-0.31%	0.71%	0.68%	-0.02%	1.94%	1.89%	-0.05%
ROYAL VIKING, INC.	2636	0.43%	1.68%	1.25%	0.48%	1.23%	0.74%	0.56%	1.59%	1.02%
SEA MAC SEAFOODS, LLC	3785	0.00%	0.51%	0.51%	0.00%	0.51%	0.51%	0.00%	0.51%	0.51%
THOMAS TORMALA	2148	0.02%	0.01%	-0.01%	0.67%	0.34%	-0.33%	0.02%	0.02%	0.00%
TRAVELER FISHERIES LLC	3463	0.53%	0.16%	-0.37%	1.08%	1.53%	0.45%	0.12%	0.04%	-0.08%
TRIDENT SEAFOODS CORPORATION	2567	1.61%	1.01%	-0.59%	1.15%	0.74%	-0.41%	1.63%	1.26%	-0.37%
TRIDENT SEAFOODS CORPORATION	3144	0.07%	0.05%	-0.02%	0.25%	0.22%	-0.03%	0.20%	0.21%	0.01%

Source: https://alaskafisheries.noaa.gov/sites/default/files/reports/initialqsowners.csv

5.2.2.2 Initial Allocations of Primary Species to CP LLP Licenses

Allocations of primary species to catcher/processor LLP licenses under the Pilot Program and Rockfish Program are presented in Table 5-6. Because the allocations to the catcher/processor and catcher vessel sectors combined must equal 100 percent of the total QS pool for each primary species the change in the sector level allocations reported in the first row are same magnitude as the catcher vessels sector totals, but have opposite signs. For example, the change for Northern rockfish is 2.18 percent for both the catcher vessel sector and catcher/processor sector, but the change is negative for the catcher vessel sector and positive for the catcher/processor sector.

Table 5-6 Initial Rockfish Program Allocations to CP LLP Licenses as percentage of primary species QS

		Northern Rockfish			Pacific Ocean Perch			Pelagic Shelf Rockfish		
	LLP	Pilot	RP	Change	Pilot	RP	Change	Pilot	RP	Change
	CP	38.64%	40.83%	2.18%	50.39%	40.03%	-10.35%	54.70%	38.43%	-16.27%
ALASKA ALLIANCE, LLC	2905	0.40%	0.16%	-0.25%	0.36%	0.09%	-0.28%	0.27%	0.07%	-0.20%
ALASKA LEGACY, LLC	1802	0.66%	0.27%	-0.39%	0.18%	0.17%	-0.01%	1.61%	1.16%	-0.45%
ALASKA SPIRIT, INC.	3043	4.72%	4.96%	0.24%	9.65%	8.83%	-0.82%	3.42%	2.93%	-0.49%
ALASKA VICTORY, INC.	2080	1.82%	4.20%	2.38%	9.57%	10.41%	0.84%	0.70%	3.02%	2.32%
AMERICAN SEAFOODS CO LLC.	3838	0.09%	0.27%	0.18%	0.04%	0.10%	0.05%	0.57%	1.15%	0.57%
B & N FISHERIES COMPANY	3741	1.13%	0.00%	-1.13%	0.01%	0.00%	-0.01%	2.41%	0.00%	-2.41%
GOLDEN FLEECE, INC.	2524	0.00%	0.00%	0.00%	0.17%	0.00%	-0.17%	0.01%	0.00%	-0.01%
JUBILEE FISHERIES, INC.	1402	0.00%	0.00%	0.00%	0.05%	0.00%	-0.05%	0.00%	0.00%	0.00%
M/V SAVAGE, INC.	2014	4.11%	7.76%	3.65%	4.13%	1.95%	-2.18%	2.03%	4.90%	2.87%
NORTH PACIFIC FISHING, INC.	2028	7.13%	7.61%	0.49%	4.82%	5.65%	0.83%	12.23%	10.63%	-1.59%
OCEAN ALASKA, LLC.	4360	0.00%	0.17%	0.17%	0.00%	0.21%	0.21%	0.00%	0.13%	0.13%
SAN JUAN SEAFOODS, INC	3740	2.99%	0.00%	-2.99%	4.96%	0.00%	-4.96%	5.12%	0.00%	-5.12%
SAN JUAN SEAFOODS, INC	3744	2.36%	0.00%	-2.36%	3.83%	0.00%	-3.83%	6.19%	0.00%	-6.19%
THE FISHING COMPANY OF ALASKA, INC.	2083	4.94%	4.11%	-0.83%	6.07%	6.00%	-0.07%	1.83%	1.72%	-0.11%
U.S. FISHING, L.L.C.	3662	6.58%	10.85%	4.28%	4.64%	6.64%	1.99%	15.75%	11.93%	-3.82%
UNIMAK VESSEL, LLC	3957	1.72%	0.47%	-1.25%	1.89%	0.00%	-1.89%	2.55%	0.80%	-1.75%

Source: https://alaskafisheries.noaa.gov/sites/default/files/reports/initialqsowners.csv

A total of seven catcher/processor LLP licenses were allocated a smaller percentage of the Northern rockfish QS pool under the Rockfish Program than the Pilot Program, two LLP licenses were allocated no QS under both programs, and seven LLP licenses were allocated a larger percentage of the QS pool. The percentage changes ranged from -2.99 percent to 3.65 percent. Catcher/processor LLP licenses issued Pacific ocean perch QS showed that 11 had a reduced percentage allocation (up to -4.96 percent) and 5 had an increase in the percent of the QS pool they were allocated (up to 1.99 percent). In addition to the redistribution within the sector, the decrease is also due to 10.35 percent more of the QS pool being allocated to the catcher/vessel sector. Five pelagic shelf rockfish/dusky rockfish LLP catcher/processor licenses were allocated a smaller percentage (up to -6.19 percent), one receiving no allocation under both programs, and 11 catcher/processor LLP licenses were allocated a larger percentage of the QS pool (up to 2.87 percent). Like under the Pacific ocean perch discussion, more catcher/processor LLP licenses realized a reduced allocation percentage of the QS pool because the sector received a reduction of 16.27 percent of the overall QS pool.

5.2.3 Initial Annual Allocations Cooperatives

Each year cooperatives that have formed are allocated cooperative quota based on the LLP Licenses that are assigned to the cooperative. Cooperative quota has been assigned since 2007 when the Pilot Program was implemented. Tables in this section report in the initial allocation primary, secondary, and halibut PSC that was assigned to the catcher vessel and catcher/processor cooperatives that formed annually. Recall that

secondary and PSC species are allocated based on the primary species catch history during the qualifying period.

5.2.3.1 Primary species

The initial allocations of primary species to cooperatives are presented in Table 5-7. The allocations vary annually because of the LLP licenses assigned to the cooperative and the annual changes in the Central GOA TACs. The number of LLP licenses assigned to each cooperative is reported in Table 4-1. Figure 5-1 shows the Central GOA TACs for primary rockfish species.

Table 5-7 shows that in the catch/processor sector the assignment of quota to the limited access fishery declined after 2009. The last two years of the Pilot Program the Best Use Cooperative was formed and the quota previously assigned to the limited access fishery was assigned to that cooperative. When the Rockfish Program went into effect the limited access fishery was eliminated and all of the catcher/processor quota was assigned to either the Best Use Cooperative or the FCA cooperative. A goal of the Rockfish Program was to create incentives for the catcher/processor sector to fish within cooperatives instead of opting out of the program and fishing in the limited entry fishery. Based on 100 percent of the LLP licenses with QS being assigned to cooperatives, each year of the Rockfish Program, the changes implemented have been successful in achieving their objective.

Table 5-7 Initial allocations of primary species (mt) to cooperatives and the limited access fishery, 2007 through 2017.

			Year										
Species	**Desig**	**Co-op**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
Dusky Rockfish/ PSR	CP	Cascade Unimak Rockfish Cooperative					129						
		CGOA RPP CP Limted Access	1,072	1,199	1,142	211	359						
		FCA Cooperative	141	147	134	178	167	278	249	253	230	291	469
		Gulf of Alaska Rockfish Best Use Cooperative				837	442	1,115	997	1,013	923	1,168	846
		Trident Offshore Rockfish Cooperative Association	470	491	446	411	385						
		USS Rockfish Cooperative					53						
	CP Total		1,683	1,837	1,722	1,637	1,534	1,393	1,246	1,265	1,153	1,459	1,315
	CV	Global Rockfish Cooperative						13	11	37	33	42	38
		I.S.A. Rockfish Cooperative	173	189	177	173	162	271	243	246	200	349	315
		North Pacific Rockfish Cooperative	187	205	192	183	171	406	364	440	401	508	458
		Ocean Beauty Seafood Incorporated Cooperative	321	351	329	313	294	639	530	467	425	442	399
		Pacific Rockfish Cooperative						88	79	80	73	92	83
		Star of Kodiak Rockfish Cooperative	368	405	380	362	339	722	645	655	597	755	681
		Western Alaska Fisheries Rockfish Cooperative	331	362	339	323	303	162	186	163	173	219	198
	CV Total		1,380	1,512	1,417	1,355	1,270	2,301	2,057	2,089	1,903	2,408	2,171
Dusky Rockfish/PSR Total			3,064	3,350	3,139	2,992	2,804	3,694	3,303	3,354	3,056	3,867	3,486
Northern Rockfish	CP	Cascade Unimak Rockfish Cooperative					121						
		CGOA RPP CP Limted Access	704	524	508	155	152						
		FCA Cooperative	284	168	157	250	238	419	390	496	465	422	637
		Gulf of Alaska Rockfish Best Use Cooperative				299	136	871	809	1,031	965	877	584
		Trident Offshore Rockfish Cooperative Association	282	166	156	141	134						
		USS Rockfish Cooperative					22						
	CP Total		1,270	858	820	845	803	1,290	1,199	1,528	1,430	1,299	1,222
	CV	Global Rockfish Cooperative						17	16	29	27	25	23
		I.S.A. Rockfish Cooperative	224	153	146	160	152	210	195	249	226	296	279
		North Pacific Rockfish Cooperative	247	169	162	168	160	283	263	413	387	352	331
		Ocean Beauty Seafood Incorporated Cooperative	492	336	321	334	317	550	470	520	487	352	331
		Pacific Rockfish Cooperative						92	86	109	102	93	87
		Star of Kodiak Rockfish Cooperative	443	312	299	310	295	622	578	736	688	626	589
		Western Alaska Fisheries Rockfish Cooperative	535	365	349	363	345	157	186	228	220	200	188
	CV Total		1,940	1,335	1,277	1,335	1,269	1,931	1,793	2,284	2,137	1,943	1,827
Northern Rockfish Total			3,210	2,193	2,098	2,180	2,072	3,221	2,992	3,812	3,567	3,242	3,049
Pacific Ocean Perch	CP	Cascade Unimak Rockfish Cooperative					567						
		CGOA RPP CP Limted Access	1,045	1,414	1,432	663	459						
		FCA Cooperative	1,700	1,671	1,679	2,460	2,382	2,560	2,476	2,879	3,427	3,837	3,918
		Gulf of Alaska Rockfish Best Use Cooperative				921	442	1,500	1,452	1,688	2,009	2,249	1,831
		Trident Offshore Rockfish Cooperative Association	779	765	769	857	829						
		USS Rockfish Cooperative					51						
	CP Total		3,523	3,851	3,880	4,901	4,729	4,060	3,928	4,566	5,436	6,087	5,749
	CV	Global Rockfish Cooperative						205	178	483	575	644	608
		I.S.A. Rockfish Cooperative	601	659	664	881	850	907	878	1,020	967	1,477	1,395
		North Pacific Rockfish Cooperative	367	403	406	516	498	987	975	1,248	1,485	1,663	1,571
		Ocean Beauty Seafood Incorporated Cooperative	647	709	715	909	878	1,411	1,167	1,242	1,479	1,261	1,191
		Pacific Rockfish Cooperative						276	267	311	370	414	391
		Star of Kodiak Rockfish Cooperative	761	847	853	1,086	1,048	1,593	1,541	1,791	2,132	2,387	2,255
		Western Alaska Fisheries Rockfish Cooperative	1,019	1,117	1,126	1,432	1,382	919	1,088	988	1,424	1,594	1,506
	CV Total		3,395	3,735	3,764	4,824	4,656	6,298	6,093	7,084	8,432	9,441	8,917
Pacific Ocean Perch Total			6,918	7,586	7,644	9,725	9,385	10,358	10,021	11,650	13,868	15,528	14,666

Source: Annual cooperative allocations reported on the NMFS AKR website.
e.g. https://alaskafisheries.noaa.gov/sites/default/files/reports/17rpallocations.xls.

5.2.3.2 Secondary Species

Secondary species are allocated to cooperatives based on the primary species QS assigned to a cooperative. Therefore, the same trends reported in the primary species allocation to cooperatives are realized for the secondary rockfish species (Table 5-8). Shortraker and rougheye are not allocated to the catcher vessel cooperatives under the Rockfish Program because they are managed under an MRA.

Table 5-8 Initial allocations of secondary species (mt) to cooperatives, 2007 through 2017.

			Year										
Species	Desig	Cooperative	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Pacific Cod	CV	Global Rockfish Cooperative						35	28	68	78	63	56
		I.S.A. Rockfish Cooperative	87	87	72	117	129	212	183	198	194	216	194
		North Pacific Rockfish Cooperative	70	70	58	91	100	256	225	279	322	259	232
		Ocean Beauty Seafood Incorporated Cooperative	128	128	107	166	182	406	312	300	346	218	196
		Pacific Rockfish Cooperative						71	62	67	77	62	55
		Star of Kodiak Rockfish Cooperative	137	140	116	181	199	459	397	428	494	397	356
		Western Alaska Fisheries Rockfish Cooperative	165	165	137	214	234	188	202	179	241	194	174
	CV Total		587	590	491	768	843	1,627	1,408	1,517	1,752	1,409	1,262
Pacific Cod Total			587	590	491	768	843	1,627	1,408	1,517	1,752	1,409	1,262
Rougheye Rockfish	CP	Cascade Unimak Rockfish Cooperative					60						
		FCA Cooperative	117	145	142	183	185	237	239	242	177	198	242
		Gulf of Alaska Rockfish Best Use Cooperative				154	81	262	265	267	195	219	173
		Trident Offshore Rockfish Cooperative Association	86	107	105	98	98						
		USS Rockfish Cooperative					10						
	CP Total		203	251	248	435	434	499	504	509	372	416	416
Rougheye Rockfish Total			203	251	248	435	434	499	504	509	372	416	416
Sablefish	CP	Cascade Unimak Rockfish Cooperative					24						
		FCA Cooperative	87	70	62	70	74	96	92	78	78	67	92
		Gulf of Alaska Rockfish Best Use Cooperative				59	32	106	102	86	86	74	66
		Trident Offshore Rockfish Cooperative Association	64	51	46	37	39						
		USS Rockfish Cooperative					4						
	CP Total		150	121	108	166	173	202	194	164	163	141	158
	CV	Global Rockfish Cooperative						8	7	14	14	12	14
		I.S.A. Rockfish Cooperative	57	51	46	43	46	51	49	41	35	42	47
		North Pacific Rockfish Cooperative	46	41	37	34	35	62	60	58	58	50	56
		Ocean Beauty Seafood Incorporated Cooperative	84	75	68	61	65	97	83	63	62	42	47
		Pacific Rockfish Cooperative						17	16	14	14	12	13
		Star of Kodiak Rockfish Cooperative	90	82	74	67	70	110	106	89	89	77	86
		Western Alaska Fisheries Rockfish Cooperative	109	96	87	79	83	45	54	37	43	38	42
	CV Total		386	345	313	284	299	390	376	317	316	273	306
Sablefish Total			537	466	421	451	472	592	570	482	479	414	464
Shortraker Rockfish	CP	Cascade Unimak Rockfish Cooperative					11						
		FCA Cooperative	34	28	27	35	35	86	86	75	75	57	70
		Gulf of Alaska Rockfish Best Use Cooperative				30	15	95	95	83	83	63	50
		Trident Offshore Rockfish Cooperative Association	25	21	20	19	19						
		USS Rockfish Cooperative					2						
	CP Total		60	48	48	84	83	181	181	159	159	120	120
Shortraker Rockfish Total			60	48	48	84	83	181	181	159	159	120	120
Thornyhead Rockfish	CP	Cascade Unimak Rockfish Cooperative					17						
		FCA Cooperative	74	58	57	53	53	96	96	110	110	124	153
		Gulf of Alaska Rockfish Best Use Cooperative				44	23	107	107	122	122	137	109
		Trident Offshore Rockfish Cooperative Association	54	43	42	28	28						
		USS Rockfish Cooperative					3						
	CP Total		128	101	100	125	124	203	203	232	232	262	262
	CV	Global Rockfish Cooperative						1	1	3	3	3	3
		I.S.A. Rockfish Cooperative	16	14	14	11	11	8	8	9	8	12	12
		North Pacific Rockfish Cooperative	13	11	11	8	8	9	10	13	13	14	14
		Ocean Beauty Seafood Incorporated Cooperative	23	20	20	15	15	15	13	14	14	12	12
		Pacific Rockfish Cooperative						3	3	3	3	3	3
		Star of Kodiak Rockfish Cooperative	25	22	22	16	16	17	17	19	19	22	22
		Western Alaska Fisheries Rockfish Cooperative	30	26	26	19	19	7	9	8	9	11	11
	CV Total		106	93	93	69	69	60	60	69	69	77	77
Thornyhead Rockfish Total			234	194	192	194	193	263	263	300	300	339	339

Source: Annual cooperative allocations reported on the NMFS AKR website.
e.g. https://alaskafisheries.noaa.gov/sites/default/files/reports/17rpallocations.xls.

5.2.3.3 Halibut PSC

Under the Pilot Program, halibut PSC limits were allocated to LLP Licenses as a portion of the total GOA halibut mortality limit annually specified under § 679.21 based on historic halibut mortality rates in the primary rockfish species fisheries. The PSC limits associated with the LLP Licenses were assigned to cooperatives based on the cooperative the LLP License holder assigned the LLP License. Table 5-9 shows the cooperative allocations under the Pilot Program under the years 2007 through 2011. That table also shows the Rockfish program halibut PSC limits assigned to cooperatives for the years 2012 through 2017. The amount of halibut PSC associated with catcher/processors varied during the pilot program because owners of LLP Licenses did not assign all of the licenses to cooperatives each year. This is the reason the

PSC limits in the catcher/processor sector tend to be lower in 2007, 2008, and 2009, relative to 2010 and 2011. The primary difference being the formation of the FCA cooperative. Halibut PSC limits assigned to catcher vessel cooperatives were similar during the Pilot Program each year. This is expected since the catcher vessels were associated with the same cooperatives during this period, based on regulations developed for the program.

Table 5-9 Initial allocations of halibut PSC limits (mt) to cooperatives, 2007 through 2017

			Year										
Species	Desig	Cooperative	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Halibut	CP	Cascade Unimak Rockfish Cooperative					12.7						
		FCA Cooperative	35.3	31.9	31.5	39.1	39.2	35.2	35.2	35.2	35.2	35.2	35.2
		Gulf of Alaska Rockfish Best Use Cooperative				32.9	17.1	38.9	38.9	38.9	38.9	38.9	38.9
		Trident Offshore Rockfish Cooperative Association	26.0	23.6	23.2	20.8	20.9						
		USS Rockfish Cooperative					2.2						
	CP Total		61.3	55.5	54.7	92.9	92.1	74.1	74.1	74.1	74.1	74.1	74.1
	CV	Global Rockfish Cooperative						2.5	2.3	5.2	5.2	5.2	5.2
		I.S.A. Rockfish Cooperative	16.9	16.9	16.9	17.6	17.6	15.3	15.3	15.3	13.0	18.0	18.0
		North Pacific Rockfish Cooperative	13.7	13.7	13.7	13.7	13.7	18.5	18.7	21.5	21.5	21.5	21.5
		Ocean Beauty Seafood Incorporated Cooperative	25.0	25.0	25.0	25.0	25.0	29.3	26.0	23.2	23.2	18.2	18.2
		Pacific Rockfish Cooperative						5.1	5.1	5.1	5.1	5.1	5.1
		Star of Kodiak Rockfish Cooperative	26.8	27.3	27.3	27.3	27.3	33.0	33.1	33.1	33.1	33.1	33.1
		Western Alaska Fisheries Rockfish Cooperative	32.2	32.2	32.2	32.2	32.2	13.5	16.8	13.9	16.2	16.2	16.2
	CV Total		114.5	115.0	115.0	115.7	115.7	117.3	117.3	117.3	117.3	117.3	117.3
Halibut Total			175.8	170.5	169.7	208.6	207.9	191.4	191.4	191.4	191.4	191.4	191.4

Source: Annual cooperative allocations reported on the NMFS AKR website.
e.g. https://alaskafisheries.noaa.gov/sites/default/files/reports/17rpallocations.xls.

5.3 Harvest by Sector

Harvest by vessels that participated in the Central GOA rockfish fisheries is reported by sector in this section. Confidentiality limitations prohibit the reporting of catch and processing information at the vessel or processor level. Information cannot be released if it is reasonable to assume that a person with average knowledge of the fishery could:

1. identify an individual fisherman, determine the fisherman's harvest, or determine the specific location where the fisherman caught fish, or
2. identify an individual fish buyer or processor and determine the fish purchasing, processing, and sales activities of the buyer or processor.

The rule of "3" is typically used as a general guideline when aggregating catch or processing information. Aggregating landings of three or more harvesters and deliveries to three or more processors will sufficiently mask the data so that its release does not violate the confidentiality statute. Given the structure of the Rockfish Program and the location of the processors that take delivery of CQ, aggregation of information by sector is used in this program review to abide by the confidentiality requirements.

Table 5-10 and Table 5-11 report the catch of primary and secondary Rockfish Program species by trawl catcher vessels and trawl catcher/processors in the Central GOA, respectively. Primary species are listed first in the tables and then secondary species. Catch is reported by whether it was identified as being harvested under the Pilot Program/Rockfish Program or not in the CAS data. Catch is reported in metric ton and includes a count of vessels. All catch prior to 2007 was not part of the Pilot Program or Rockfish Program. Since 2007, catch is not considered part of the Pilot Program or Rockfish Program if it was harvested prior to May 1st, by vessels that opted out of the program or were not part of the program, or by vessels after their cooperative checked out of the program.

Table 5-10 Catcher vessel catch (mt) of primary and secondary species in the Central GOA, 2003 through 2016

Species/catch/vessels	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
When not fishing under the Pilot Program or Rockfish Program														
Pacific ocean perch														
Metric Tons	4,610	4,176	4,237	3,957	9	22	19	100	289	49	223	208	134	448
Vessel Counts	30	30	27	31	23	28	20	28	31	32	34	34	34	35
Dusky rockfish														
Metric Tons	1,270	1,257	975	930	21	25	10	16	58	31	42	41	27	53
Vessel Counts	29	29	30	30	24	25	26	29	30	30	33	33	33	34
Northern Rockfish														
Metric Tons	2,743	2,034	1,689	1,719	44	54	15	25	44	41	93	49	64	54
Vessel Counts	28	28	27	28	23	27	20	25	24	32	32	21	28	33
Pacific cod														
Metric Tons	11,387	11,301	7,635	5,234	7,373	10,259	6,736	13,412	10,604	7,540	8,162	9,716	11,839	6,878
Vessel Counts	32	32	32	31	32	32	31	31	34	34	33	34	34	36
Rougheye rockfish														
Metric Tons	37	37	19	46	29	29	19	23	19	19	16	19	13	20
Vessel Counts	21	18	28	25	19	22	23	27	25	25	24	30	28	27
Shortraker rockfish														
Metric Tons	76	20	19	48	38	37	4	5	8	4	2	3	6	8
Vessel Counts	20	21	24	28	19	18	14	15	15	7	14	12	10	20
Thornyhead rockfish														
Metric Tons	81	50	44	41	2	13	16	28	23	7	20	106	35	40
Vessel Counts	25	28	23	24	10	9	12	15	19	14	12	11	10	18
Sablefish (blackcod)														
Metric Tons	489	514	427	393	20	26	39	89	164	37	36	136	114	206
Vessel Counts	30	31	32	31	26	27	25	25	28	27	17	22	32	34
CV Metric Tons	20,693	19,388	15,044	12,368	7,536	10,465	6,857	13,698	11,210	7,730	8,593	10,278	12,231	7,707
CV Vessel Counts	32	32	32	32	32	32	31	31	34	35	34	34	34	36
Fishing under the Pilot Program or Rockfish Program														
Pacific ocean perch														
Metric Tons					4,486	4,497	4,561	5,911	5,641	6,242	6,012	7,048	8,347	9,390
Vessel Counts					27	27	26	27	25	28	29	28	28	26
Dusky rockfish														
Metric Tons					1,589	1,596	1,491	1,267	839	2,000	1,487	1,391	1,177	1,802
Vessel Counts					26	27	26	27	25	28	28	28	28	26
Northern Rockfish														
Metric Tons					2,146	1,348	1,294	1,134	866	1,812	1,314	1,649	1,239	1,811
Vessel Counts					26	27	23	27	25	27	26	26	24	25
Pacific cod														
Metric Tons					290	576	478	771	705	796	490	1,358	791	196
Vessel Counts					27	25	26	27	25	27	29	28	27	27
Rougheye rockfish														
Metric Tons					8	4	9	4	8	14	9	5	9	3
Vessel Counts					19	17	19	16	15	15	16	18	21	18
Shortraker rockfish														
Metric Tons					5	11	3	5	9	3	11	8	8	17
Vessel Counts					11	13	12	14	16	16	19	15	17	15
Thornyhead rockfish														
Metric Tons					48	45	36	34	41	36	63	46	43	42
Vessel Counts					26	24	24	27	25	28	25	25	24	26
Sablefish (blackcod)														
Metric Tons					468	395	416	348	351	373	368	319	307	271
Vessel Counts					26	26	25	27	25	28	27	27	25	26
CV Metric Tons					9,039	8,472	8,289	9,473	8,461	11,276	9,754	11,824	11,920	13,531
CV Vessel Counts					27	27	26	27	25	28	29	28	28	27
Total CV Metric Tons	20,693	19,388	15,044	12,368	16,575	18,937	15,146	23,171	19,671	19,006	18,347	22,102	24,152	21,238
Total CV Vessel Counts	32	32	32	32	32	32	31	31	34	35	34	34	34	36

Source: AKFIN summary of CAS data

Table 5-11 Catcher/Processor catch (mt) of primary and secondary species in the Central GOA, 2003 through 2016

Species/catch/vessels	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
When not fishing under the Pilot Program or Rockfish Program														
Pacific ocean perch														
Metric Tons	1,957	2,894	2,843	2,699	2,653	Conf.	120	704	Conf.	189	301	Conf.	Conf.	Conf.
Vessel Counts	6	6	9	5	5	3	4	6	3	4	4	3	3	3
Dusky rockfish														
Metric Tons	695	674	595	604	Conf.	Conf.	Conf.	Conf.	Conf.	Conf.	38	Conf.	Conf.	Conf.
Vessel Counts	7	6	8	5	3	1	3	2	3	3	4	3	3	3
Northern Rockfish														
Metric Tons	1,582	1,329	1,586	1,653	Conf.	Conf.	Conf.	126	Conf.	Conf.	9	Conf.	Conf.	Conf.
Vessel Counts	6	6	8	4	3	2	3	4	3	3	4	3	3	3
Pacific cod														
Metric Tons	901	492	485	475	202	273	646	172	Conf.	806	878	765	Conf.	Conf.
Vessel Counts	8	8	8	6	4	7	8	5	3	5	5	4	3	3
Rougheye rockfish														
Metric Tons	82	34	42	Conf.	19	15	15	6	Conf.	5	3	Conf.	Conf.	Conf.
Vessel Counts	8	9	5	3	4	5	6	6	3	4	4	3	3	2
Shortraker rockfish														
Metric Tons	410	92	124	120	Conf.	24	41	Conf.	Conf.	Conf.	Conf.	Conf.	Conf.	Conf.
Vessel Counts	9	9	6	4	3	5	7	3	3	2	2	3	3	1
Thornyhead rockfish														
Metric Tons	439	181	173	151	53	45	34	6	Conf.	2	10	Conf.	Conf.	Conf.
Vessel Counts	9	9	7	5	4	6	7	5	3	4	4	3	3	3
Sablefish (blackcod)														
Metric Tons	348	275	353	188	146	101	94	82	Conf.	56	63	Conf.	Conf.	Conf.
Vessel Counts	9	9	8	5	4	6	7	5	3	4	4	3	3	3
Fishing under the Pilot Program or Rockfish Program														
Pacific ocean perch														
Metric Tons						2,936	2,963	3,338	3,207	4,013	3,756	4,504	5,317	6,062
Vessel Counts						7	8	4	4	5	5	5	4	5
Dusky rockfish														
Metric Tons						1,184	583	955	758	1,361	1,166	1,255	1,144	1,151
Vessel Counts						5	7	4	4	5	5	5	4	5
Northern Rockfish														
Metric Tons						616	627	518	532	1,280	1,075	1,519	1,432	1,265
Vessel Counts						6	8	4	4	4	5	5	4	5
Pacific cod														
Metric Tons								172	127	197	225	164	325	183
Vessel Counts								4	4	5	5	5	4	5
Rougheye rockfish														
Metric Tons						Conf.	Conf.	84	238	258	268	428	241	321
Vessel Counts						2	2	4	4	5	5	5	4	5
Shortraker rockfish														
Metric Tons						Conf.	Conf.	23	58	170	183	148	133	102
Vessel Counts						2	2	4	4	5	5	5	4	5
Thornyhead rockfish														
Metric Tons						Conf.	Conf.	47	38	44	68	139	161	252
Vessel Counts						2	2	4	4	5	5	5	4	5
Sablefish (blackcod)														
Metric Tons						Conf.	Conf.	126	113	193	175	161	148	128
Vessel Counts						2	2	4	4	5	5	5	4	5
C/P Metric Tons	6,413	5,971	6,201	5,900	4,726	5,347	5,208	6,496	6,705	8,639	8,224	9,767	9,728	9,873
C/P Vessel Counts	9	9	9	6	5	8	9	8	6	8	8	7	5	6

Source: AKFIN summary of CAS data

5.4 Processing by Sector

Information reported in the harvest section reflects the amount of fish processed by the shorebased and offshore sectors. All of the offshore processors were defined as catcher/processors until 2016, when two motherships reported processing very small amounts of bycatch of the primary species in the arrowtooth flounder fishery. Table 5-12 reports the number of plants (unique counts of Intent to Operate codes) that processed the three primary rockfish species harvested with trawl gear from the GOA. The number of catcher/processors in the Pilot Program and Rockfish Program have been relatively stable, with either four or five catcher/processors reporting targeted catch of primary rockfish species since 2010, when the sector assigned almost all the allocation to cooperatives. Between six and nine catcher/processors reported catch of these species in the GOA open access fisheries.

Between seven and 12 shorebased plants took deliveries of the three primary rockfish species between 2003 and 2016. The number of plants has declined in recent years from 12 in 2012 to eight in 2016. Fewer plants were active in the Pilot Program and Rockfish Program. Those plants were generally discussed in Table 5-7.

Table 5-12 Number of plants that took deliveries of the three primary rockfish species, 2003 through 2016.

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	Total
Catcher/Processors	**9**	**8**	**9**	**6**	**7**	**8**	**9**	**8**	**9**	**8**	**7**	**7**	**6**	**8**	**9**
Open Access	*9*	*8*	*9*	*6*	*6*	*6*	*7*	*8*	*9*	*8*	*6*	*6*	*6*	*7*	*9*
Pacific ocean perch	8	8	9	6	5	6	7	8	9	8	6	6	6	7	9
Dusky rockfish	9	8	8	6	5	5	7	8	9	8	6	6	5	7	9
Northern rockfish	9	8	8	4	5	4	7	7	8	7	5	5	4	6	9
Rockfish Program					*2*	*7*	*8*	*4*	*4*	*5*	*5*	*5*	*4*	*5*	*9*
Pacific ocean perch					2	7	8	4	4	5	5	5	4	5	9
Dusky rockfish					2	5	7	4	4	5	5	5	4	5	8
Northern rockfish					2	6	8	4	4	4	5	5	4	5	9
Motherships														**2**	**2**
Open Access														*2*	*2*
Pacific ocean perch														2	2
Dusky rockfish														2	2
Northern rockfish														2	2
Shorebased	**7**	**8**	**9**	**9**	**11**	**8**	**8**	**11**	**10**	**12**	**10**	**10**	**9**	**8**	**22**
Open Access	*7*	*8*	*9*	*9*	*10*	*8*	*8*	*10*	*10*	*12*	*10*	*10*	*8*	*7*	*22*
Pacific ocean perch	7	7	9	7	10	8	8	10	10	12	10	10	7	7	19
Dusky rockfish	7	7	8	8	10	6	7	9	10	10	9	8	6	6	19
Northern rockfish	6	7	8	8	8	8	8	7	9	9	8	7	8	7	18
Rockfish Program					*8*	*6*	*6*	*8*	*8*	*7*	*7*	*7*	*7*	*6*	*11*
Pacific ocean perch					8	6	6	8	8	7	7	7	7	6	11
Dusky rockfish					6	6	6	8	8	7	7	7	7	6	11
Northern rockfish					6	6	6	7	8	6	7	7	7	6	11

Source: AKFIN summary of CAS data
Note: The two motherships that are reported to have taken deliveries of the primary Central GOA rockfish species in 2016, were taking deliveries from the arrowtooth flounder target fishery that had primary rockfish species as bycatch.

Additional information on the processing sector is provided in Sections 5.3 (harvest by sector), 9 (products and markets), 10 (revenue), 12 (ownership), and 13 (communities) of this document. Those sections provide greater detail on variety of topics. Detailed breakouts of processing activity for each sector are not reported in this document due to the limited number of firms and communities that are involved in Central GOA rockfish processing. Finer breakouts than the sector level would disclose confidential information.

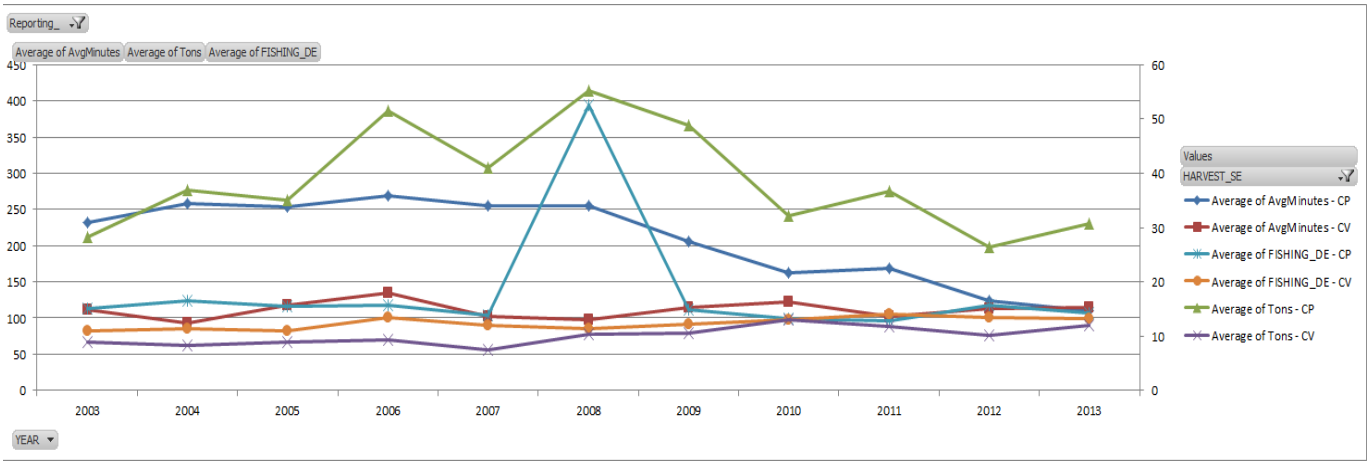
6 Reductions in Sea Floor Contact

A goal of the Pilot Program and Rockfish Program was to reduce trawl gear impacts on the sea floor and the organisms that live there. This section was prepared by NMFS Habitat Division staff to describe those impacts. Information is also presented in Appendix 2. That section draws from information that was prepared for the Essential Fish Habitat 5-year review and focuses on the GOA Pacific ocean perch and Northern rockfish fisheries.

For the 2015 Essential Fish Habitat 5-year Review, a Fishing Effects (FE) model was developed by the NMFS Alaska Region Office – HCD and partners at Alaska Pacific University to estimate the effects of commercial fishing activities on marine habitats. The FE model is a cumulative effects model that incorporates habitat impacts and recovery at a monthly time step utilizing Vessel Monitoring System (VMS) data. VMS data is available for most GOA vessels starting in 2003. For the purposes of this analysis, we considered 2003-2006 Limited Access Fishery; 2007-2011 Rockfish Pilot Program; and post-2012 the Rockfish Program.

While it is possible to calculate the amount of habitat impact in terms of habitat reduction for tows identified as Rockfish target, some initial data analysis Figure 6-1 reveals there is very little difference in duration of hauls, fishing depth, or tons of catch for both catcher vessels and catcher/processer vessels over the time series from 2003-2013. The cause of the 2008 increase in fishing depth for catcher/processors is uncertain.

Figure 6-1 Average trawl minutes fished, fishing depth, and tons of catch by catcher/catcher-processor vessels, 2003-2013.



Source: Fishing Effects Model

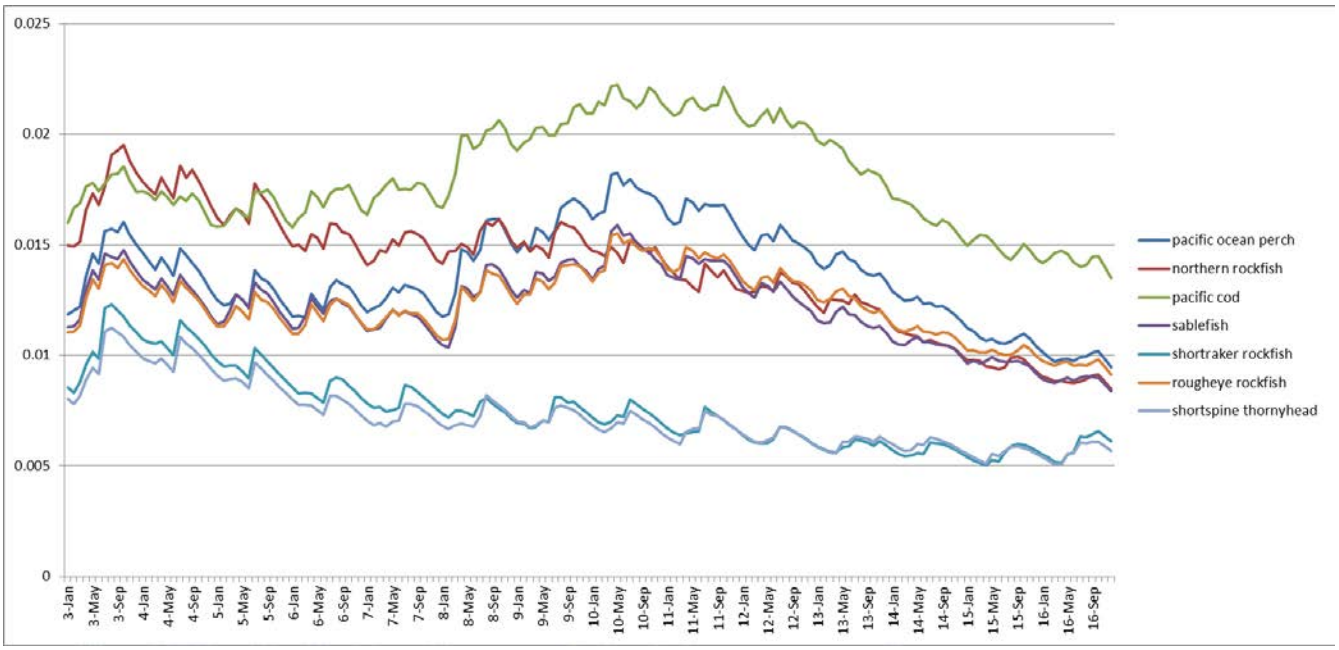
In discussions with trawl industry participants, it appears likely that it may be difficult to analyze target tows associated with the rockfish fishery due to differences in the way the fishery was prosecuted before and after the Pilot Program. Fishing events previous to the Pilot Program consisted of multi-species combo trips which may have been topped off with sablefish and operated under MRAs. Target assignment for fishing events is based on the predominant species, so 51 Pacific cod/49 percent Pacific ocean perch would be called a Pacific cod trip. Under the Rockfish Program, participants have the freedom to target species individually.

As stated in the June 2008 Central Gulf Rockfish Pilot Program document, "A trend toward greater use of pelagic gear that started in the period leading up to implementation of the program has continued .... This transition from non-pelagic, bottom gear to pelagic gear suggests a further reduction in any habitat effects

by the rockfish fishery."[8] To enhance this discussion, there are two relevant gear configurations that have led to less bottom contact since 2003. First, a move towards semi-pelagic bottom trawl gear (doors off bottom) since about 2008 decreased the bottom contact from the heaviest portion of the gear. In 2014, mandatory sweep modifications for flatfish trawls were implemented that raise the majority of the trawl off the bottom have been used in other fisheries as well, as sweeps are difficult to replace for specific other target trips.

The FE model as run in 2017 assumed no bottom contact for GOA slope rockfish pelagic trawl. Figure 6-2 illustrates that over time, the percentage habitat reduction for each target species' Essential Fish Habitat area of concentration has declined (since 2003).

Figure 6-2 Core EFH habitat reduction by GOA RPP trawl target species, 2003 - 2016



Source: Fishing Effects Model

[8] NPFMC. Gulf of Alaska Rockfish Pilot Program Review. 2008.

7 Prohibited Species Catch

The information presented in this section focuses on halibut PSC and Chinook salmon PSC from the Central GOA trawl fisheries by vessels that participate in the Rockfish Program. Data from the 2003 fishing year is excluded because AKFIN staff advised the authors that the data available includes duplicate information and recommended that the PSC data for that year not be used until that issue can be resolved with the agencies providing the data.

7.1 Chinook Salmon Prohibited Species Catch

Starting in 2015, the Rockfish Program trawl catcher vessels are limited to 1,200 Chinook salmon each year while checked into the Rockfish Program. If the Rockfish Program trawl catcher vessels reach the Chinook salmon limit, directed fishing by all catcher vessels in the Rockfish Program will be prohibited for the remainder of the year. On October 1, if it is determined that more than 150 Chinook salmon from the Rockfish Program catcher vessel limit will not be caught, the available Chinook salmon limit minus 150 fish can be reallocated for use by catcher vessels in the GOA in other fisheries.

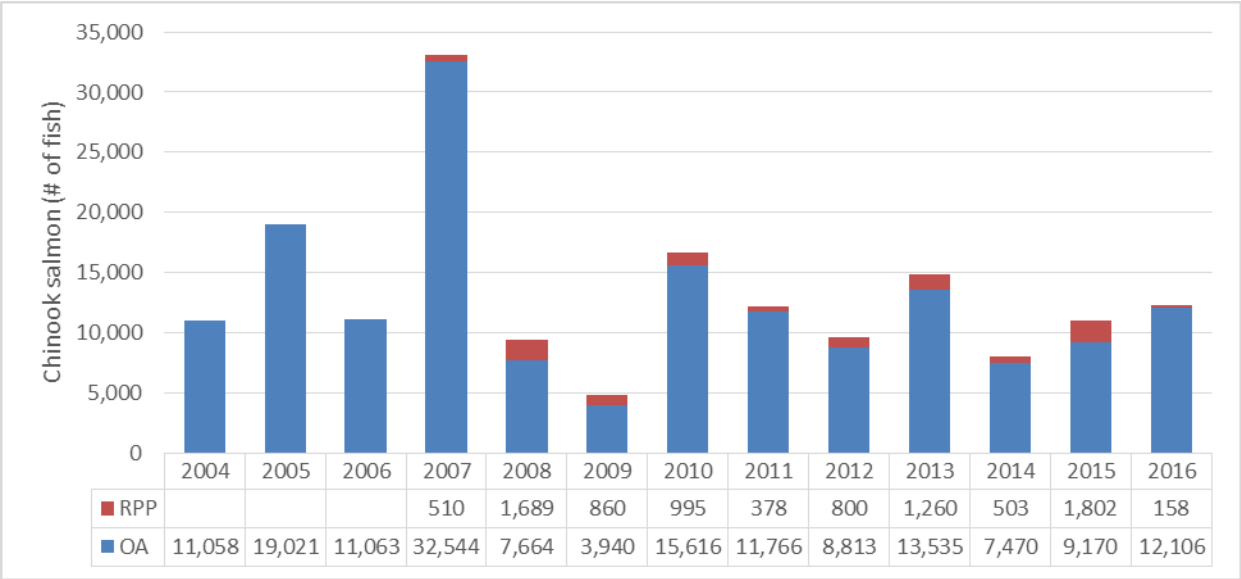
Trawl catcher/processor vessels fishing in the Gulf of Alaska are subject to a limit of 3,600 Chinook salmon, or, 4,080 Chinook salmon if the previous year's catch of Chinook salmon did not exceed 3,120 fish. This limit applies to vessels fishing inside and outside of the Rockfish Program. Directed fishing by trawl catcher/processors will be closed in the GOA when that limit is projected to be reached. The trawl catcher/processor sector has a seasonal limit before June 1 of either 2,376 or 2,693 Chinook salmon, depending on whether they were allocated additional Chinook salmon as a result of being under their defined limit the previous year.

In general, Chinook salmon PSC tends to be quite difficult to consistently avoid. Improvements in gear and communication on the fishing grounds have provided some benefits. However, there are still instances reported where a vessel is reported to encounter relatively high PSC rates when other vessels in the area had not previously realized high rates. Members of the fleet often describe these events as "lighting strikes" since they tend to be difficult to predict and, therefore, avoid.

7.1.1 Catcher vessels

Figure 7-1 shows the estimated Chinook salmon PSC taken in the Central GOA Rockfish Program (Pilot Program) and Central GOA open access trawl fisheries from 2004 through 2016. As stated above, a Chinook salmon PSC limit was not implemented for the non-pollock trawl fisheries in the GOA until 2015. Prior to 2015, catcher vessel Chinook salmon PSC in the Rockfish Program ranged from as few as 378 fish to over 1,689. The annual variation is likely due to a variety of factors that include the number of Chinook salmon on the fishing grounds, PSC estimation methods, the use and effectiveness of excluder devices, and communication of areas that have high PSC rates. In the two years since the Rockfish Program PSC limit was implemented, both the largest and smallest Central GOA Chinook salmon PSC estimates were reported. In 2015, 1,802 Chinook salmon were reported and in 2016 the number dropped to 158. The variation is in part due to the complexities associated with avoiding Chinook salmon and extrapolation methods used to estimate total PSC from basket samples.

Figure 7-1 Chinook salmon PSC (in numbers of fish) in the directed Central GOA Pilot Program, Rockfish Program, and open access catcher vessel trawl fisheries, 2003 through 2016.



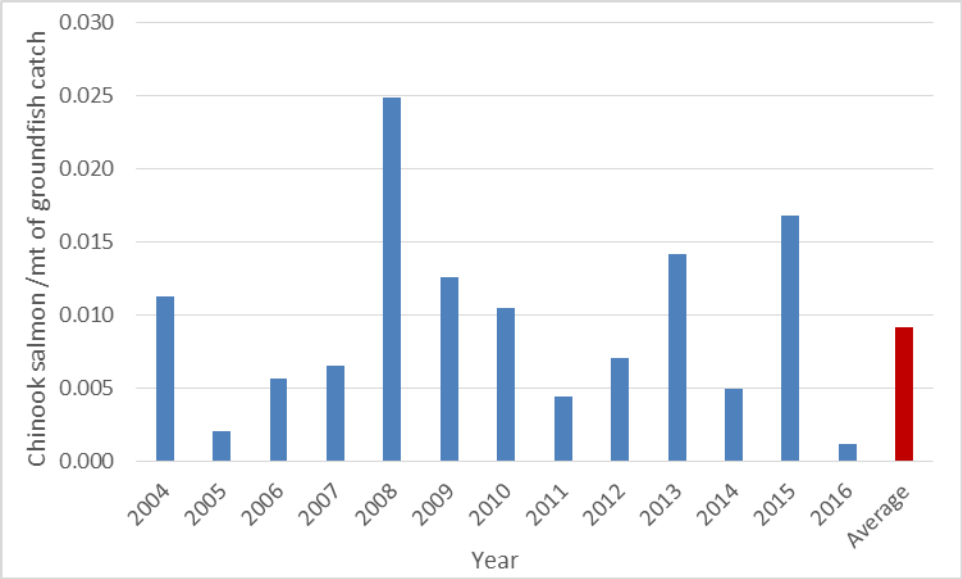
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
RPP				510	1,689	860	995	378	800	1,260	503	1,802	158
OA	11,058	19,021	11,063	32,544	7,664	3,940	15,616	11,766	8,813	13,535	7,470	9,170	12,106

Source: AKFIN summary of CAS data

During 2015, catcher vessels exceeded their limit of 1,200 fish, but were well under their limit until November. In May and June, an estimated 684 and 91 Chinook salmon were taken, respectively. The remaining 1,027 Chinook salmon were taken during the last week of fishing in November. High PSC rates reported for the last week fishing occurred in November were attributed to the fleet, in part, based on the basket samples taken from one vessel.

Figure 7-2 shows the estimated annual Chinook salmon PSC rates in the Central GOA trawl rockfish target fisheries. Rates are shown as the ratio of Chinook salmon per metric ton of total groundfish caught in the rockfish target fisheries. Rates were highest in 2008 and 2015, but very low in 2016. The variability of the Chinook salmon PSC rates highlights the difficulties associated with avoiding Chinook salmon, even when gear is modified to allow some salmon to escape and the fleet communicates bycatch hot spots in close to real time.

Figure 7-2 Estimated annual Chinook salmon PSC rates (# of Chinook salmon/mt of total groundfish basis species catch) in the Central GOA rockfish target fisheries, 2004 through 2016



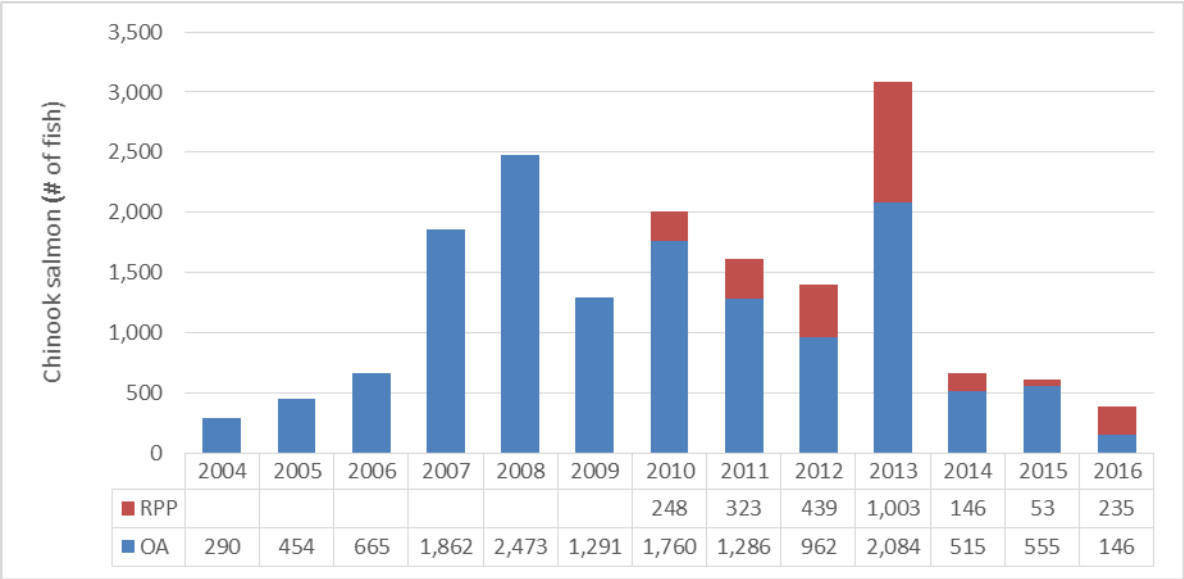
Source: AKFIN summary of CAS data

7.1.2 Catcher/Processors

Chinook salmon PSC used by the trawl catcher/processor sector in the Central GOA has also shown considerable variability. Catcher/processors began assigning the majority of their allocation of primary species to cooperatives starting in 2010 (Table 5-7). Prior to that time the data indicates most of the catch is attributed to the Open Access fishery, since the catcher/processor LLP licenses were assigned to that fishery and not cooperatives. Figure 7-3 focuses on the reported catch of Chinook salmon PSC in the Central GOA by vessels in the Rockfish Program, but it is worth noting that the trawl catcher/processor sector in total was reported to have taken 655 of the 3,600 non-pollock Western and Central GOA Chinook limit (18 percent) in 2015 and 442 of the 4,080 (11 percent) non-pollock GOA Chinook limit in 2016.

Data reported in Figure 7-3 shows that in the Central GOA, trawl catcher/processors have had below average Chinook salmon PSC usage in the past three years. Chinook salmon PSC usage in 2013 was greater than any other year considered. During 2013, Chinook salmon PSC was relatively large in both the Rockfish Program and the open access fisheries. Catcher vessels also experienced higher than average Chinook salmon PSC that year. However, because the catcher vessels and catcher/processors have different fishing patterns and locations the two sectors may realize different interactions with Chinook when targeting groundfish.

Figure 7-3 Chinook salmon PSC (in numbers of fish) in the directed Central GOA Rockfish Program and open access catcher/processor trawl fisheries, 2004 through 2016.

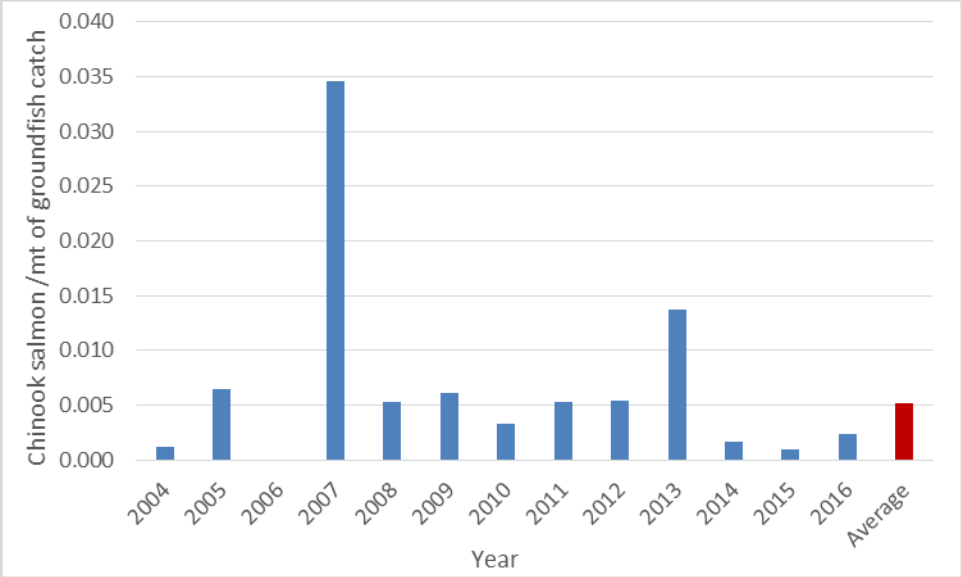


	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
RPP							248	323	439	1,003	146	53	235
OA	290	454	665	1,862	2,473	1,291	1,760	1,286	962	2,084	515	555	146

Source: AKFIN summary of CAS data

Chinook salmon PSC rates in the Central GOA catcher/processor trawl fisheries are reported in Figure 7-4. Years when the catcher/processor GOA Chinook salmon limit was in place are among the lowest rates reported and less than half of the 2004 through 2016 average. Rates in 2007 were over twice those reported for any other year. While 2007 was the first year of the Pilot Program, most catcher/processor sector members did not take part in GOA cooperatives until 2010.

Figure 7-4 Estimated annual Chinook salmon PSC rates (# of Chinook salmon/mt of total groundfish basis species catch) in the Central GOA rockfish target catcher/processor fisheries, 2004 through 2016



Source: AKFIN summary of CAS data

7.2 Halibut Prohibited Species Catch

Table 5-9 provides a summary of the halibut PSC limits that were set for the Pilot Program and Rockfish Program. Catcher vessels were limited to about 115 mt of halibut PSC under the Pilot Program and 117.3 mt under the Rockfish Program. The slight increase was a result of a greater percentage of the primary species being allocated to the catcher vessel sector. Catcher/processors were allocated between 55 mt and 92 mt in the Pilot Program. The increase in later years was due to more eligible catcher/processor LLP licenses being assigned to cooperatives as opposed opting out of the program and fishing in the open access fishery. Under the Rockfish Program, catcher/processors are assigned 74.1 mt of halibut PSC for use in Rockfish Program cooperatives.

Over the 2004 through 2016 time period, the overall GOA trawl PSC limit decreased from 2,000 mt to the current limit of 1,706 mt. The reduction in the overall GOA trawl PSC limit is a result of reductions implemented as part of the Rockfish Program and Amendment 95 to the GOA FMP. Amendment 95 to the GOA FMP reduced the trawl halibut PSC (and hook and line) PSC limit. The trawl limit was reduced from 2,000 mt in 2004 to 1,973 mt under Rockfish Program reduction and then stair stepped down to the current 1,706 mt under Amendment 95 to the GOA FMP. The overall trawl limits for the GOA include the amount that is deducted and set aside for exclusive use by the Rockfish Program participants.

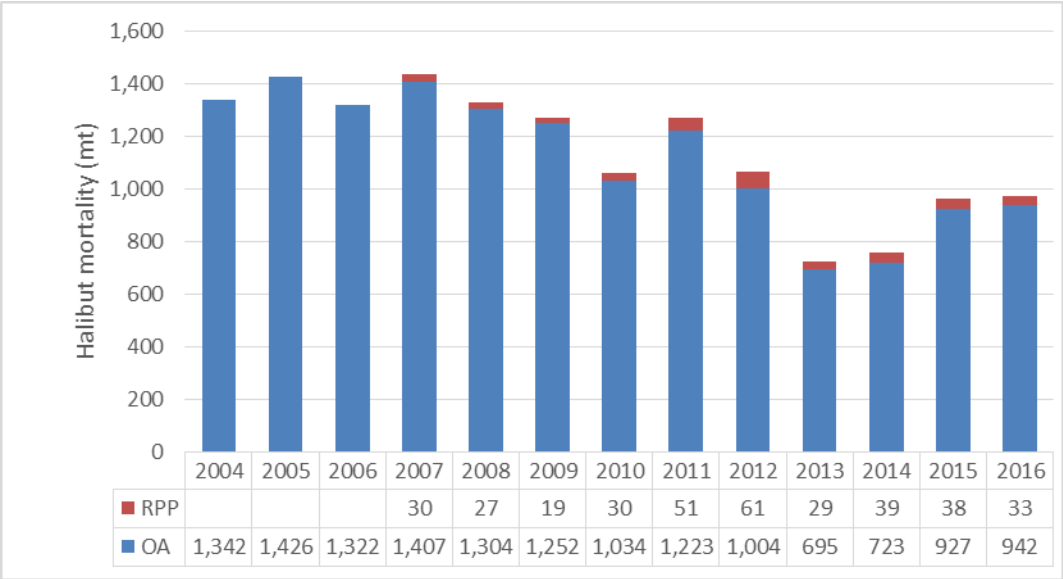
Chapter 6 of this paper provides a discussion of the impact that the Rockfish Programs have had on the development of changes in fishing practices and gear to reduce contact with the sea floor. Those gear modifications resulted in the fleet using more pelagic style gear to avoid bottom contact. The move to more pelagic style gear, in conjunction with the fishery taking place during the time of the year when there are more hours of daylight[9] (Adlerstein, 1991), was mentioned as one potential reason for the reduction in halibut PSC realized by catcher vessels under Pilot Program and Rockfish Program (North Pacific Fishery Mangement Council, 2011).

7.2.1 Catcher Vessels

Figure 7-5 shows the metric tons of trawl halibut PSC taken by catcher vessels in the Pilot Program/Rockfish Program and in the open access fisheries. The vast majority of halibut PSC continues to be taken in the open access fisheries. Halibut PSC in the Pilot Program/Rockfish Program annually ranged between 19 mt and 61 mt. These amounts of reported halibut mortality attributed to the Pilot Program and Rockfish Program are generally well below half of the program limits of approximately 115 mt under the Pilot Program and 117.3 mt for the Rockfish Program.

[9] See p. 211 - http://www.iphc.int/publications/rara/1991rara/1991rara04.pdf.

Figure 7-5 Halibut PSC (mt of mortality) in the directed Central GOA Rockfish Program and open access catcher vessel trawl fisheries, 2004 through 2016



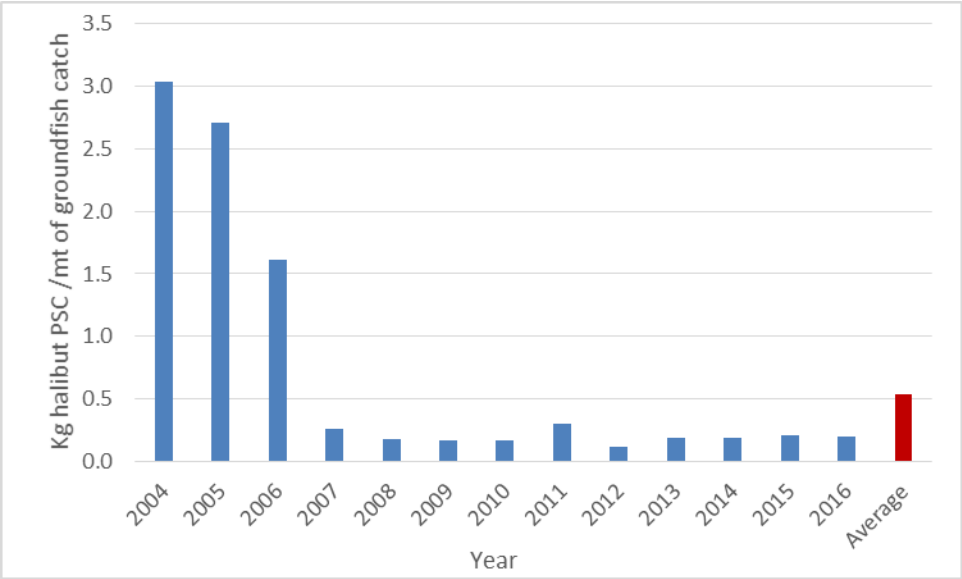
	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
RPP				30	27	19	30	51	61	29	39	38	33
OA	1,342	1,426	1,322	1,407	1,304	1,252	1,034	1,223	1,004	695	723	927	942

Source: AKFIN summary of CAS data

Figure 7-6 focuses on halibut PSC rates in the trawl Central GOA rockfish target fisheries. Rates are expressed in terms of kilograms of halibut PSC morality divided by the total catch of all basis species. Halibut rates before the Pilot Program ranged from 1.5 to 3.0 kg of halibut per metric ton of total groundfish basis species. After the Pilot Program was implemented the rates decreased to about 0.25 kg of halibut per metric ton of total groundfish basis species each year. This indicates that structure of the LAPP allowed harvesters to implement fishing strategies to reduce halibut PSC rates. These practices seem to be more effective in consistently avoiding halibut than were realized for Chinook salmon.

The red column on the right side of Figure 7-6 shows the average halibut PSC mortality rate. A column for the average rate was included to allow a quick comparison of the annual rates to the long-term average.

Figure 7-6 Estimated annual halibut PSC rates (kilograms of halibut mortality/metric ton of total groundfish basis species) in the trawl catcher vessel Central GOA rockfish target fisheries, 2004 through 2016

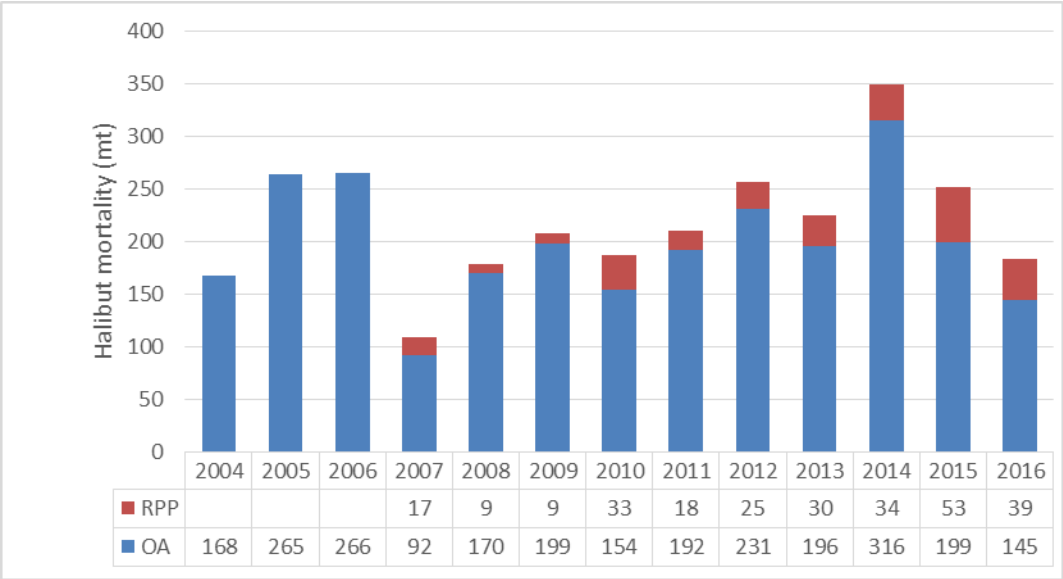


Source: AKFIN summary of CAS data

7.2.2 Catcher/Processors

Figure 7-7 shows the reported trawl catcher/processor Central GOA halibut PSC mortality from 2004 through 2016. Halibut PSC in the Rockfish Pilot Program was relatively low from 2007 through 2009. Those were years when few catcher/processors assigned their LLP licenses to rockfish cooperatives and catch of catcher/processors not in cooperatives was assigned to the open access. Since 2010, total halibut PSC mortality in the Pilot Program/Rockfish Program ranged from 18 mt to 53 mt. Mortality was highest in in 2015 at 53 mt and was lowest in 2011 at 18 mt. Because much of the halibut PSC occurs outside the Rockfish Programs, when vessels are competing for harvest, attributing overall changes in halibut PSC mortality to the Rockfish Program in the Central GOA is not appropriate.

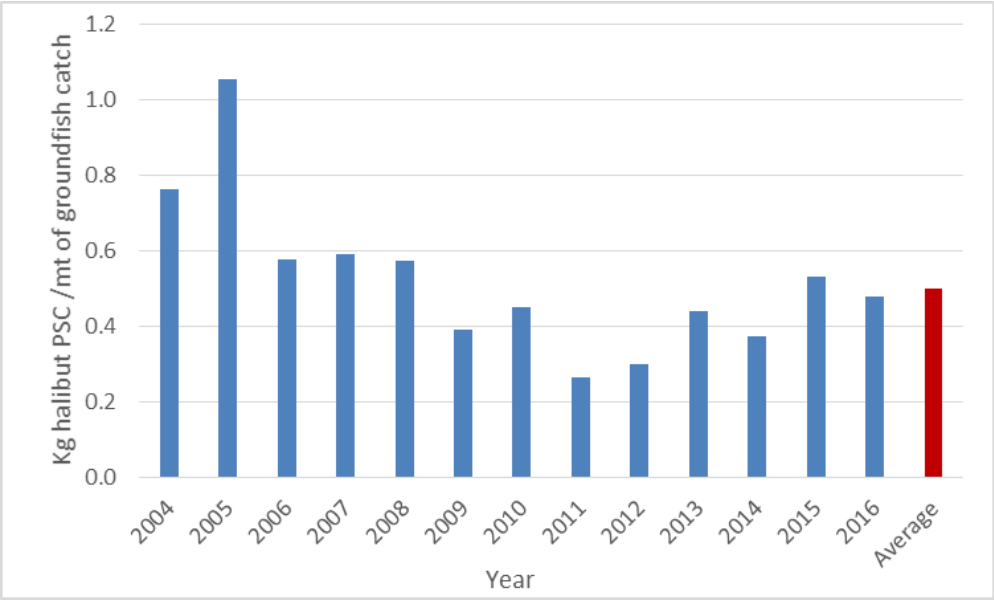
Figure 7-7 Halibut PSC (mt of mortality) in the directed Central GOA Rockfish Program and open access catcher/processor trawl fisheries, 2004 through 2016



Source: AKFIN summary of CAS data

Trawl catcher/processor halibut PSC mortality rates in the Central GOA rockfish target fisheries are reported in Figure 7-8. The catcher/processors rates were lower than the catcher vessel rates prior to the Pilot Program, but tend to be slightly higher after. After the Pilot Program, the catcher vessels had rates of about 0.3 kilograms of halibut PSC per metric ton of total groundfish basis species. The catcher/processor rate was closer to 0.4 kilograms of halibut PSC per metric ton of total groundfish basis species. In both cases, the rates after the Pilot Program was implemented was lower than rates prior to the Pilot Program being implemented. The lower rates may be the result of changes in the timing of the fishery as well as better communication, gear modification, and the secure allocations that allow vessels to make smaller tows and move fishing areas if bycatch is high.

Figure 7-8 Estimated annual halibut PSC rates (kilograms of halibut mortality/metric ton of total groundfish basis species) in the trawl catcher/processor Central GOA rockfish target fisheries, 2004 through 2016



Source: AKFIN summary of CAS data

8 Retention and Utilization

This section examines the retention and utilization of fishery resources during the three periods considered. Discard rate refers to the percentage of the groundfish catch that is not retained because the fish are unwanted for economic reasons (undesirable size, sex, quality, etc.), or because the fish are required by regulation to be discarded. Utilization rate refers to the percentage of retained groundfish processed into some type of product.

All primary and secondary species harvested with CQ are required to be retained under the Rockfish Program. Discards of prohibited species are not included in this discussion. Halibut PSC is required to be carefully handled to minimize mortality and discarded. Chinook salmon are required to be retained.

8.1 Retention Rates

When the Pilot Program was implemented it was assumed that changing the structure of the fishery would create economic incentives to reduce discards. Harvesters are allocated a specific amount of primary species and secondary species. All catch of those species is deducted from the cooperative's allocation when fishing under the Rockfish Program. Because they lose the value associated with that quota if it is discarded, harvesters are expected to try to develop fishing practices that ensures they will derive the greatest value possible.

In addition to the economic incentives, federal regulations require the Rockfish Program participants to retain all CQ species. These regulations prohibit at-sea discards of Pacific ocean perch, Northern rockfish, dusky rockfish, Pacific cod, thornyheads, and sablefish. Some discards of these species have been reported when bringing the fish onboard the vessel would cause safety concerns for the vessel and its crew.

8.1.1 Primary Species

Table 8-1 shows the retention rates of the three Central GOA primary rockfish species. Also included in the table are the amounts of catch that was retained and discarded by whether the catch was taken in the open access fishery or the Pilot Program/Rockfish Program.

Retention rates in the Pilot Program and Rockfish Program are very high, with rates approaching 100 percent for each fishery most years. Retention rates were slightly lower in 2011. That was the only year when reported rates dropped slightly below 99 percent for Pacific ocean perch and Northern rockfish. Dusky rockfish retention rates remained above 99 percent that year.

Retention rates are considerably lower in the open access fisheries. Since the Pilot Program was implemented, these are fisheries where rockfish are not the intended target. The reason for the lower retention rate is likely tied to the ability of the plant's ability to processor small amounts of rockfish that are taken as incidental catch to Pacific cod, pollock, or flatfish target deliveries. Those fisheries are prosecuted under the race to fish[10]. Processors and their harvesting vessels are concerned about moving those target species off the vessel and through the plant in a timely manner so harvesters can offload as quickly as possible and return to fish in order to maximize catch.

Retention of dusky rockfish tends to be greater than Pacific ocean perch or Northern rockfish most years under the open access. Retention rates overall in the open access fisheries were highly variable, ranging from under 25 percent to over 90 percent depending on the year and species. The average retention rates

[10] Unless voluntary cooperative can be formed. Voluntary cooperatives are typically for pollock fisheries and only form when everyone agrees to join. Voluntary cooperative formation is typically most successful when the alternative would be to not open the fishery because the TAC relative to expected effort is too small for NMFS to manage the fishery.

over all the years tended to be 5 percent to 15 percent less than those reported for the Pilot Program and Rockfish Program. Those rate differences would have been greater if the directed rockfish fisheries in 2003 through 2006 had been excluded from the calculation. The exact factors that caused each decision to discard fish are not know with certainty, but as discussed above are likely linked to safety issues and the ability of the vessel to market those fish and the processing plant to effectively process small amounts of rockfish mixed in with deliveries of larger amounts of other species.

Table 8-1 Primary rockfish species retention rates by Central GOA open access fishery and Rockfish Program fisheries, 2003 through 2016.

		Open Access				Rockfish Pilot/Rockfish Program				
Year	Data	Pacific ocean perch	Dusky rockfish	Northern rockfish	Total	Pacific ocean perch	Dusky rockfish	Northern rockfish	Total	Primary Species Total
2003	Retention Rate	88.91%	98.10%	93.99%	91.85%					91.85%
	Retained (mt)	7,215	2,142	4,518	13,875					13,875
	Discard (mt)	900	42	289	1,231					1,231
2004	Retention Rate	91.62%	98.80%	95.55%	93.68%					93.68%
	Retained (mt)	7,849	2,039	3,611	13,498					13,498
	Discard (mt)	718	25	168	911					911
2005	Retention Rate	93.10%	99.40%	96.65%	94.94%					94.94%
	Retained (mt)	7,496	1,788	3,803	13,087					13,087
	Discard (mt)	555	11	132	698					698
2006	Retention Rate	91.02%	98.67%	91.90%	92.18%					92.18%
	Retained (mt)	7,541	1,635	3,659	12,834					12,834
	Discard (mt)	744	22	322	1,088					1,088
2007	Retention Rate	96.46%	99.47%	94.03%	96.51%	99.48%	99.95%	99.91%	99.68%	98.56%
	Retained (mt)	2,674	817	869	4,360	4,486	1,589	2,146	8,221	12,581
	Discard (mt)	98	4	55	158	23	1	2	26	184
2008	Retention Rate	23.97%	75.97%	36.46%	34.55%	99.85%	99.98%	99.96%	99.89%	97.45%
	Retained (mt)	57	40	67	164	7,432	2,781	1,964	12,177	12,341
	Discard (mt)	181	13	116	310	11	1	1	13	323
2009	Retention Rate	28.26%	82.31%	43.55%	36.19%	99.94%	100.00%	99.93%	99.95%	96.50%
	Retained (mt)	143	61	35	239	7,525	2,075	1,922	11,521	11,760
	Discard (mt)	362	13	46	421	4	0	1	6	427
2010	Retention Rate	72.88%	97.10%	90.05%	77.67%	99.55%	99.49%	99.52%	99.54%	97.11%
	Retained (mt)	917	177	182	1,276	9,248	2,222	1,652	13,122	14,399
	Discard (mt)	341	5	20	367	42	11	8	61	428
2011	Retention Rate	58.93%	97.65%	72.09%	68.37%	98.33%	99.28%	98.80%	98.51%	93.74%
	Retained (mt)	900	446	202	1,548	8,849	1,597	1,398	11,844	13,392
	Discard (mt)	627	11	78	716	151	12	17	179	895
2012	Retention Rate	52.21%	47.48%	41.28%	49.07%	99.63%	99.73%	99.73%	99.67%	97.29%
	Retained (mt)	252	88	65	405	10,255	3,361	3,091	16,707	17,112
	Discard (mt)	231	97	92	421	38	9	9	56	476
2013	Retention Rate	48.70%	44.03%	44.25%	47.42%	99.70%	99.71%	99.86%	99.73%	93.65%
	Retained (mt)	682	107	136	926	9,768	2,653	2,388	14,809	15,735
	Discard (mt)	719	136	171	1,027	29	8	3	40	1,067
2014	Retention Rate	29.25%	64.00%	57.57%	34.34%	99.29%	99.84%	99.83%	99.47%	91.40%
	Retained (mt)	603	102	143	849	11,552	2,646	3,168	17,366	18,215
	Discard (mt)	1,460	57	106	1,623	83	4	5	92	1,715
2015	Retention Rate	45.57%	49.89%	52.09%	47.53%	99.17%	99.83%	99.70%	99.33%	95.61%
	Retained (mt)	426	115	148	689	13,664	2,321	2,671	18,655	19,345
	Discard (mt)	509	116	136	761	115	4	8	127	887
2016	Retention Rate	29.42%	50.91%	32.56%	31.33%	99.78%	99.88%	99.95%	99.82%	92.47%
	Retained (mt)	635	100	76	811	15,452	2,954	3,076	21,482	22,293
	Discard (mt)	1,524	96	157	1,777	34	3	2	39	1,816
Average Retention Rate		80.65%	93.71%	90.27%	84.87%	99.46%	99.78%	99.76%	99.56%	94.54%

Source: AKFIN summary of CAS data

8.1.2 Secondary Rockfish Species

Table 8-2 provides a summary of retention rates for secondary rockfish species in the Central GOA trawl fisheries. Pacific cod and sablefish are also allocated to cooperatives as secondary species. From 2003 through 2006 discards of sablefish exceeded 100 metric tons in some years and exceeded 250 metric tons in one year (North Pacific Fishery Mangement Council, 2011). Under the pilot program, discards of these species were generally not permitted by cooperatives, and discards were very small. Under Rockfish Program discards of CQ species are required to be documented in the Annual Cooperative Reports[11].

Pacific cod retention has been required since the Improved Retention/Improved Utilization Program was implemented under the provisions of 50 CFR 679.27. Because of the relatively small percentage of the sablefish and Pacific cod TAC allocated as secondary species and the high retention rates, a separate table for those species is not included.

As was reported for the primary rockfish species retention rates of secondary rockfish species in the Pilot Program and Rockfish Program are greater than in the open access fisheries. The increased retention rates are due to the same factors discussed in the primary rockfish species section. Unlike the primary species the majority of the catch of secondary species is taken by the catcher/processor sector. Recall that under the Rockfish Program the catcher/processor sector is allocated 40.00 percent of the shortraker rockfish TAC, 58.87 percent of the rougheye rockfish TAC, and 26.50 percent of the thornyhead rockfish TAC. The catcher vessel sector is allocated 7.84 percent of the thornyhead rockfish TAC, but rougheye/shortraker are managed under an MRA that may not exceed 9.72 percent of the TAC.

[11] See page 6 at https://www.npfmc.org/wp-content/PDFdocuments/catch_shares/CoopRpts2016/SOK.pdf

Table 8-2 Secondary rockfish species retention rates by Central GOA open access fishery and Rockfish Program fisheries, 2003 through 2016.

		Open Access				Pilot Program/Rockfish Program				Secondary
Year	Data	Rougheye rockfish	Shortraker rockfish	Thornyhead rockfish	Total	Rougheye rockfish	Shortraker rockfish	Thornyhead rockfish	Total	Rockfish Total
2003	Retention Rate	67.45%	94.25%	92.19%	89.17%					89.17%
	Retained (mt)	140	502	550	1,193					1,193
	Discard (mt)	68	31	47	145					145
2004	Retention Rate	88.60%	97.56%	84.96%	88.65%					88.65%
	Retained (mt)	75	118	247	441					441
	Discard (mt)	10	3	44	56					56
2005	Retention Rate	85.84%	93.00%	91.17%	90.94%					90.94%
	Retained (mt)	68	155	234	457					457
	Discard (mt)	11	12	23	46					46
2006	Retention Rate	80.41%	95.32%	82.76%	87.25%					87.25%
	Retained (mt)	77	218	220	515					515
	Discard (mt)	19	11	46	75					75
2007	Retention Rate	48.10%	91.82%	94.44%	75.18%	66.00%	59.18%	91.75%	84.01%	76.68%
	Retained (mt)	66	122	75	263	8	5	48	60	323
	Discard (mt)	71	11	4	87	4	3	4	11	98
2008	Retention Rate	60.65%	78.30%	97.45%	76.94%	47.71%	86.13%	79.66%	76.73%	76.87%
	Retained (mt)	71	72	84	227	11	40	58	108	335
	Discard (mt)	46	20	2	68	12	6	15	33	101
2009	Retention Rate	84.18%	59.57%	95.21%	77.55%	78.37%	62.69%	81.54%	77.35%	77.49%
	Retained (mt)	37	53	71	161	14	10	42	67	228
	Discard (mt)	7	36	4	47	4	6	10	20	66
2010	Retention Rate	79.77%	80.56%	95.38%	85.75%	93.43%	64.08%	92.54%	87.46%	86.81%
	Retained (mt)	57	11	49	117	88	28	81	196	314
	Discard (mt)	15	3	2	20	6	15	7	28	48
2011	Retention Rate	70.13%	81.55%	88.47%	79.87%	98.74%	87.68%	86.60%	94.06%	88.73%
	Retained (mt)	56	83	62	200	246	67	78	392	592
	Discard (mt)	24	19	8	50	3	9	12	25	75
2012	Retention Rate	87.13%	59.01%	26.32%	61.42%	99.37%	86.94%	88.62%	93.25%	88.57%
	Retained (mt)	43	7	9	60	272	173	80	525	585
	Discard (mt)	6	5	26	37	2	26	10	38	75
2013	Retention Rate	94.89%	59.42%	96.69%	90.39%	97.63%	72.47%	90.70%	86.50%	87.04%
	Retained (mt)	37	10	53	101	277	194	131	603	703
	Discard (mt)	2	7	2	11	7	74	13	94	105
2014	Retention Rate	77.44%	84.94%	99.21%	91.28%	99.37%	96.64%	94.09%	97.51%	95.73%
	Retained (mt)	46	73	171	290	433	155	185	774	1,064
	Discard (mt)	13	13	1	28	3	5	12	20	48
2015	Retention Rate	84.14%	72.10%	90.25%	85.37%	99.48%	92.22%	92.55%	95.25%	93.62%
	Retained (mt)	31	15	59	106	250	141	204	595	701
	Discard (mt)	6	6	6	18	1	12	16	30	48
2016	Retention Rate	17.19%	5.95%	51.62%	20.22%	99.63%	85.80%	94.33%	95.03%	69.20%
	Retained (mt)	21	11	50	83	324	118	294	737	819
	Discard (mt)	101	178	47	326	1	20	18	38	365
Average Retention Rate		67.44%	80.46%	88.06%	80.61%	97.83%	84.02%	91.15%	92.34%	85.96%

Source: AKFIN summary of CAS data

8.2 Utilization Rates

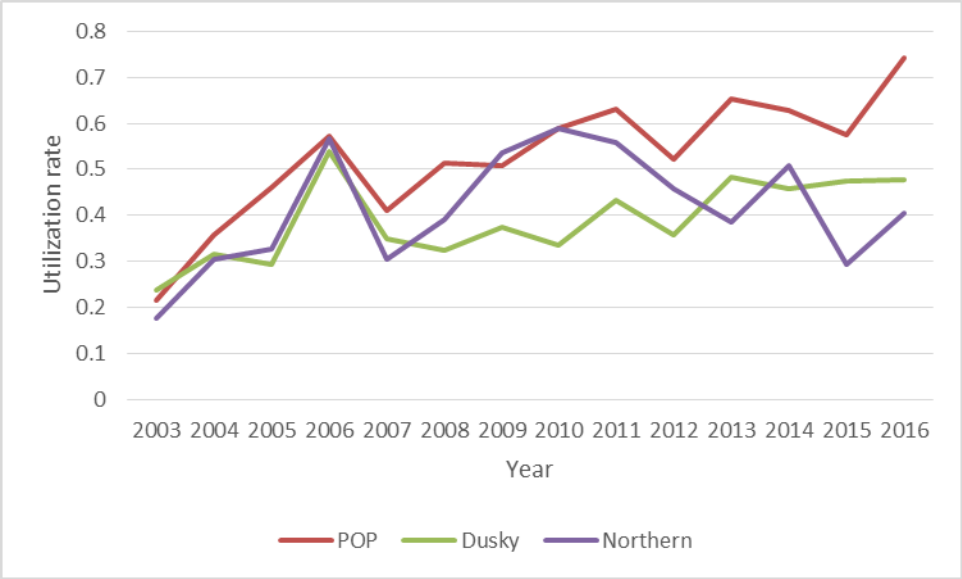
Utilization rates in this section are reported as the ratio of the weight of products produced at the first wholesale level to retained catch. This is one measure of whether processors are selling more of each fish that is retained, on average. One benefit often cited for LAPPs is that they provide the opportunity for improvements in the utilization rates of fish, since processors can produce primary product and secondary products that reduce fish waste. However, utilization rates are also highly dependent on the products produced. For example, product recovery rates for rockfish are listed as 0.25 to 0.40 for various types of

fillets, 0.50 to 0.60 for head-and-gut products, and 0.88 to 1.00 for gutted and whole fish. In the rockfish fisheries, utilization increases could be realized by making fewer fillets and selling head-and-gut or whole fish. That change increases utilization rate but is not necessarily a positive outcome, since those fish may be sent to another country to be filleted and re-exported. The next section of this document provides a more detailed discussion of first wholesale product forms and markets.

Utilization rates of the three primary rockfish species processed by shoreside processors that participate in the Rockfish Program are presented in Figure 8-1.The rates are for all of that species processed at the plant during the year, regardless of the GOA area it was harvested or the gear used to catch the fish. Production data for shoreside plants does not allow a finer breakout for production of only Central GOA trawl caught fish.

Utilization rates increased leading up to the implementation of the Pilot Program, with 2006 having relatively high rates. Rates then declined in 2007 but Pacific ocean perch and dusky rockfish tended to show a trend of increasing utilization rates over the Pilot Program and Rockfish Program. Northern rockfish utilization rates increased through 2010, but then had a decreasing trend with 2015 rates being similar to those in 2004.

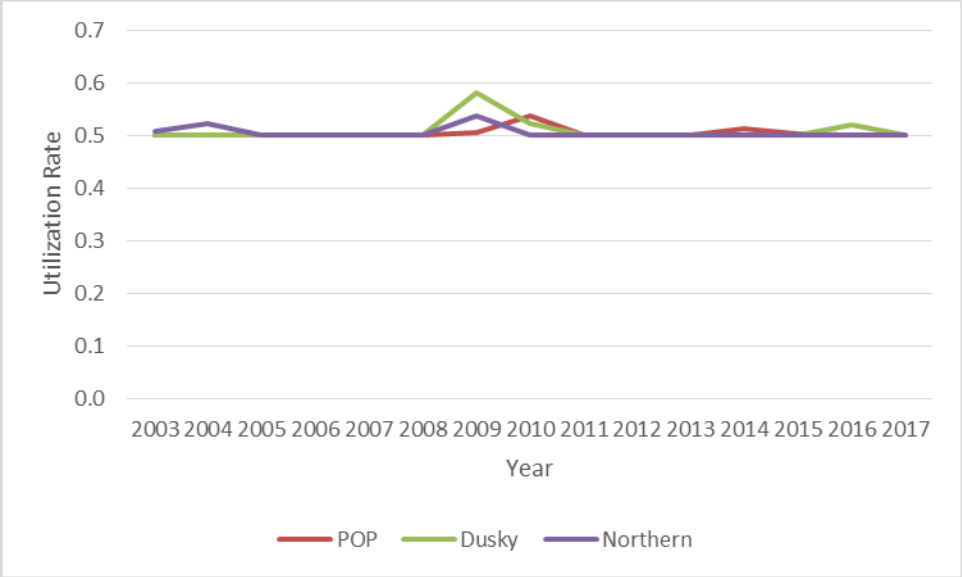
Figure 8-1 Utilization rate of primary rockfish species by Rockfish Program shoreside processors



Source: AFKFIN summary of CAS data

Utilization rates for catcher/processors are reported as the ratio of product weight to retained catch. Production data for catcher/processors provides sufficient detail to allow rates to be reported for Central GOA trawl catch. The rates reported are 0.5 for most years and species with little variation between the pre-Pilot Program, Pilot Program, and Rockfish Program time periods. Because catcher/processors produce primarily head and gut products there is minimal change in the utilization rates reported.

Figure 8-2 Utilization rate of primary rockfish species by catcher/processors



Source: AKFIN summary of CAS and production data

9 Products and Markets

This section provides an overview of the GOA rockfish products produced at the first wholesale level by processors that participate in the Rockfish Program. The data shows the products types produced from all gear types that fished in the GOA. The data collected does not allow for the information to be refined and presented by gear type used to harvest the fish or by the Central GOA management area. AKFIN staff used the comprehensive Shoreside Production Reports (SPR) to generate the data for the GOA which does break out the FMP area. The prices are appended to the processing volume data from COAR and are the same data that are used in the Economic SAFE document.

Data presented in this section also describes the markets that purchase those products. Market information is derived from secondary sources.

9.1 Overview of Rockfish Products

Product forms reported in the SPR include detailed product information. To reduce the categories reported and minimize confidentiality constraints, the data were aggregated into more general groupings as shown in Table 9-1. Products listed as surimi or "other/ancillary" are excluded from tables later in this section. The reason those products were excluded is because 1) an insufficient number of processors made those products to report the information and 2) volume and value were relatively small. If those products were included in the tables, other product forms would have also had to been masked to allow reporting the total value in each table.

Table 9-1 Rockfish product forms reported

Product grouping	Product code reported in AKFIN summary of SPR data
Fillets	Fillets with ribs, no skin. Meat with ribs with skin removed, from sides of body behind head and in front of tail.
	Fillets with skin and ribs. Meat and skin with ribs attached, from sides of body behind head and in front of tail.
	Fillets with skin, no ribs. Meat and skin with ribs removed, from sides of body behind head and in front of tail.
	and in front of tail, resulting in thin fillets.
	Fillets, skinless/boneless. Meat with both ribs and skin removed, from sides of body behind head and in front of tail.
Head & Gut	Gutted, head on. Belly slit and viscera removed.
	Headed & gutted tail removed. Head removed usually in front of collar bone, and viscera and head removed.
	Headed & gutted, Eastern cut. Head removed just behind the collar bone, and viscera removed.
	Headed & gutted, Western cut. Head removed just in front of collar bone, and viscera removed.
	perpendicular to the spine, resulting in a steak.
Other/Ancilary	Bones. (if meal, report as 32) (ancillary only)
	Chins. Lower jaw (mandible), muscles, and flesh. (ancillary only)
	Heads. Heads only. regardless where severed from body. (ancillary only)
	recovery rate next to it in parentheses.
	Pectoral girdle. Collar bone and associated bones, cartilage and flesh.
	Roe. Fish eggs, either loose or in sacs or skeins. (ancillary only)
	Wings. On skates, side fins are cut off next to body.
Surimi	Surimi. Paste from fish flesh and additives.
Whole or Bled	Bled only. Throat, or isthmus, slit to allow blood to drain.
	Whole fish/food fish.

Source: AKFIN summary of SPR data

Table 9-2 provides information on the Pacific ocean perch products produced by Rockfish Program processors as well value and processor counts included in the data. Head and gut (H&G) data were combined with whole and bled data in 2003 and 2004 to protect confidential data. The first wholesale value of GOA Pacific ocean perch processed by these processors ranged from $3.5 to $11.2 million per year, in 2009 dollars. Most of the value was derived from H&G and whole products. After the Pilot Program was

implemented the real first wholesale value ranged from $7.7 million to $19.9 million. The increase in value is primarily driven by increases in the volume of the species processed.

The information in Table 9-2 also indicates a decline in the relative production in fillets to total products produced. On average during the pre-Pilot Program years 12 percent of the products produced were fillets. The percentage declined to 8 percent during the Pilot Program and less than 2 percent during the Rockfish Program. Decreases in fillet production and increases in the head and gut, whole, and bled, production accounts for the increased utilization rates reported in the previous section.

Table 9-2 Pacific ocean perch first wholesale products and value (in 2009 dollars), 2003 through 2016

Product	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Fillets														
Product Weight (1,000 lbs)	837	438	298	257	1,388	407	183	325	165	457	168	195	120	72
1st Wholesale Value ($1,000)	$1,464	$816	$496	$535	$2,671	$370	$449	$554	$430	$1,715	$461	$352	$258	$132
Price/Pound	$1.75	$1.86	$1.67	$2.08	$1.92	$0.91	$2.45	$1.70	$2.61	$3.75	$2.75	$1.81	$2.15	$1.82
Number of Plants	5	4	4	4	5	5	6	5	5	5	6	5	4	4
Head & Gut														
Product Weight (1,000 lbs)	Combined with		1,774	3,036	2,253	3,056	2,946	4,165	3,979	4,508	3,689	4,112	4,295	4,802
1st Wholesale Value ($1,000)	Whole and Bled -		$2,533	$4,084	$1,751	$3,086	$2,874	$5,003	$6,151	$7,229	$4,075	$3,973	$4,770	$4,121
Price/Pound	confidential data		$1.43	$1.35	$0.78	$1.01	$0.98	$1.20	$1.55	$1.60	$1.10	$0.97	$1.11	$0.86
Number of Plants	2	2	4	6	7	6	6	7	7	6	6	5	6	4
Whole or Bled														
Product Weight (1,000 lbs)	1,794	3,373	4,529	5,798	4,364	5,535	5,140	8,596	9,096	7,443	9,088	10,073	10,782	16,172
1st Wholesale Value ($1,000)	2,045	2,947	$4,719	$6,613	$4,944	$5,670	$4,332	$8,262	$10,724	$10,961	$7,601	$7,526	$9,229	$10,457
Price/Pound	$1.14	$0.87	$1.04	$1.14	$1.13	$1.02	$0.84	$0.96	$1.18	$1.47	$0.84	$0.75	$0.86	$0.65
Number of Plants	4	6	5	6	4	6	4	8	7	5	5	6	5	4
All Products														
Product Weight (1,000 lbs)	2,631	3,811	6,601	9,091	8,005	8,998	8,268	13,086	13,239	12,408	12,945	14,379	15,197	21,046
1st Wholesale Value ($1,000)	3,509	3,763	7,747	11,232	9,366	9,126	7,655	13,818	17,304	19,905	12,137	11,852	14,258	14,710
Price/Pound	$1.33	$0.99	$1.17	$1.24	$1.17	$1.01	$0.93	$1.06	$1.31	$1.60	$0.94	$0.82	$0.94	$0.70
Number of Plants	6	6	6	6	8	7	7	9	9	8	7	8	8	6

Source: AKFIN summary of SPR data

The first wholesale average price per pound of product produced has been relatively low in recent years. Section 10 provides a short discussion of the factors that influence first wholesale prices and notes that many of those factors are not fundamentally impacted by the management structure of the Central GOA rockfish fishery.

Table 9-3 provides information on dusky rockfish and is structured like Table 9-2. The average first wholesale price per pounds follows a similar trend as reported for Pacific ocean perch. The average price peaked in 2012 has shown a declining trend since then. The volume of dusky rockfish product produced in recent years is about 1/10th of the Pacific ocean perch products produced. The difference in volume is more closely linked to changes in TAC (see Figure 5-1) than the impact of the Rockfish Program in terms of ability to harvest these species.

Table 9-3 Dusky rockfish first wholesale products and value (in 2009 dollars), 2003 through 2016

Product	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Fillets														
Product Weight (1,000 lbs)	476	255	158	171	371	265	93	209	228	465	252	335	254	140
1st Wholesale Value ($1,000)	$984	$506	$313	$378	$726	$408	$193	$422	$633	$1,651	$562	$494	$446	$387
Price/Pound	$2.07	$1.99	$1.98	$2.22	$1.96	$1.54	$2.08	$2.02	$2.78	$3.55	$2.23	$1.47	$1.76	$2.76
Number of Plants	5	6	6	5	7	6	6	7	7	7	7	8	9	7
Head & Gut														
Product Weight (1,000 lbs)	Combined with		343	Combined with		293	327	327	483	849	656	547	593	1,482
1st Wholesale Value ($1,000)	Whole and Bled -		$488	Whole and Bled -		$410	$590	$413	$768	$1,097	$421	$873	$601	$884
Price/Pound	confidential data		$1.42	confidential data		$1.40	$1.81	$1.26	$1.59	$1.29	$0.64	$1.60	$1.01	$0.60
Number of Plants	1		4	3	3	4	4	6	6	6	5	8	5	6
Whole or Bled														
Product Weight (1,000 lbs)	81	414	229	965	908	636	823	409	159	287	733	577	439	362
1st Wholesale Value ($1,000)	39	$162	$140	760	652	$350	$471	$255	$208	$179	$853	$347	$505	$162
Price/Pound	$0.49	$0.39	$0.61	$0.79	$0.72	$0.55	$0.57	$0.62	$1.31	$0.62	$1.16	$0.60	$1.15	$0.45
Number of Plants	3	5	5	6	5	5	6	3	7	4	6	7	4	6
All Products														
Product Weight (1,000 lbs)	662	738	737	1,166	1,279	1,199	1,243	953	870	1,601	1,640	1,459	1,286	1,985
1st Wholesale Value ($1,000)	1,097	719	948	1,162	1,378	1,176	1,254	1,096	1,609	2,926	1,836	1,714	1,552	1,434
Price/Pound	$1.66	$0.97	$1.29	$1.00	$1.08	$0.98	$1.01	$1.15	$1.85	$1.83	$1.12	$1.18	$1.21	$0.72
Number of Plants	6	7	6	7	7	7	7	9	9	9	9	9	9	8

Source: AKFIN summary of SPR data

Northern rockfish production is reported in Table 9-4. The volume and value is more closely aligned with dusky rockfish. The TACs for these species are similar and values of all three primary rockfish tend to generally track over time. The majority of northern rockfish is processed into a head and gut product.

Table 9-4 Northern rockfish first wholesale products and value (in 2009 dollars), 2003 through 2016

Product	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Fillets														
Product Weight (1,000 lbs)	656	223	159	128	235	55	520	256	44	238	156	55		
1st Wholesale Value ($1,000)	$1,086	$467	$265	$234	$487	$80	$1,370	$446	$89	$919	$381	$103	Confidential data	
Price/Pound	$1.66	$2.09	$1.66	$1.83	$2.07	$1.45	$2.63	$1.74	$2.02	$3.86	$2.43	$1.88		
Number of Plants	4	4	4	4	5	5	5	6	5	6	6	7	3	3
Head & Gut														
Product Weight (1,000 lbs)	Combined with		604	1,134	1,264	989	906	1,199	1,081	1,627	869	1,156	739	1,444
1st Wholesale Value ($1,000)	Whole and Bled -		$894	$1,502	$924	$1,090	$820	$1,098	$1,421	$2,191	$947	$1,476	$927	$1,077
Price/Pound	confidential data		$1.48	$1.32	$0.73	$1.10	$0.90	$1.07	$1.55	$1.53	$1.09	$1.28	$1.25	$0.75
Number of Plants	1	2	5	5	5	6	6	6	6	6	6	7	5	6
Whole or Bled														
Product Weight (1,000 lbs)	86	717	497	896		180	57				173	695		
1st Wholesale Value ($1,000)	$36	$583	$287	$628	Combined	$108	$27	Combined with H&G			$115	$380	Confidential data	
Price/Pound	$0.41	$0.41	$0.58	$0.70	with H&G	$0.60	$0.47				$0.67	$0.55		
Number of Plants	3	4	4	5	2	4	4	3	3	3	4	4	2	2
All Products														
Product Weight (1,000 lbs)	936	1,034	1,363	2,203	1,499	1,226	1,548	1,508	1,125	1,865	1,199	1,905	845	1,663
1st Wholesale Value ($1,000)	1,256	1,119	1,544	2,401	1,411	1,281	2,261	1,619	1,510	3,110	1,443	1,959	1,031	1,484
Price/Pound	$1.34	$1.08	$1.13	$1.09	$0.94	$1.05	$1.46	$1.07	$1.34	$1.67	$1.20	$1.03	$1.22	$0.89
Number of Plants	4	5	6	6	7	7	7	8	6	7	7	8	5	6

Source: AKFIN summary of SPR data

Information reported in the tables above indicate that the types of products being produced by processors have not changed much over time periods considered. Processor representatives indicated that the costs associated with transporting rockfish from Kodiak to fresh markets is too high relative to prices that they receive to be profitable. The high transportation costs for all but the highest value species delivered to non-road system communities is currently prohibitive to develop fresh markets.

Labor costs are the limiting factor for other product types that could potentially be introduced to markets. The pilot and current program make it possible to explore developing higher value markets that can support higher production cost products. Processors have not demonstrated success in creating profitable new markets, but continue to explore markets by developing experimental projects.

Some processors also noted that they do not differentiate jig/longline gear catches in markets. Those markets provide opportunities for small boat deliveries as long as diesel prices remain sufficiently low to allow those fisheries to be profitable.

9.2 Overview of Rockfish Markets

NMFS contracted to develop a paper on wholesale market profiles for Alaska crab and groundfish species (Alaska Fisheries Science Center, 2016). The rockfish portion of that paper was limited to Pacific ocean perch. However, the general findings are also applicable to the other primary rockfish species. Information presented in that paper is used in this section.

Alaska Pacific ocean perch is exported to China (for reprocessing) and Japan. Japan is the largest final consumer market. The paper noted that increasing Atka mackerel quotas in Alaska could impact prices for Pacific ocean perch since Atka mackerel and Pacific ocean perch are reported to be competitive species in the dried fish market in Japan

A conservative estimate is that at least 48 percent of Alaska rockfish production was exported to China in 2014. Virtually all Pacific ocean perch and other rockfish exported to China is frozen whole or H&G fish. Those products are reprocessed in China, where labor costs are lower, into fillets and re-exported.

Seafood sold in the US is tracked using Harmonized System codes (H.S. codes). Use of those codes outside the United States is uncommon. As a result, it is not possible to track competing supply of Pacific ocean perch and rockfish coming into China or the markets where it goes. However, data that are available indicates China's major export markets appear to be Japan, Europe, Russia, and the United States.

Rockfish producers have been negatively impacted by unfavorable currency valuations and rising secondary processing costs. Both of these factors put downward pressure on raw material pricing for Alaska producers. (McDowell Group , 2015).

10 Fishery Revenue

Revenue is reported at two levels in this section. Ex-vessel prices are reported to represent the value paid to catcher vessels by their processor. First wholesale value is reported to provide information on the value received by catcher/processors and shorebased processors from the entities that purchase their products. When reviewing the information in this section it important to note that the changes in value and prices are driven by market forces.

The prices received by harvesters and processors are effected by a variety of factors related to the supply and demand market forces. In the case of the Central GOA rockfish harvesters, supply is generally determined by the TAC. This assumes that processors offer a price that pays harvesters a sufficient amount to induce them to fish[12]. Demand is, in part, determined by the number of persons competing to purchase the fish.

At the first wholesale level supply is again determined by the TAC. First wholesale changes in demand for whitefish can occur as a result of shifting the demand curve. The demand curve will shift at the first wholesale level from changes in:

- tastes and preferences of consumers,
- consumer's income (also changes in exchange rates which makes fish seem more or less costly), and
- changes in prices of substitute products (e.g., rockfish from other sources and other whitefish prices) - which are also affected by exchange rates.

Processors, like harvesters, may also affect their price if they are able to supply a higher quality product or more desirable product form or fish sizes to the consumer than its competitors. Since most processors produce the same product at the first wholesale level[13] differentiating products is difficult. As a result, the other market factors noted above tend to determine the prices that processors receive for their products.

Harvesters prior to the Pilot Program could have chosen to change markets (processors) at any time, if the overall benefits offered by one processor was determined to be superior. During this period, the harvesters were competing for the available TAC and had to fish when the fishery opened in July. The need to fish when the season started limited their ability to negotiate prices with processors if other vessel operators accepted a price and started fishing. Limits in processing capacity also reduced market choices for harvesters. Product quality, delivery timing, and historical relationships often affected choice of processing markets.

Under the Pilot Program, the supply of Central GOA rockfish available to a Kodiak based processor was determined by the owners of LLP licenses that joined the cooperative associated with the processor. Harvesters were linked to the cooperative and associated processor where they delivered a majority of their catch during the qualifying years. Harvesters could negotiate prices with their processor, but they eventually would need to settle on a price or both the harvesters and processor would forgo the value of the fish they

[12] The assumption is that the supply curve is a vertical line. In other words, if harvesters are paid enough to cover their costs they will catch the amount available for harvest subject to other constraints of the program (e.g., buffers to ensure they do not exceed their allocations, PSC limit constraints, etc.). In many fisheries the delivery price is negotiated prior to the fleet starting the fishing season, with price adjustments made for fish quality and/or roe bonuses the time of delivery.

[13] Traditionally processors primarily produce head & gut or whole fish in frozen blocks sold for reprocessing, but some processors have produced small amounts of fillets. Processors are continuing efforts to generate new product forms and markets. Success in these efforts are constrained by the market price for these products and the costs of production to make them.

were allocated. This limited ability to market fish reduced the ability of a harvester to command higher prices.

The Rockfish Program allows harvesters to annually determine the cooperative they will join. This is the only management structure implemented over the period considered where harvesters have a secure allocation and can annually determine where they will deliver their catch. Under this structure, the harvester can annually market his fish to any processor within the city of Kodiak. In addition, the harvester could retain the flexibility to deliver to the processor of its choice under its cooperative/processor association. The structure gives the harvesters substantially greater negotiating leverage than either the pre-Pilot Program fishery, where processing capacity limited choices of markets, or the Pilot Program fishery, where the cooperative choice was determined by historical landings.

The structure of the LAPP changes the bargaining power between harvesters and processors. Linkages between harvesters and processors were a controversial issue when the Rockfish Program was developed. While the information in this section does not determine the optimal division of first wholesale revenue between harvesters and processors, it does show trends in how the management structure, at least in part, affected market power and revenue distributions.

Central GOA trawl harvesters that fish rockfish also typically fish for pollock and/or Pacific cod. Harvesters often deliver their catch to the same processor (market). Because deliveries of the various species are not negotiated in a vacuum, competition for rockfish deliveries may be limited by the desire to obtain/retain a market for other fisheries. In other words, a harvester may choose a processor to deliver rockfish, based on existing relationships, including markets for these other (often more valuable in terms of total revenue) species.

The bargaining power of the processors and the downstream buyers they sell their fish to is not changed by the management structure. Processors must compete to sell Central GOA Rockfish Program species in a world market where there are many substitute products.

10.1 Prices and Value

Prices is this section are reported as the ex-vessel and first wholesale price per metric ton and price per pound of retained catch. Prices reported in the production section are the price per metric ton of product produced, so they are not directly comparable. All prices and values are reported in real 2009 dollars. When these data were generated the first wholesale value for 2016 was not available, so that information is excluded from the tables.

Table 10-1 provides value information, retained catch amounts, prices, and counts of vessels and processors by primary rockfish species and sablefish. Sablefish was included because it is a high value species that is important to the profitability of the rockfish fisheries. Also since the Pilot Program and Rockfish Program were implemented, the cooperative allocation of sablefish has provided the opportunity for vessels in a cooperative to directed fish for sablefish. Information in the table shows that rockfish prices tended to increase just prior to implementation of the Pilot Program. Real ex-vessel prices have varied over the life of the program, but prices were similar in 2006 and 2016 (2015 for first wholesale). The strong US dollar, relative to currencies of buying countries, has played a role in the recent prices being lower than 2012 and 2013.

Coefficients of variation were calculated for the primary species and sablefish. Each ex-vessel price coefficient of variation fell within the range of 0.31 to 0.38, indicating relatively low variance over the 2003 through 2016 time period. First wholesale price coefficients of variation were also low and ranged from 0.22 to 0.31 over the 2003 through 2015 period.

Table 10-1 Catcher vessel and shoreside processor real value and prices (in 2009 dollars) for the three primary rockfish species and sablefish, 2003 through 2016

Species/units	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Pacific ocean perch														
Ex-vessel Value ($ million)	$0.65	$0.60	$1.02	$1.42	$1.64	$1.58	$0.67	$1.51	$1.87	$3.37	$2.52	$2.55	$3.06	$3.51
First Wholesale Value ($ million)	$2.36	$2.36	$4.50	$5.65	$4.61	$5.18	$4.25	$7.46	$9.44	$10.49	$7.14	$7.27	$9.00	
Metric Tons	4,597	4,174	4,231	3,938	4,466	4,475	4,507	5,974	5,759	6,178	5,946	7,035	8,295	9,395
Ex-vessel $/lb	$0.06	$0.06	$0.11	$0.16	$0.17	$0.16	$0.07	$0.11	$0.15	$0.25	$0.19	$0.16	$0.17	$0.17
Ex-vessel $/mt	$141	$143	$241	$360	$368	$352	$149	$252	$325	$545	$423	$363	$369	$374
First Wholesale $/mt	$514	$566	$1,064	$1,435	$1,032	$1,158	$942	$1,249	$1,640	$1,699	$1,201	$1,033	$1,085	
Processing Plants	6	6	6	6	8	6	6	8	9	7	7	7	7	6
Vessels	25	26	22	23	27	27	26	27	25	28	29	28	28	26
Dusky Rockfish														
Ex-vessel Value ($ million)	$0.17	$0.18	$0.21	$0.32	$0.56	$0.63	$0.47	$0.36	$0.26	$1.08	$0.59	$0.46	$0.40	$0.61
First Wholesale Value ($ million)	$1.12	$1.22	$1.97	$1.50	$1.73	$1.78	$2.26	$1.75	$1.82	$3.57	$2.42	$1.98	$1.78	
Metric Tons	1,268	1,251	961	916	1,588	1,579	1,481	1,256	836	1,991	1,485	1,360	1,174	1,802
Ex-vessel $/lb	$0.06	$0.07	$0.10	$0.16	$0.16	$0.18	$0.14	$0.13	$0.14	$0.25	$0.18	$0.15	$0.15	$0.15
Ex-vessel $/mt	$135	$148	$215	$346	$354	$399	$318	$286	$312	$543	$399	$340	$341	$338
First Wholesale $/mt	$880	$975	$2,052	$1,640	$1,089	$1,127	$1,528	$1,395	$2,183	$1,792	$1,629	$1,454	$1,513	
Processing Plants	6	6	6	6	6	5	6	8	9	7	7	7	7	6
Vessels	25	25	22	23	26	26	26	27	25	28	28	28	28	26
Northern Rockfish														
Ex-vessel Value ($ million)	$0.38	$0.28	$0.36	$0.59	$0.74	$0.53	$0.22	$0.26	$0.22	$0.97	$0.50	$0.52	$0.39	$0.59
First Wholesale Value ($ million)	$2.41	$1.97	$3.45	$2.79	$2.34	$1.51	$1.97	$1.58	$1.86	$3.24	$2.11	$2.33	$1.87	
Metric Tons	2,740	2,017	1,680	1,698	2,145	1,344	1,287	1,132	851	1,811	1,292	1,606	1,239	1,811
Ex-vessel $/lb	$0.06	$0.06	$0.10	$0.16	$0.16	$0.18	$0.08	$0.11	$0.12	$0.24	$0.18	$0.15	$0.14	$0.15
Ex-vessel $/mt	$138	$140	$215	$347	$345	$395	$170	$234	$263	$538	$389	$327	$318	$324
First Wholesale $/mt	$880	$975	$2,052	$1,640	$1,089	$1,127	$1,528	$1,395	$2,183	$1,792	$1,629	$1,454	$1,513	
Processing Plants	5	6	6	6	6	5	6	7	8	6	7	7	8	6
Vessels	24	23	21	21	26	26	23	27	25	27	26	26	24	25
sablefish (blackcod)														
Ex-vessel Value ($ million)	$1.72	$1.52	$1.20	$1.40	$0.83	$0.57	$0.72	$0.92	$1.31	$1.12	$0.69	$1.07	$0.53	$0.75
First Wholesale Value ($ million)	$2.49	$2.37	$2.17	$2.22	$1.27	$0.86	$1.16	$1.27	$1.64	$1.30	$0.92	$1.48	$0.78	
Metric Tons	445	464	392	356	209	127	159	150	150	166	146	193	104	133
Ex-vessel $/lb	$1.75	$1.48	$1.39	$1.78	$1.79	$2.02	$2.04	$2.78	$3.97	$3.07	$2.16	$2.53	$2.31	$2.56
Ex-vessel $/mt	$3,860	$3,270	$3,068	$3,933	$3,954	$4,448	$4,499	$6,132	$8,746	$6,763	$4,765	$5,569	$5,100	$5,643
First Wholesale $/mt	$5,594	$5,119	$5,548	$6,232	$6,082	$6,789	$7,275	$8,463	$10,956	$7,837	$6,313	$7,701	$7,516	
Processing Plants	6	6	6	7	7	6	6	7	9	7	7	7	5	5
Vessels	26	26	22	23	25	23	23	25	23	25	24	26	23	23
Total of Species in Table														
Ex-vessel Value ($ million)	$2.92	$2.58	$2.79	$3.72	$3.77	$3.30	$2.08	$3.05	$3.67	$6.54	$4.31	$4.61	$4.38	$5.46
First Wholesale Value ($ million)	$8.38	$7.92	$12.10	$12.16	$9.95	$9.34	$9.63	$12.06	$14.77	$18.60	$12.58	$13.06	$13.43	
Metric Tons	9,051	7,905	7,264	6,908	8,408	7,525	7,434	8,512	7,596	10,145	8,869	10,193	10,812	13,141
Ex-vessel $/lb	$0.15	$0.15	$0.17	$0.24	$0.20	$0.20	$0.13	$0.16	$0.22	$0.29	$0.22	$0.21	$0.18	$0.19
Ex-vessel $/mt	$322	$326	$384	$539	$448	$439	$280	$358	$483	$645	$486	$452	$405	$415
First Wholesale $/mt	$926	$1,002	$1,665	$1,760	$1,183	$1,241	$1,296	$1,417	$1,945	$1,834	$1,419	$1,281	$1,242	
Processing Plants	6	6	6	7	8	6	6	8	9	8	7	7	8	6
Vessels	26	26	22	23	27	27	26	27	25	28	29	28	28	26

Source: AKFIN summary of CAS and COAR data

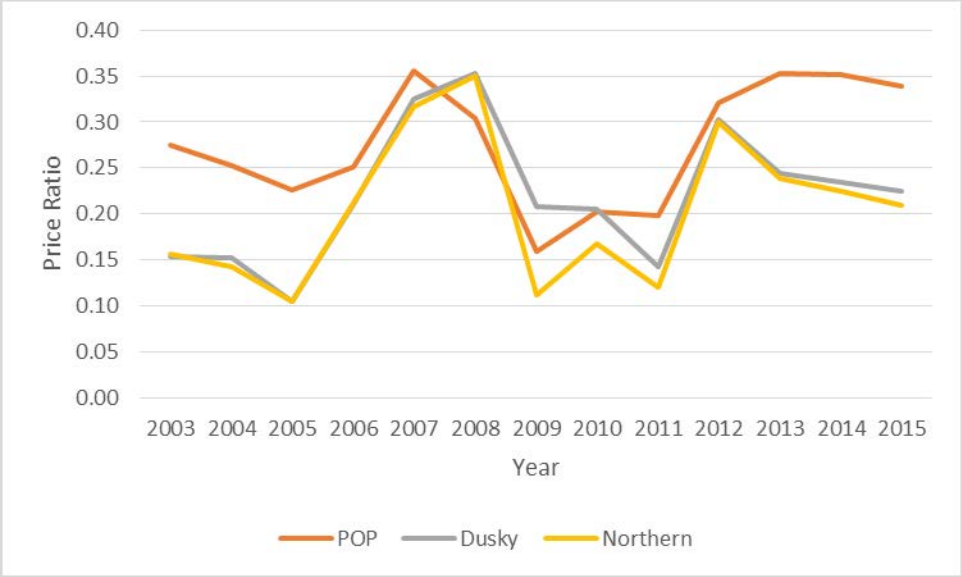
Figure 10-1 provides information on the average annual ratio of ex-vessel to first wholesale prices for the three primary rockfish species. The ratios for dusky and Northern rockfish tend to track fairly closely. Pacific ocean perch's ratio tended to be higher. Price ratios early in the period and during the majority of the Pilot Program period were lower than the transition period for the pre-Pilot Program/Pilot Program and the Rockfish Program. Several factors could influence the movement of the price ratio, including the structure of the Pilot Program and Rockfish Program. An area of concern for harvester and processors was how changes in the harvester/processor linkage within the cooperative structure would alter bargaining power. Except for 2007 and 2008 the ratio seems to track with the management structure. The 2007 and 2008 period was when diesel prices were very high. That may have contributed to harvesters being paid a higher percentage of first wholesale prices those years to help offset those increased harvesting costs. The ratio of ex-vessel to first wholesale price is only an indicator of changes in market power. As note by the

Council's Scientific and Statistical Committee in their minutes from the October 2016 halibut and Sablefish IFQ program review:

> *…the division of revenues between processors and vessels with wholesale and ex-vessel prices, this is not equivalent to tracking the extent to which fishery rents accrue to processors, vessel owners, crew, and quota owners, which is critical to monitoring the extent to which business relationships are maintained, and to which those who are directly involved in the fishery benefit from the IFQ program.*

Information is provided in this section because data are not available to determine the rents that accrue to the various fisheries sectors. NMFS and ADF&G collect data on landings value. Economic data reports collect information on the Amendment 80 fleet, but similar cost data are not available for the catcher vessel sector and the Council and NMFS do not currently have the authority to collect that information for shorebased processors.

Figure 10-1 Ratio of ex-vessel to first wholesale primary species prices, 2003 through 2015



Source: AKFIN summary of CAS and COAR data

Catch, value, and price data for the catcher/processor sector are provided in Table 10-2. Catch increased from 2003 relative to 2016 for Pacific ocean perch and dusky rockfish, but decreased for Northern rockfish and sablefish. The increased catch of Pacific ocean perch is correlated to the increased Central GOA TAC, especially over the 2012 through 2016 period. Dusky rockfish catches were relatively stable during the Rockfish Program, ranging from 1,074 mt to 1,207 mt. Dusky rockfish catches were as low as 508 mt in 2016.

The first wholesale value derived from the reported species was greatest in 2011 and 2012. From 2011 to 2015 the real first wholesale value declined 22 percent. Values declined even though the catch of all the primary rockfish species increased. Reported sablefish catch only decreased by 3 mt over that period. The impact of the strong US dollar likely played a role in the decreasing first wholesale prices over that period.

Table 10-2 Catcher/processor real first wholesale value and prices (in 2009 dollars) for the three primary rockfish species and sablefish, 2003 through 2016

Species/units	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Pacific ocean perch														
First Wholesale Value ($ million)	$1.48	$2.67	$3.66	$3.71	$2.61	$2.73	$2.85	$5.39	$7.44	$5.96	$4.05	$5.28	$5.59	
Metric Tons	1,876	2,894	2,810	2,628	2,594	2,923	2,963	3,925	3,629	3,876	3,668	4,339	5,150	5,673
First Wholesale $/mt	$791	$921	$1,302	$1,413	$1,005	$934	$963	$1,374	$2,050	$1,538	$1,104	$1,218	$1,087	
Vessels	4	6	6	4	4	6	8	7	5	5	6	5	4	6
Dusky Rockfish														
First Wholesale Value ($ million)	$0.45	$0.58	$0.46	$0.77	Conf.	$1.02	$0.44	$0.94	$1.73	$1.63	$0.90	$1.14	$1.26	
Metric Tons	690	669	589	508	Conf.	1,184	583	1,081	1,047	1,207	1,129	1,174	1,105	1,074
First Wholesale $/mt	$659	$874	$779	$1,519	Conf.	$859	$763	$870	$1,656	$1,351	$800	$969	$1,139	
Vessels	5	6	6	4	3	5	7	5	5	5	6	5	4	5
Northern Rockfish														
First Wholesale Value ($ million)	$0.92	$0.93	$1.70	$2.20	Conf.	$0.49	$0.49	$0.71	$1.14	$1.74	$0.89	$1.37	$1.41	
Metric Tons	1,580	1,329	1,586	1,626	Conf.	616	627	641	578	1,268	1,070	1,252	1,405	1,258
First Wholesale $/mt	$583	$697	$1,072	$1,356	Conf.	$795	$780	$1,102	$1,968	$1,373	$835	$1,093	$1,004	
Vessels	5	6	6	4	3	5	8	5	5	4	6	5	4	5
sablefish (blackcod)														
First Wholesale Value ($ million)	$1.50	$1.54	$1.74	$0.79	Conf.	$1.13	$0.59	$1.16	$1.42	$1.18	$1.12	$1.11	$0.80	
Metric Tons	265	267	313	127	Conf.	153	79	135	130	183	176	144	123	127
First Wholesale $/mt	$5,673	$5,757	$5,575	$6,179	Conf.	$7,379	$7,441	$8,622	$10,895	$6,434	$6,392	$7,711	$6,460	
Vessels	5	6	5	4	3	6	8	6	5	5	6	5	4	5
Total of Species in Table														
First Wholesale Value ($ million)	$4.36	$5.71	$7.56	$7.47	$4.81	$5.37	$4.37	$8.20	$11.73	$10.51	$6.97	$8.90	$9.06	
Metric Tons	4,412	5,158	5,298	4,889	4,089	4,876	4,252	5,782	5,385	6,534	6,042	6,909	7,783	8,132
First Wholesale $/mt	$989	$1,108	$1,427	$1,529	$1,177	$1,101	$1,029	$1,418	$2,179	$1,608	$1,154	$1,288	$1,164	
Vessels	5	6	6	4	4	6	8	7	5	5	6	5	4	6

Source: AKFIN summary of CAS and COAR data

Revenue performance metrics for the Rockfish Program are reported on pages 349 through 355 in the 2016 Economic SAFE (Ben Fissel, 2016). The reader is referred to that document for additional information. The 2016 Economic SAFE also projects prices for Pacific ocean perch (a proxy for all rockfish), but indicates that there is currently limited information to make projections. However, the mean price projections indicate a slight increase through 2020, from $1.12/lb reported for 2015 in the SAFE to $1.20/lb.

10.2 Exchange Rates

Exchange rates impact the cost of U.S. goods purchased by international buyers. When the U.S dollar (USD) is stronger compared to a foreign currency, one USD will buy more of that country's currency; conversely, when the USD is weaker their currency will buy fewer USD. A stronger dollar makes goods produced in the U.S. more expensive for individuals and businesses in countries buying the product. The higher cost can reduce demand for those products in the world market, especially when other counties that supply substitute products have more favorable exchange rates.

Exchange rates of selected countries that either purchase rockfish or supply substitute species are reported in Figure 10-2. The maximum, minimum, and average exchange rates for the years 2007 through early 2017 are reported in this section. Reporting the maximum and minimum rates in addition to the average rate for the year provides some context of the fluctuation during the year.

The final figure is an index of the exchange rates using 2011 as the base year. The index is calculated using the formula below:

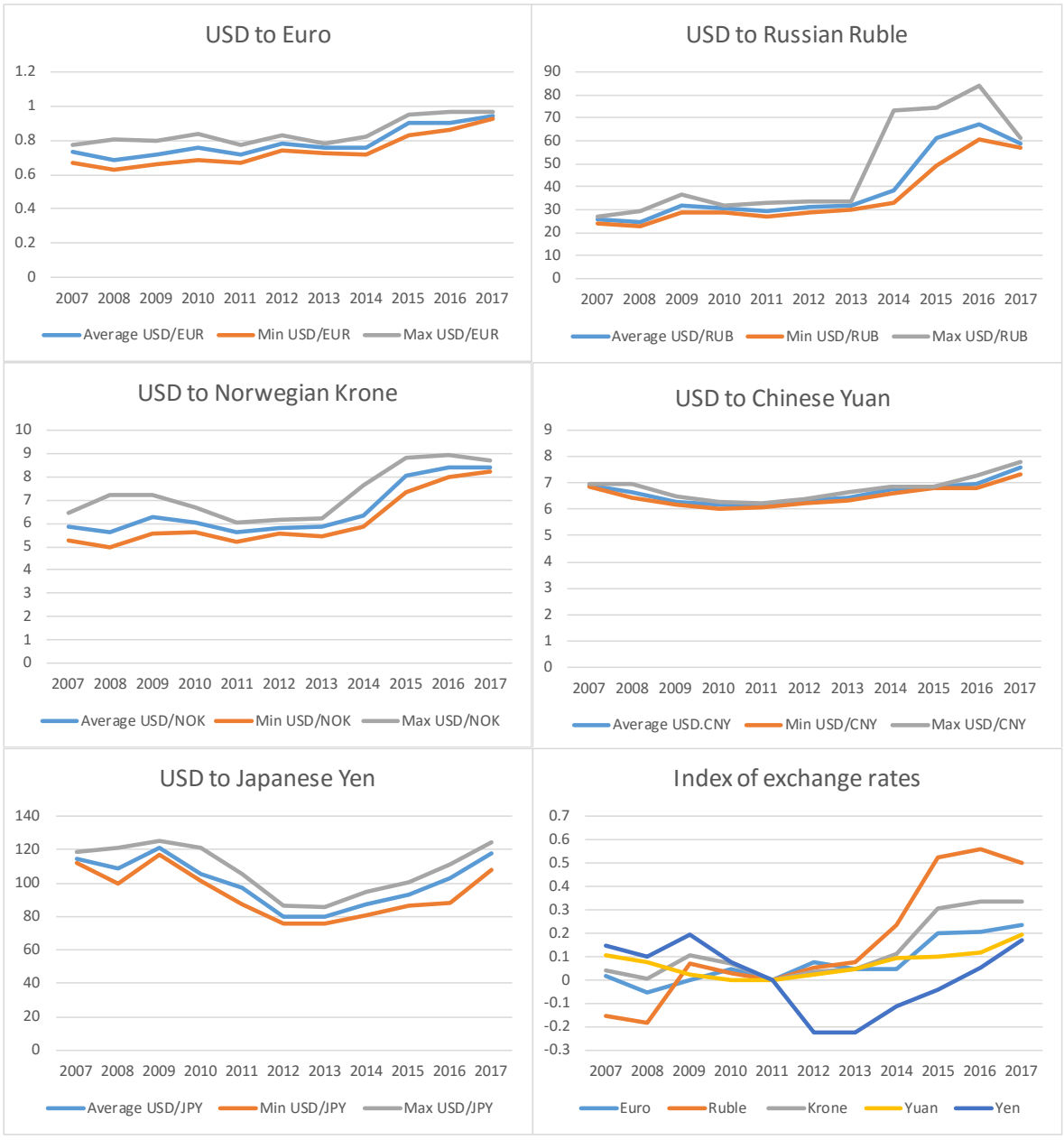
$$Index = 1 - (\frac{ERi}{ER2011})$$

ER_i is the exchange rate of the USD to the foreign currency in a year from 2007 through 2017; ER_{2011} is the exchange rate of the USD to the foreign currency in 2011. Based on the formula, the index will be zero in 2011, the base year. Years when the index is greater than zero the dollar was stronger than it was in the

base year. The percentage it was stronger or weaker than the base year is reflected in the y-axis values. For example, in 2016 the exchange rate of the USD to the Euro was about 20% greater than it was in the base year. So, all other factors held constant in that year, a European country buying rockfish would seem 20% more expensive in 2016 than it did in 2011. Residents, of a European country buying, a similar product from Russia would need to pay less than in 2011 because the value of the ruble decreased more than the Euro.

Information shown in the figures indicates that since 2012 the USD has trended to increase in strength relative to the currencies considered. Exchange rates for the USD relative to the Chinese Yuan have been relatively stable over the period considered. Stable rates between the two currencies is primarily due to the fiscal policy of the Chinese government that "pegged" the Yuan to the USD. However, that policy was modified in August 2015 to allow limited fluctuation in value. The policy to control movement in the exchange rates between the two countries has resulted in a modest strengthening of the USD to the yuan in recent years.

Figure 10-2 Exchange rates of USD to select foreign currencies (2007 through February 2017)



Source: https://www.federalreserve.gov

11 Excessive Ownership and Use Limits

Ownership and use caps are imposed to limit consolidation of QS and CQ in the Central GOA rockfish fisheries. When the caps were developed the Council tried to balance the goals of improving economic efficiency by allowing entities to take advantage of economies of scale relative to protecting other members of the sector, maintaining employment opportunities for vessel crew, and providing financially affordable access opportunities for new participants.

Caps apply to catcher vessels, cooperatives, processors, and catcher/processors. Use caps apply to CQ issued to cooperatives. Ownership and control caps apply to QS issued to LLP license and the owners of LLP licenses. The caps include:

(1) A rockfish harvester may not hold more than 4 percent of the aggregate rockfish primary species QS assigned to the catcher vessel sector. This also limits the amount of secondary and PSC species a harvester may hold since it is based on the amount of primary species QS assigned to the LLP License.

(2) A catcher vessel may not harvest more than 8 percent of the CQ of rockfish primary species during a calendar year.

(3) A rockfish program processor may not receive or process more than 30 percent of the aggregate CQ allocated to the catcher vessel sector during a calendar year. As a result, rockfish processors would also be prohibited from receiving or processing more than 30 percent of:

    a. primary rockfish species,

    b. Pacific cod, and

    c. sablefish

    harvested with CQ assigned to the catcher vessel sector during a calendar. Rougheye and shortraker rockfish are managed under an MRA and CQ for those species is not allocated to the catcher vessel cooperatives. Because CQ is not allocated a cap is not applied to those species other than the MRA limits.

(4) Catcher vessel rockfish cooperatives would be limited to using not more than 30 percent of the CQ allocated to the catcher vessel sector.

(5) A rockfish program catcher/processor may not hold an amount of primary rockfish species CQ that is more than 40 percent of the aggregate rockfish primary species QS assigned to the catcher/processor sector. The program also limits a vessel participating in the catcher/processor sector from harvesting more than 60 percent of the CQ of primary rockfish species in the catcher/processor sector.

The Rockfish Program includes a grandfather provision that allowed persons whose initial allocation of QS and resulting CQ that was in excess of the use caps to retain that amount. It was determined that the processor caps apply to the individual plants. Changes in ownership of Kodiak plants are described in the Fishing Communities section, but the consolidation at the firm level do not impact the amount of Rockfish Program CQ a plant may receive and process.

11.1 Management of limits

To monitor the caps NMFS requires harvesters and processors to submit information through annual cooperative applications, cooperative transfer requests, and annual catch reports. NMFS uses the information to enforce the use cap provisions, track primary rockfish species and secondary species CQ

use, and to discourage rockfish harvesters from entering into corporate arrangements that would frustrate the goal of the use caps.

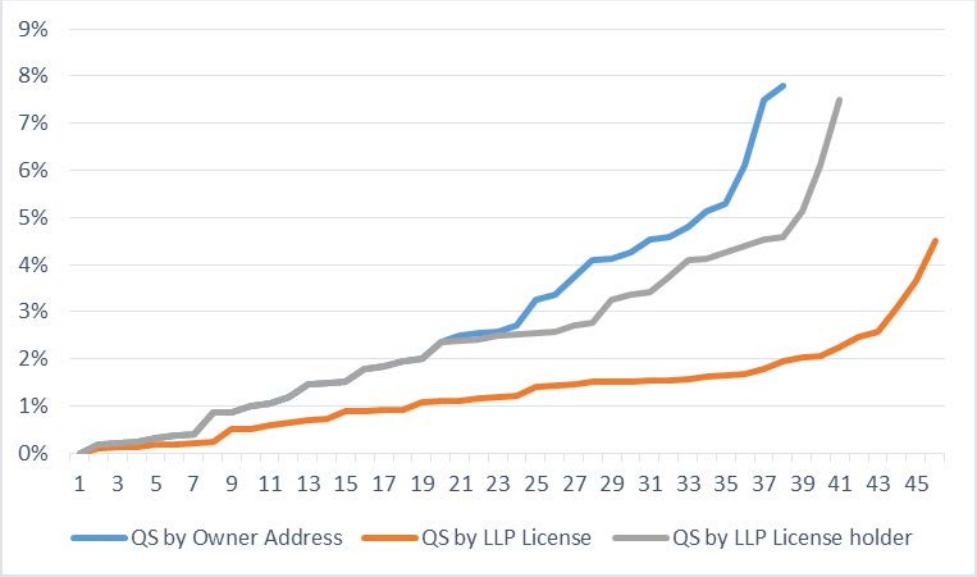
11.2 Ownership Limits

The ownership and use caps appear to be functioning as intended when the Rockfish Program was implemented. The number of vessels participating in the Central GOA rockfish fishery has been relatively stable and about twice the number allowed if the maximum level of consolidation were to occur.

11.2.1 Catcher Vessels

Harvesters in the catcher vessel sector may not hold more than 4 percent of the aggregate primary rockfish species quota. **Figure 11-1** shows the aggregate percentage of primary Rockfish Program QS assigned to each catcher vessel LLP License and the percentage when the LLP Licenses associated with an address are aggregated. Only one of the 46 LLP Licenses was issued more than 4 percent of the primary species QS. Aggregating the QS by LLP License holder name shows that 32 of the 41 LLP License holders by name were under the 4 percent cap. The remaining 9 persons held more than the 4 percent cap. When the LLP license primary QS is aggregated by reported LLP License address, 27 of the 38 catcher vessel LLP license holder addresses are under the 4 percent cap. The remaining 11 addresses were associated with LLP licenses that exceeded the 4 percent limit. Depending on the ownership structure of the owners of those LLP licenses the harvesters may be grandfathered in above the cap.

Figure 11-1 Percentage of primary RP catcher vessel QS held by LLP license, LLP license holder, and LLP license holder address at the time of initial allocation



Source: Summary of NMFS reported initial allocation of QS.
https://alaskafisheries.noaa.gov/sites/default/files/reports/initialqsowners.csv

Based on the above information above, the LLP licenses with allocations under the cap, assuming away limits imposed on LLP license purchases under other programs, could be purchased by other current participants under the cap. These purchases could occur if the harvester's combined holdings was under the 4 percent limit. However, because the Central GOA rockfish fishery is generally a small part of the LLP license holders annual fishing cycle and the RP QS cannot be separated from the LLP license, the sale and

purchase of LLP licenses is only partially driven by rockfish fishery considerations. Participation in the BSAI fisheries and GOA pollock, Pacific cod, and flatfish fisheries are more likely to determine whether an LLP licenses is sold. If quota is transferred, annual transfers of CQ are more likely to occur within the cooperative as opposed to sale of the entire LLP license with all its associated endorsements.

11.2.2 Catcher/Processors

Ownership limits are set at 40 percent of the catcher/processor sector allocation. Table 11-1 provides a summary of the data presented on the NMFS web site for the 2017 LLP license owners. The information is reported by address, because it is a reasonable proxy for ownership information. All of the LLP licenses associated with a unique address sum to less than 40 percent of the sector's allocation. LLP licenses associated with one address are issued QS that sums to just under the limit (39.37 percent). Two other addresses are associated with LLP licenses that sum to 28 percent of the sector allocation. The remaining three addresses are associated with LLP licenses that account for 2 percent or less of the sector's allocation.

Table 11-1 Initial 2017 primary QS issued by owner address and LLP license

	Percent of Primary QS Issued for 2017				
Address/LLP license	**Northern Rockfish**	**Pacific Ocean Perch**	**Pelagic Shelf Rockfish**	**Total**	**% of Sector QS**
120 TILLSON AVE STE 1	***9.07%***	***14.82%***	***4.65%***	***11.51%***	***28.81%***
O'HARA CORPORATION	9.07%	14.82%	4.65%	11.51%	28.81%
1801 FAIRVIEW AVENUE EAST #100	***0.60%***	***0.46%***	***1.35%***	***0.66%***	***1.64%***
ALASKA LEGACY, LLC	0.16%	0.09%	0.07%	0.10%	0.25%
CAPE FLATTERY WASHINGTON LLC	0.17%	0.21%	0.13%	0.18%	0.46%
SEAFREEZE AMERICA LLC	0.27%	0.17%	1.16%	0.37%	0.93%
2025 1ST AVE, STE 900	***0.27%***	***0.09%***	***1.15%***	***0.33%***	***0.82%***
AMERICAN SEAFOODS CO LLC.	0.27%	0.09%	1.15%	0.33%	0.82%
2320 WEST COMMADOR WAY, STE. 200	***0.47%***	***0.00%***	***0.80%***	***0.26%***	***0.66%***
UNIMAK VESSEL, LLC	0.47%	0.00%	0.80%	0.26%	0.66%
4201 21ST AVENUE WEST	***11.96%***	***12.35%***	***7.92%***	***11.46%***	***28.70%***
AK VICTORY, INC.	4.20%	10.40%	3.02%	7.46%	18.69%
M/V SAVAGE, INC.	7.76%	1.95%	4.90%	4.00%	10.01%
570 KIRKLAND WAY, STE. 200	***18.47%***	***12.28%***	***22.56%***	***15.73%***	***39.37%***
NORTH PACIFIC FISHING, INC.	7.61%	5.65%	10.63%	7.05%	17.65%
U.S. FISHING, L.L.C.	10.85%	6.63%	11.93%	8.68%	21.73%
CP Sector	***40.83%***	***40.00%***	***38.43%***	***39.94%***	***100.00%***

Source: RAM 2017 initial allocation data
https://alaskafisheries.noaa.gov/sites/default/files/reports/17RP_Current_Owners_and_QS.csv

One of the companies that purchased quota from the Fishing Company of Alaska when it was sold was reported to have adjusted their LLP license holdings to stay under the ownership limit. If the limit were not in place it is likely that company would have not divested and would have holdings greater than 40 percent of the sector's allocation. Based on the information available it appears the limits are functioning as intended, preventing persons from acquiring excessive Rockfish Program QS holdings. Excessive holdings were defined by the Council and Secretary and adjustments to the size of the caps are not considered as part of this review since they seem to function as intended.

11.3 Catcher vessel cooperative limits

Based on the requirements of the Rockfish Program, a catcher vessel cooperative may not hold or use more than 30 percent of the QS assigned to the catcher vessel sector. Table 11-2 shows the percentage of catcher vessels QS initially assigned to each catcher vessel cooperative. None of the cooperatives were over the limit at the time Rockfish Program allocations were initially issued in 2012 or in 2017. The Star of Kodiak Rockfish Cooperative was closest to the limit. In that case the limit could be a constraint on recruiting new cooperative members. Overall, the limits implemented as part of the program have been effective at limiting consolidation within cooperatives beyond that determined to be appropriate when the program was developed.

Table 11-2 Percent of catcher vessel QS assigned to cooperatives

Catcher Vessel Cooperative	Pilot	RP	2017
GLOBAL ROCKFISH COOPERATIVE	0.00%	1.98%	4.53%
I.S.A. ROCKFISH COOPERATIVE	14.96%	13.19%	15.55%
NORTH PACIFIC ROCKFISH COOPERATIVE	12.07%	15.90%	18.30%
OBSI ROCKFISH COOPERATIVE	22.04%	25.29%	15.71%
PACIFIC ROCKFISH COOPERATIVE	0.00%	4.44%	4.44%
STAR OF KODIAK ROCKFISH COOPERATIVE	22.54%	27.49%	27.50%
WESTERN ALASKA FISHERIES ROCKFISH COOPERATIVE	28.39%	11.70%	13.96%
Total	**100.00%**	**100.00%**	**100.00%**

Source: NMFS reported initial allocations by LLP license linked to cooperative membership

Based on reported delivery data no cooperative was over 30 percent usage after 2011. While some trading of CQ did occur among cooperatives, the delivery patterns are similar to the CQ allocations by cooperative presented in the previous table. Again, this indicates the use limits implemented as part of the Rockfish Program have been effective.

11.4 Excessive harvesting limits

Harvesting limits are imposed to prevent cooperative members from using excessive amounts of CQ on member vessels and as a result reducing the number of vessels that are active in the Rockfish Program. Information is not reported for individual vessels in this section, but a general description of catch is provided, focusing on whether entities have exceeded the limits.

11.4.1 Catcher vessels

A catcher vessel may not be used to harvest or use more than 8 percent of the primary species CQ issued to the catcher vessel sector. No vessels were grandfathered in at the 8 percent use cap (North Pacific Fishery Mangement Council, 2011)[14].

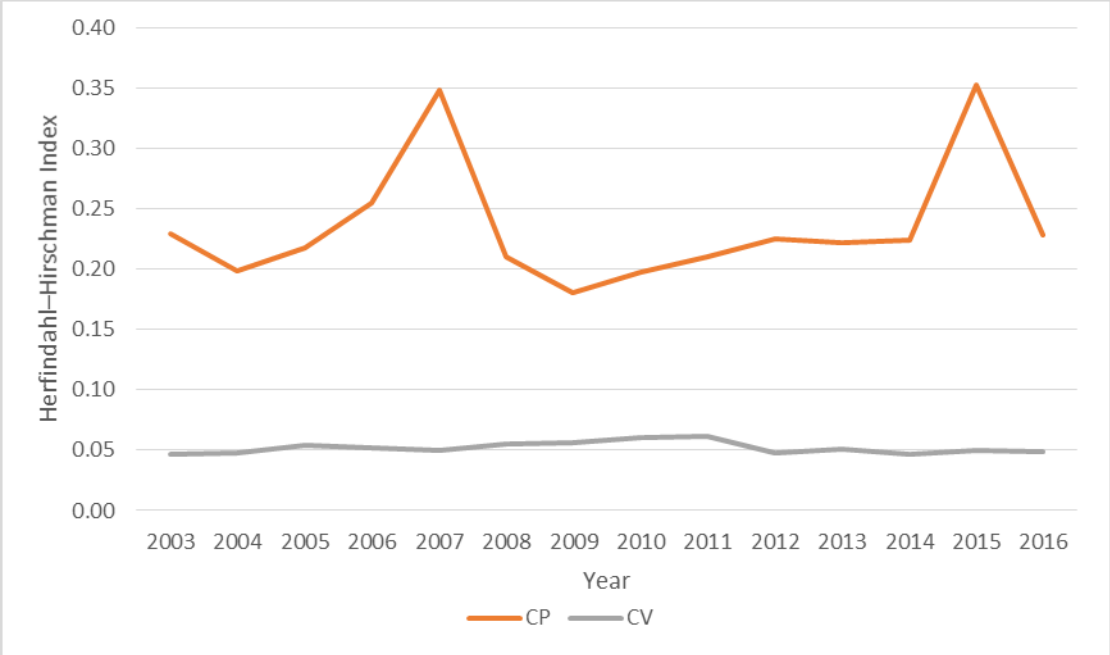
CAS data indicates that no catcher vessels have exceeded the use cap. Three or fewer vessels have reported primary species catch data that approached the cap during a year. These vessels, and potentially others, may find the cap constraining and would increase their catch within the cooperative if the limit were not in place.

[14] See page 123

The purpose of this cap was to ensure that harvest of primary species by individual vessels does not exceed the specified threshold and, indirectly, require that a minimum number of vessels remain active in the rockfish fisheries. At the 8 percent cap a minimum of 13 vessels could be used to harvest the allocation of primary rockfish species. As shown in Table 5-10 the average number of catcher vessels active in the fishery is about twice that number. So while the cap may limit the activity of certain vessels, other economic and political forces have limited concentration of catch by the fleet overall.

In addition to the number of vessels participating in the fishery, another measure of market concentration is the Herfindahl–Hirschman Index (HHI). The HHI for the catcher vessel sector is consistently about 0.05 over the 2003 through 2016 period (Figure 11-2). This indicates almost no change in the level of consolidation of the Central GOA primary rockfish species harvests. Between the pre-Pilot Program period and 2016. There was a slight increase in the HHI during the Pilot Program years, but the implementation of the Rockfish Program and the new allocation formula reduced the HHI to approximately pre-Pilot Program levels.

Figure 11-2 Catcher vessel and catcher/processor HHI for Central GOA primary rockfish catch from 2003 through 2016



Source: AKFIN summary of CAS data

11.4.2 Catcher/processors

A catcher/processor may not be used to harvest or use more than 60 percent of the cooperative quota issued to the catcher/processor sector. Catch data for the catcher/processor sector indicates there are typically about four or five vessels active in the fishery and no vessel has ever reported catch that exceeded the 60 percent use cap.

The use caps for the catcher/processor sector appear to be functioning as intended. The use cap would allow as few as two vessels to harvest the entire allocation. So, like the catcher vessel sector about twice as many vessels participate on an annual basis as required under the use caps.

For the catcher/processor sector there was more variation in the level of harvest consolidation over the period considered, but the 2003 HHI and 2016 HHI are almost identical (Figure 11-2). More variation can occur in the catcher/processor sector since there are relatively few vessels operating in the fishery. The catcher/processor HHI indicates that there was little consolidation in the catcher/processor sector over the years considered.

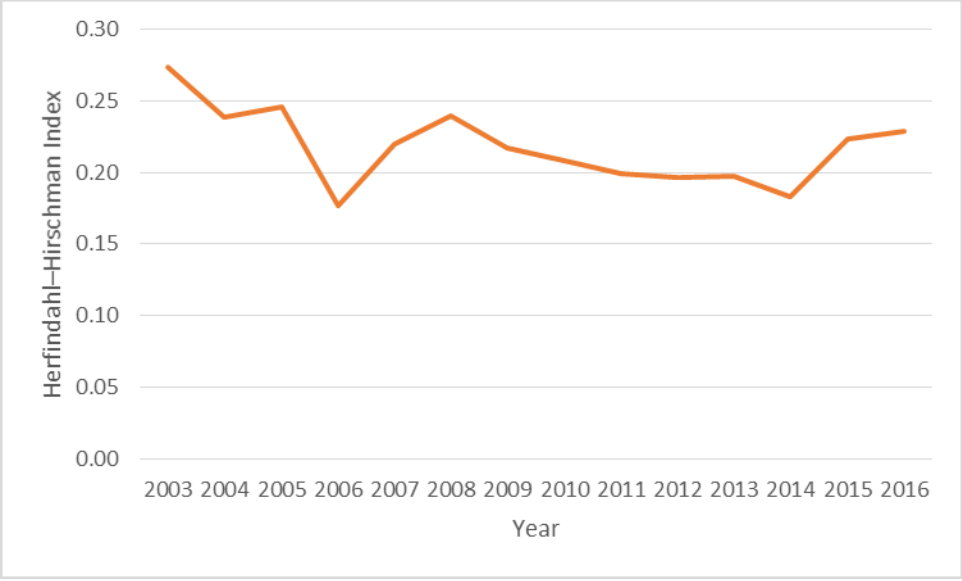
11.5 Excessive processing limits

Processors are limited to not receiving or processing more than 30 percent of the CQ issued to the catcher vessel sector. This includes the three primary rockfish species, Pacific cod, and sablefish. No processors have exceeded the 30 percent limit imposed under the Rockfish Program. The 30 percent cap ensures that a minimum of four Kodiak processors will take deliveries of Rockfish Program CQ catches.

The cap was intended to maintain a distribution of processing activity among several processors, which might benefit employees of those plants. In addition, the cap could be intended to stabilize the processing sector. Particularly since it was accompanied by a Kodiak landing requirement. Based on the 2017 allocations to cooperatives, which are associated with particular plants, the caps appear to be effective in preventing excessive consolidation.

Additional information on the number of active plants are reported in Section 5.4. The HHI for the shorebased processing sector, based on groundfish deliveries from Central GOA rockfish target fisheries, indicates that some consolidation has occurred after 2014 but even the increased levels are similar to those in the pre-Pilot Program years[15]. The pre-Pilot Program years had the most variation which reflects greater uncertainty in the limited access fishery delivery patterns.

Figure 11-3 Shorebased processing Herfindahl–Hirschman Index for groundfish delivered in the Central GOA Rockfish target fisheries, 2003 through 2016



Source: AKFIN summary of CAS data

[15] The 2007 and 2008 HHI are similar to the 2015 and 2016 HHI.

From a processor's perspective, the processing limits could create economic inefficiencies. The caps could keep certain plants from operating at capacity, which may increase costs per unit of production. Caps may also hinder processors from efficiently developing markets by constraining the amount of product they can supply. Limiting the amount of raw product available may also constrain the company's ability to experiment in developing new product forms.

12 Overview of Changes in Ownership

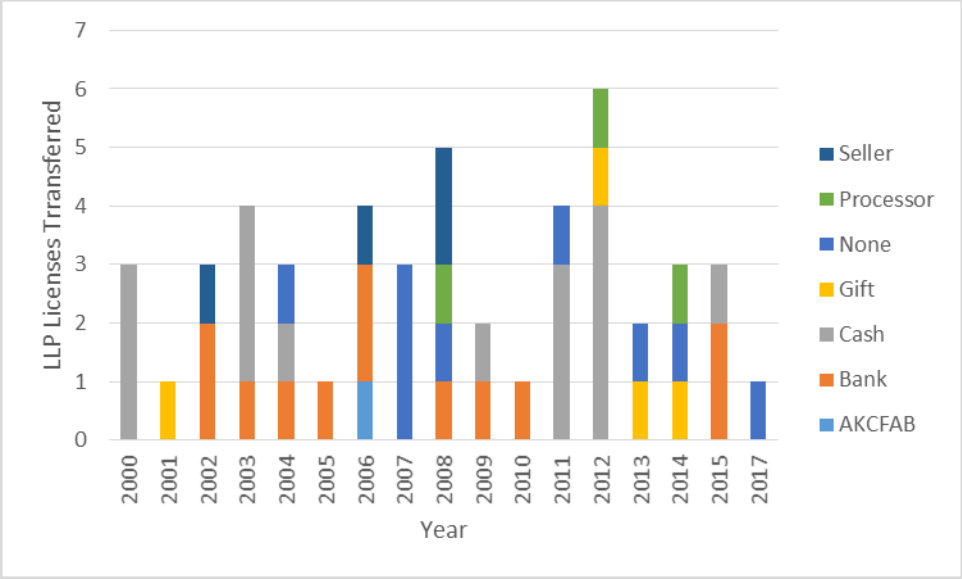
Ownership of fishing privileges in the Rockfish Program is based on ownership of LLP licenses with qualifying catch history that generated QS. To consider ownership changes in the Rockfish Program, LLP license transfers reported to NMFS RAM were reviewed for the years 2000 through May 23, 2017.

12.1 Catcher Vessel Sector

Figure 12-1 reports the groundfish catcher vessel LLP license transfers. Transfers each year are broken out by the reported primary finance method used to complete the transfer. When the transfer was reported as using "none" or "gift" as the primary financing method the sale was typically not and arms-length transaction. Those transfers were often transferring the LLP license to reorganize the structure of the company that held the LLP license or to transfer the LLP license to a friend or family member.

Also note that no LLP license transfers were reported for 2016. That year is not included in the figure.

Figure 12-1 Catcher vessel LLP license transfers by primary finance method, 2000 through May 2017



Source: AKFIN summary of NMFS RAM transfer data

The number of transfers in a year tends to be greatest shortly after a new version of the rockfish program is implemented, but only slightly greater. Uncertainty associated with the outcome of the new program likely hinders sales that are being considered prior to implementation. When the program is implemented buyers and sellers are better able to assess the value of the LLP license and creates a market that is more conducive to trading.

Table 12-1 shows all reported transfers by the quartile price reported. Individual prices cannot be reported due to confidentiality restrictions placed on the data. Instead prices are reported by quartile. The first quartile is defined as the middle number between the smallest number and the median of the data reported. The second quartile is the median of all the reported prices. The third quartile is the middle value between the median and the highest value of the price data reported. All prices are reported as the real price set at 2009 dollars using the U.S. Gross Domestic Product (GDP) price index.

Table 12-1 Reported LLP license transfer price by quartile and management program years

Quartile	Reported Transfer Price		
	2000-2006	2007-2011	2012-2017
1st	$ 8,570	$ -	$ -
2nd	$ 183,179	$ 25,190	$ 833,431
3rd	$ 437,822	$ 226,709	$ 2,307,672

Source: AKFIN summary of NMFS RAM LLP License transfer data

As expected it is difficult to derive meaningful information from the LLP license prices reported. The small values for the first quartile are the result of a $0 value reported for the selling price of more than 30% of the reported transfers. In addition, not all of the transactions are arm's length which may distort to the market price. Finally, the sale may include other items (vessels) which may inflate or obscure the true market prices of the LLP license and its QS.

12.2 Catcher/Processor Sector

A total of eight unique catcher/processor LLP licenses were transferred a total of 24 times from 2000 through May 23, 2017. All reported transfers are shown in Figure 12-2. The reasons reported for the transfers were:

- Eleven of the transfers were part of restructuring a business that retained the LLP license, or moving a license to another vessel owned by the company;
- Two transfers were due to either a court order or foreclosure;
- Two transfers were the sale of the business; and
- Nine transfers did not report the reason.

A sales price was reported for just five of the 24 transfers. Of the values that were reported the largest value was about 95 times greater than the smallest. As a result of the limited number of transfers, information on the average sale value or the quartiles of the sales value is not reported for the catcher/processor LLP license sales.

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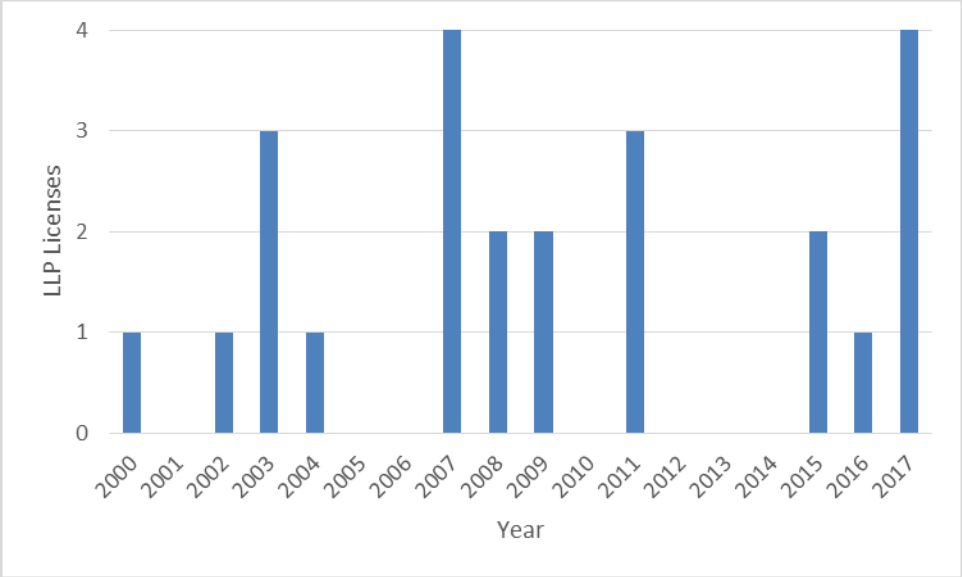
Figure 12-2 Catcher/processor LLP license transfers, 2000 through May 2017



Source: AKFIN summary of NMFS RAM LLP License transfer data

12.3 Processing Sector

Recent changes in the Kodiak based shoreside processing ownership are described in the reports developed for the GOA Trawl Bycatch Management Program (Northern Economics, 2016). That report indicated that a major change was Trident Seafoods construction of the new Kodiak Near Island (KNI) plant that became operational in the summer of 2015, and the acquisition of the former Alaska Fresh Seafoods and Western Alaska Fisheries plants in 2014 and 2015, respectively. That paper also noted that Silver Bay Seafoods had purchased some ISA assets, but none of those assets were directly related to the Rockfish Program.

Increased vertical integration was anticipated as a possible outcome when the harvester/processor linkage was removed under Rockfish Program. At the harvesting and first processing level in the Central GOA rockfish fishery vertical integration can occur either by more of the fishery being harvested by catcher/processors, shorebased processors buying catcher vessels, or catcher vessels buying a shorebased processor(s). The regulations implemented as part of the Rockfish Program that prohibit the transfer of quota from the catcher vessel sector to the catcher/processor sector effectively limit increased vertical integration of the rockfish fishery in the catcher/processor sector.

The Rockfish Program allocated a greater percentage of the TAC to the inshore sector. That movement of quota between sectors reduced the vertical integration of up to 16 percent of the TAC of primary and secondary species, since it was moved from vertically integrated catcher/processors to the inshore sector. Some of the inshore catcher vessels are closely associated with processors (through ownership or control), so the decrease in vertical integration is less than 16 percent.

The catcher vessel transfer data indicates that three of the LLP license transfers were primarily financed by a processor (Figure 12-1). Those transfers occurred in 2008, 2012 and 2014. The transfer data does not indicate any level of control beyond the source of financing. In each case the reason listed for the transfer was retirement of the catcher vessel LLP holder. Based on that information it does not appear that excessive vertical integration has occurred in the inshore sector.

13 Fishing Communities

13.1 Overview

This section provides an overall comparative summary of community impacts previously described in NPFMC documents as associated with the Rockfish Pilot Program and those identified as associated with the Rockfish Program in the Draft Social Impact Assessment included with this document as Appendix 1. Conclusions are also drawn regarding the presence or absence of environmental justice concerns and/or risks to the sustained participation of fishing communities since the fishery began to be managed under the Rockfish Program.

13.2 Community Impacts of the Rockfish Pilot Program as Documented in Earlier Council Reports

Community impacts of the Rockfish Pilot Program were documented in two previous NPFMC reports. These are the Gulf of Alaska Rockfish Pilot Program Review (NPFMC 2008) and the Regulatory Impact Review, Final Environmental Assessment, and Initial Regulatory Flexibility Analysis for proposed Amendment 88 to the Gulf of Alaska Fishery Managment Plan, Central Gulf of Alaska Rockfish Program (NPFMC 2011).

13.2.1 Gulf of Alaska Rockfish Pilot Program Review

The Gulf of Alaska Rockfish Pilot Program Review, completed after the first year of fishery management under the pilot program, included what can be described as five main community impact related findings.

- Finding 1: Transfers of quota from catcher processor cooperative allocations to catcher vessel cooperatives benefitted catcher vessel cooperatives affiliated with Kodiak shore-based processors as well as the processors themselves.

- Finding 2: Little information was available regarding impacts to captains and crew, but no major adverse program effects were obvious. Impacts to catcher vessel crew payments were assumed to be beneficial, but data to quantify these impacts were not available.

- Finding 3: Some Kodiak shore-based processors benefited from their history in the fishery, others benefitted from their participation in the entry level fishery, and the community benefitted from virtually all CGOA rockfish shore-based processing remaining in Kodiak.

- Finding 4: A temporal redistribution of rockfish fishery landings had operational benefits for shore-based processors in Kodiak and had additional benefits to the community of Kodiak through catcher vessels and their crews being in the community for a longer portion of the year (and perhaps longer periods of time during deliveries). The impacts on Kodiak processing crews and support service businesses from the shift of the peak in rockfish landings from July to May/June in combination with their occurrence over a greater portion of the year were likely beneficial, but data to quantify these impacts were not available.

- Finding 5: The transfer of quota from the catcher processor to the catcher vessel sector benefitted Kodiak through increased local vessel activity.

These findings were broadly consistent with community impacts predicted in the pre-implementation Regulatory Impact Review and Final Environmental Assessment for Proposed Amendment 68 to the Gulf of Alaska Fishery Management Plan: Central Gulf of Alaska Rockfish Demonstration Program (NPFMC 2006), with one exception. The 2006 document suggested that "under either alternative, catcher vessel entities that receive small allocations could be disadvantaged, if holders of large allocations are able to draft cooperative terms that favor holders of large allocations over holders of small allocations." The 2008 document is silent on whether entities with smaller allocations were subsequently disadvantaged, but later input from industry (Alaska Groundfish Data Bank 2017[16]) suggests that this has not occurred.

13.2.2 Central Gulf of Alaska Rockfish Program RIR/FEA/IRFA

The Regulatory Impact Review, Final Environmental Assessment, and Initial Regulatory Flexibility Analysis for proposed Amendment 88, completed after the fourth year of fishery management under the pilot program, included three main community impact related findings.

- Findings 1 and 2: These findings were the same as Findings 4 and 5 from the 2008 rockfish pilot program review.

- Finding 3: Community effects of the Rockfish Pilot Program were limited to changes in Kodiak-based activity.

The 2011 document also characterized community impacts that were then-anticipated to occur with the implementation of the Rockfish Program as follows:

- Implementing the Rockfish Program alternatives is likely to have continued positive impacts on fishing communities. As a result of the CGOA Rockfish Pilot Program, it is generally understood that rockfish communities have enjoyed increased efficiency. Quality of CGOA rockfish landings and products has improved as participants in both sectors have maximized production of harvest quota shares. Community participation in the fisheries is unlikely to change under the Rockfish Program alternatives. Kodiak has historically been home to processors that have processed almost all of the rockfish landings. Under the Rockfish Program alternatives, this should continue (NPFMC 2011).

13.3 Community Impacts of the Rockfish Program

The community impacts of the Rockfish Program are broadly consistent with those described for the Rockfish Pilot Program, with a few important differences based primarily on changes in the community protection measures built into the two programs and the change in initial quota allocation qualification years between the two programs.

Among the community protection measures included in the Rockfish Pilot Program were the following:

Kodiak-specific measures

- Catcher vessels were allowed to form cooperatives only in association with shoreside processors located in Kodiak.

- Processors were limited in their ability to process catch outside the communities in which they have traditionally processed primary rockfish species and associated secondary species. This limitation

[16] Personal communication 8/21/2017.

was imposed to help protect the community of Kodiak from adverse impacts of a program that could otherwise increase flexibility of where catch was landed and processed.

General measures

- Entry level fisheries were established for both trawl and longline harvests of Central GOA rockfish. Landings in both entry level fisheries could only be made at shore-based processors not in a cooperative.

Community protection measures that were modified or added under the Rockfish Program included the following:

Kodiak-specific measures

- The Pilot Program permitted catcher vessels to form a cooperative only with the processor the catcher vessel made a majority of their deliveries during 1996 through 2000. The Rockfish Program modified the requirement to allow catcher vessels to annually join the Kodiak-based cooperative of their choice, regardless of where they had delivered rockfish in the past. The Council's recommendation sought to maintain the traditional shore-based processing activity within Kodiak and limit the consolidation of processing effort among rockfish processors.
- To address concerns raised by processors that the Rockfish Program would provide harvesters an undue competitive advantage and that they could use that potential advantage to deliver outside of the traditional port of Kodiak, the Rockfish Program included a requirement that all primary and rockfish secondary species cooperative quota in the catcher vessel sector be delivered to a shore-based processor within the City of Kodiak. In addition to protecting traditional processors, the requirement is intended to protect the fishing community of Kodiak.

General measures

- The entry level fishery for trawl vessels was eliminated but the entry level fishery for longline vessels was maintained under the Rockfish Program. Longline catcher vessels are allowed to deliver to any shore-based processor in any community the GOA region, including processors affiliated with cooperatives.

Several other features of the program, though not explicitly community protection measures, served to avoid or minimize some types of adverse social/community impacts experienced when other catch share programs were implemented in Alaska. These include:

- The attachment of catch history to the LLP license and making it non-severable from the LLP license has limited consolidation since quota shares cannot be stacked on fewer LLP licenses.
- Ownership and use caps have been effective in limiting vessel consolidation.

Additionally, the change in qualifying years between the two programs has effectively functioned to lock in benefits to Kodiak that accrued from one-way transfers of quota from the catcher processor sector to the catcher vessel sector during the Rockfish Pilot Program.

13.3.1 Impacts to Communities Engaged in the CGOA Rockfish Fishery

The community impacts associated with the Rockfish Program and described in Appendix 1 are summarized in this section for Kodiak, other Alaska communities, the greater Seattle area as represented by the Seattle-Tacoma-Bellevue metropolitan statistical area (Seattle MSA), and Lincoln County, Oregon, the communities or aggregation of communities identified as the most substantially engaged in and/or dependent on the CGOA rockfish fishery.

13.3.1.1 Kodiak

Kodiak is, by far, the community most substantially engaged in, and the most substantially dependent on, the CGOA rockfish fisheries managed under the Rockfish Program. Kodiak has experienced beneficial impacts across harvester, processor, and support services sectors because of the implementation of the Rockfish Program and has specifically benefitted from several community protection measures built into the program. Although not all individual operations have benefitted equally from the change in qualifying years between the Rockfish Pilot Program and the Rockfish Program, and therefore changes in the pattern of initial quota share allocations under the two programs, no substantial adverse sector-level or community-level impacts resulting from the implementation of the Rockfish Program have been identified for the community of Kodiak.

In terms of CGOA rockfish trawl catcher vessel ownership, Kodiak has benefitted from:

- An increase in the annual average number of Kodiak resident-owned CGOA rockfish trawl catcher vessels participating in the fishery between the Rockfish Pilot Program years and the Rockfish Program years.
- The trawl entry level fishery community protection feature of Rockfish Pilot program. All three catcher vessels that qualified for an initial allocation of quota under the Rockfish Program based on their participation in the Rockfish Pilot Program entry level trawl fishery were either Kodiak resident-owned at the time of that allocation or have become so in more recent years.
- Kodiak resident-owned CGOA rockfish trawl catcher vessels further diversifying their fishery portfolios under Rockfish Program conditions. This has included more summer salmon tendering opportunities with the continuing temporal separation of rockfish trawl-related and salmon-related peak processing efforts at local shore-based processors, as reported by processing management personnel.

In terms of CGOA trawl catcher vessel LLP license and quota ownership, Kodiak has benefitted from:

- An increase in the annual average number of Kodiak resident-owned catcher vessel LLPs between the Rockfish Pilot Program years and the Rockfish Program years.
- An increase in annual average percentage of Kodiak resident-owned catcher vessel quota for northern rockfish, Pacific ocean perch, and pelagic shelf rockfish between the Rockfish Pilot Program years and the Rockfish Program years. This across-the-board increase was due in part to quota transfers that occurred during the Rockfish Pilot Program years and in part to changes in qualifying years for initial quota allocations between the two programs.
- Kodiak specifically benefitted from the CGOA rockfish trawl quota transfer community protection feature of the Rockfish Pilot program where quota could be transferred from the catcher processor sector to the catcher vessel sector, but not vice versa. These one-way inter-sector transfers resulted in an increase in quota shares associated with Kodiak resident-owned LLPs.

In terms of impacts to CGOA rockfish trawl catcher vessel crew:

- Quantitative data on employment of, or payments to, Kodiak crew members aboard CGOA rockfish trawl vessels is not available for the pre-Rockfish Pilot Program or the Rockfish Pilot Program years, and is available for only the most recent two of the five Rockfish Program years covered by this review.
- Given that the number of Kodiak resident-owned catcher vessels in the CGOA rockfish trawl fishery has increased and the overall ex-vessel value of CGOA rockfish trawl-caught landings of those vessels has also increased under the Rockfish Program, it is assumed that the number of crew positions and payments to crew have similarly increased during this time. However, the impacts of quota leasing costs or changes to vessel operating costs, if any, on crew compensation is unknown,

as are the impacts on crew employment, if any, of the increased number of CGOA rockfish trawl fishing days per season.

In terms of CGOA rockfish longline catcher vessel ownership, Kodiak has seen:

- An increase in annual average number of Kodiak resident-owned GOA rockfish longline catcher vessels participating in the Federal open access rockfish fishery between the Rockfish Pilot Program years and the Rockfish Program years. All participation in this sector during the Rockfish Program years was by Kodiak resident-owned vessels, after transitioning from a wider Alaska community ownership participation base during the pre-Rockfish Pilot Program years and the Rockfish Pilot Program years.
- It is unlikely, however, that this proportional and absolute increase in Kodiak longline catcher vessel sector engagement is related to the Rockfish Program. As noted in Section 4.2, diesel prices were likely a primary constraining factor for CGOA rockfish jig effort between 2006 and 2014.

In terms of the shore-based processors operating in Kodiak that accepted CGOA trawl-caught rockfish landings:

- Kodiak did experience the consolidation (by one) of shore-based processors that regularly accepted CGOA rockfish trawl-caught deliveries during Rockfish Program years. However, at the transition from the Rockfish Pilot Program to the Rockfish Program, it experienced an increase (by two) of shore-based processors that were affiliated with CGOA rockfish cooperatives, due primarily to the change in qualifying years between the two programs.

- Kodiak, and its shore-based processors, specifically benefitted from the CGOA rockfish trawl catcher vessel landings requirement community protection feature of Rockfish Pilot program. With the discontinuation of the CGOA rockfish entry level trawl fishery upon the implementation of the Rockfish Program, all trawl-caught catcher vessel landings of rockfish were made exclusively in Kodiak.

- Kodiak shore-based processors continue to directly benefit from the shift in peak CGOA rockfish trawl vessel effort to from July to May/June. This shift occurred at the transition from pre-Rockfish Pilot Program conditions to the Rockfish Pilot Program conditions, but it has been maintained under the Rockfish Program. It has moved CGOA rockfish trawl-caught landings out of peak salmon processing time to what was a period of lower activity for the plants, increasing efficiency of operations and helping to attenuate some of the sharper seasonal peaks and valleys of processing labor demand, while making more local workers potentially available for peak salmon production demands in June.

- While the transition from the Rockfish Pilot Program to the Rockfish Program was generally beneficial for Kodiak shore-based processing plants, specific outcomes varied between processors operating in the community due to different processing histories accrued during the different sets of qualifying years used for initial allocations under the two programs.

In terms of processing workers at Kodiak shore-based processors that accepted CGOA trawl-caught rockfish landings:

- Quantitative data on employment of, or payments to, the processing workers employed at Kodiak shore-based processing plants that have accepted CGOA trawl-caught landings is not available for the pre-Rockfish Pilot Program or the Rockfish Pilot Program years, and is available for only the most recent two of the five Rockfish Program years covered by this review.

- Given that the number of Kodiak shore-based processors affiliated with rockfish cooperatives has increased and the overall ex-vessel value of CGOA rockfish trawl-caught landings in Kodiak has also increased under the Rockfish Program, it is assumed that processing worker positions may have increased for at least some operations during this time. More hours would appear to be available for interested workers during the May/June period, but the net effect across all processors attributable specifically to the Rockfish Program, given physical plant consolidation and other operational changes (e.g., those associated with changes in technology) during this same time, is unknown. The impacts of the temporal shift in rockfish processing, which occurred during the Rockfish Pilot Program, in combination with the increasing number of days fished per season in the CGOA rockfish trawl fishery that occurred during the Rockfish Program, on the average amount of processing personnel overtime compensation cannot be determined with available information.

    - While one entity reported that they have "seen a little bit less overtime than we used to have," input from Kodiak shore-based processing management in general would suggest that overtime hours are typically a function of fishing conditions, with good fishing conditions (and general operational efficiency) favoring a plant running at a high capacity, which results in ongoing overtime opportunities for processing crew.

    - Input from shore-based processing management also suggests that for at least some individual operations, the temporal shift in rockfish processing has increased the availability of work for local Kodiak resident processing workers during the May/June period, contributing to more workforce stability and decreased turnover.

In terms of the shore-based processors operating in Kodiak that accepted CGOA longline-caught rockfish landings:

- The number of Kodiak shore-based processors accepting CGOA rockfish longline-caught deliveries was relatively flat between the Rockfish Pilot Program and the Rockfish Program. While ex-vessel values of those deliveries showed considerable year-to-year variability, they were consistently minor in relation to the overall scale of most Kodiak shore-based processors.

- Under the Rockfish Program any processor, including those affiliated with a CGOA rockfish trawl cooperative, can accept deliveries from the longline entry level fishery. Available data, however, would suggest that implementation of the Rockfish Program has not had a substantial impact on Kodiak shore-based processing engagement in the CGOA rockfish longline fishery.

In terms of the fishery support sector businesses operating in Kodiak:

- No systematically collected data on Kodiak fishery support service businesses in general or those linked to the CGOA rockfish fishery specifically are available. However, the number of locally owned CGOA rockfish trawl vessels has increased and Kodiak became the exclusive port of landings for all trawl catcher vessels engaged in the fishery under the Rockfish Program. The number of processors affiliated with CGOA rockfish cooperatives has increased, and increased revenues accruing to both harvesting and processing sectors has likely been accompanied by increased local spending by vessel owners and/or crew, but the impact on the local purchase of fishery specific goods and services is unknown.

In terms of public revenue impacts in Kodiak:

- The percentage of CGOA rockfish fishery landings related-revenues subject to taxes that directly benefit the city of Kodiak (and the Kodiak Island Borough) remain modest compared to several other fisheries. However, the percent attributable to the fishery has increased under the Rockfish Program compared to other years. This is, of course, due in part to fluctuations in the value of both the rockfish and other fisheries that, in turn, depend on variable natural resource conditions and variable market conditions far removed from the Kodiak economy as well as on direct fishery management variables.

- The community protection feature of the Rockfish Program that ensures CGOA rockfish trawl catcher vessel landings will occur in Kodiak, however, builds an additional measure of stability into the public revenue stream compared to previous conditions.

13.3.1.2 Other Alaska Communities

In addition to Kodiak, another 20 Alaska communities were directly engaged in the CGOA rockfish federal open access rockfish longline and/or CGOA rockfish trawl fisheries 2003-2016 as measured by a variety of indices. These include: resident ownership of catcher vessels in CGOA rockfish longline in the hook-and-line or jig sectors, local operation of shore-based processors that accepted longline caught deliveries of CGOA rockfish; resident ownership of CGOA rockfish trawl catcher vessel LLP licenses, resident ownership of CGOA rockfish trawl catcher processors, and local operation of shore-based processors that accepted trawl-caught caught deliveries of CGOA rockfish in any year 2003-2016, and residents who served as crew members aboard CGOA rockfish trawl catcher vessels and/or trawl catcher processors in 2015 or 2016 (the only years for which these data are available). None of these communities are considered to have been substantially engaged or substantially dependent upon the CGOA rockfish fishery at the time of the implementation of the Rockfish Program.

- 10 of these communities were involved in the entry level longline fishery, including two in the hook-and-line fishery, seven in the jig fishery, and one in both the hook-and-line and jig fisheries.

    - All the communities participating in these fisheries through local ownership of active longline vessels last participated in the fishery before or during the Rockfish Pilot Program. None participated after the implementation of the Rockfish Program.

    - It is unlikely, however, that this lack of participation is related to the Rockfish Program. As noted in the Kodiak summary, under the Rockfish Program, participants in the entry level longline fishery are no longer required to register, they may deliver their harvest to any shore-based processing facility, including those affiliated with cooperatives, in any community in the GOA, and they are exempted from fees related to the cost recovery program implemented under the Rockfish Program. As noted in Section 4.2, diesel prices were likely a primary constraining factor for CGOA rockfish jig effort between 2006 and 2014, largely accounting for the drop in annual average effort across all communities between the pre-Rockfish Pilot Program years and the Pilot Program years, as well as the rebound in effort by Kodiak vessels seen part-way through the Rockfish Program years. Overall, that analysis concludes that the entry level fishery has provided an opportunity for longline gear vessel to continue to develop markets for rockfish and harvest rockfish in both the State and Federal waters of the Central GOA.

    - Also, as noted in the Kodiak summary, under the Rockfish Program, the CGOA longline sector in the Federal open access fishery was transitioned from a percentage of TAC to a set number of metric tons allocation. Neither of these types of limits have constrained effort by vessels owned in any community to date, and under the Rockfish Program allocations

to the longline fishery can be increased if the sector harvests 90 percent of their allocation the previous year (with caps varying by primary rockfish species).

- Four of these communities were engaged in the CGOA rockfish trawl fishery through ownership of LLP licenses that came to have initial allocations of quota under the Rockfish Pilot Program or the Rockfish Program.
    - In three out of four of these cases (Anchorage, False Pass, and Sand Point), the LLP left community ownership during the pre-Rockfish Pilot Program years or the Rockfish Pilot Program years. The later implementation of the Rockfish Program did not influence the movement of these LLPs.
    - In the fourth case (Homer), the LLP came into community ownership during the Rockfish Pilot Program years and has remained in local resident ownership during the Rockfish Program years.
- While the discontinuation of active engagement in the CGOA rockfish longline fishery through vessel ownership or in the CGOA rockfish trawl fishery through LLP ownership is not attributable to the implementation of the Rockfish Program, it is, in some cases, consistent with what has been described in the literature as a trend of ongoing challenges in small, rural Alaska communities of sustaining fluid access to participation in a range of fisheries. These fisheries may vary in their commercial viability but not their cultural importance over time.
- Crew employment, even in small numbers, aboard CGOA rockfish trawl catcher vessels and/or rockfish trawl catcher processors may be an important resource for small communities, but there are no data available to quantify crew participation in any but the two most recent years. During those years, exclusive of Kodiak, residents of 10 and six Alaska communities served as crew aboard CGOA rockfish trawl catcher vessels or trawl catcher processors, respectively

13.3.1.3 The Seattle MSA

The Seattle MSA was substantially engaged in the CGOA rockfish trawl fishery in several ways over the period 2003-2016. While changes have occurred in several sectors, no substantial community-level impacts resulting from the implementation of the Rockfish Program have been identified.

In terms catcher vessel and catcher processor ownership, the Seattle MSA:

- Experienced an increase in annual average Seattle MSA resident-owned CGOA rockfish trawl catcher vessel participation between the Rockfish Pilot Program years and the Rockfish Program years.
- Experienced an increase in the annual average Seattle MSA-owned resident-owned CGOA rockfish trawl catcher processor participation between the Rockfish Pilot Program years and the Rockfish Program years.

In terms of LLP license and quota share ownership, the Seattle MSA:

- Experienced an increase in annual average Seattle MSA resident-owned catcher vessel LLPs between the Rockfish Pilot Program years and the Rockfish Program years.
- Number of resident-owned catcher processor LLPs has remained steady since 2010, two years before the implementation of the Rockfish Program.

- Also benefitted from an increase in annual average Seattle MSA resident-owned catcher vessel quota with the implementation of the Rockfish Program for Pacific ocean perch and pelagic shelf rockfish, but a decrease was seen for northern rockfish.

- Resident-owned catcher processor quota increased between the Rockfish Pilot Program and the Rockfish Program for northern rockfish, but decreased for Pacific ocean perch and pelagic shelf rockfish.

In terms of catcher vessel and catcher processor crew employment:

- Quantitative data on employment of, or payments to, Seattle MSA crew members aboard CGOA rockfish trawl catcher vessels and/or catcher processors is not available for the pre-Rockfish Pilot Program or the Rockfish Pilot Program years, and is available for only the most recent two of the five Rockfish Program years covered by this review.

- Given that the number of Seattle MSA resident-owned catcher vessels in the CGOA rockfish trawl fishery has increased and the overall ex-vessel value of CGOA rockfish trawl-caught landings of those vessels has also increased under the Rockfish Program, it is assumed that the number of crew positions and payments to crew have similarly increased during this time. However, the impacts of quota leasing costs or changes to vessel operating costs, if any, on crew compensation is unknown, as are the impacts on crew employment, if any, of the increased number of CGOA rockfish trawl fishing days per season. The increase in the number of Seattle MSA resident-owned catcher processors participating in the fishery during the Rockfish Program years is also assumed to have increased CGOA rockfish-related employment and income opportunities for crew members in that sector.

13.3.1.4 Lincoln County, Oregon

Lincoln county was substantially engaged in the CGOA rockfish trawl fishery primarily through catcher vessel ownership. While changes have occurred during the Rockfish Program years, no substantial community-level impacts resulting from the implementation of the Rockfish Program have been identified.

In terms of the catcher vessel ownership, Lincoln county:

- Experienced an increase in annual average county resident-owned CGOA rockfish trawl catcher vessel participation between the Rockfish Pilot Program years and the Rockfish Program years.

In terms of LLP and quota ownership, Lincoln county:

- Experienced a minor decrease in annual average county resident-owned catcher vessel LLPs between the Rockfish Pilot Program years and the Rockfish Program years.
- Benefitted from an increase in annual average county resident-owned catcher vessel quota with the implementation of the Rockfish Program for pelagic shelf rockfish, but a decrease was seen for Pacific ocean perch and northern rockfish.

In terms of catcher vessel crew employment:

- Quantitative data on employment of, or payments to, Lincoln county crew members aboard CGOA rockfish trawl catcher vessels is not available for the pre-Rockfish Pilot Program or the Rockfish Pilot Program years, and is available for only the most recent two of the five Rockfish Program years covered by this review.

- Given that the number of Lincoln County resident-owned catcher vessels in the CGOA rockfish trawl fishery has increased under the Rockfish Program, it is assumed that the number of crew positions have similarly increased during this time. Information on crew compensation is not available for Lincoln County due to data confidentiality constraints.

13.3.2 Impacts to Alaska Communities Substantially Engaged in and/or Dependent on Halibut and Chinook Salmon Fisheries

One of the goals of the Rockfish Program is to reduce/minimize halibut and Chinook salmon PSC. To the extent that the program has achieved those goals, indirect benefits should accrue over time to those communities substantially engaged in and/or substantially dependent upon the GOA halibut and/or Chinook salmon targeted commercial fisheries, sport charter fisheries, subsistence fisheries, and/or sport or personal use fisheries. The communities involved would potentially benefit relative to the degree that PSC reductions would benefit the GOA halibut and/or Chinook salmon stocks (and, in the case of commercial or charter halibut fisheries, the effective redistribution of overall allocations of between sectors). These types of indirect beneficial social impacts of halibut and/or Chinook PSC reductions, and the communities to which those beneficial would most likely accrue, have been recently described in the GOA trawl bycatch management analysis SIA (Northern Economics 2016a). That comprehensive description is not recapitulated here.

13.3.3 Environmental Justice Concerns

No high and adverse impacts resulting from the implementation of the Rockfish Program have been identified for any Alaska or Pacific Northwest communities. No issues of environmental justice concern have been identified.

13.3.4 Risks to Fishing Community Sustained Participation in the CGOA Rockfish Trawl or Longline Fisheries

No issues identified with the implementation of the Rockfish Program put the sustained participation of any communities substantially engaged in or substantially dependent upon the CGOA rockfish trawl or longline fisheries at risk.

14 Sideboard Limits

A LAPP provides economic efficiencies to harvesters by allowing them to determine the most beneficial times and places to fish. Harvesters could utilize those efficiencies to increase their participation in other fisheries. As a result, persons that traditionally participate in those other fisheries, but are not part of the LAPP, could be adversely affected.

Sideboards limit the total amount of catch in other groundfish fisheries that can be taken by eligible LAPP harvesters to historic levels, but do not provide guaranteed harvest privileges for a specific amount of fish. Sideboard limits are not used as a management tool in the open access fisheries since all the participants compete to harvest a portion of the available catch limit.

Rockfish Program sideboards apply to federally permitted vessels fishing in federal waters and waters adjacent to the Central GOA when the harvest of rockfish primary species by that vessel is deducted from the federal TAC. Sideboards limit both the LLP license with rockfish QS assigned to it, and the vessel used to make legal landings of rockfish QS.

Rockfish Program sideboards are in effect from July 1 through July 31. Sideboard measures are in effect only during the month of July when the Central GOA rockfish fisheries were traditionally open and vessel operators had to choose between fishing in the Central GOA rockfish fisheries and other fisheries that were open to directed fishing.

14.1 Catcher Vessels

Under Pilot Program, catcher vessels had small sideboard limits in the West Yakutat District for pelagic shelf rockfish and Pacific ocean perch. Those limits are shown in Table 14-1. Rockfish Pilot Program catcher vessels were prohibited from fishing for the three primary rockfish species in the Western GOA during July. Under the Rockfish Program, catcher vessels were prohibited from fishing for the primary rockfish species in the West Yakutat District and Western GOA during July. Prohibiting fishing in the West Yakutat District, as opposed to setting small sideboard limits, eased the management burden associated with catcher vessel sideboards and reduced the observer coverage and costs associated with sideboard fisheries for the catcher vessel sector, since they would not be under the 100 percent coverage requirement in those fisheries limited by sideboard amounts.

Catcher vessels that were in the entry level fishery were not given an allocation of Central GOA rockfish and were not subject to the sideboard limits. The entry level fishery allowed vessels to harvest up to the 2.5 percent of the Central GOA primary species allocated under the Pilot Program and fish in the limited access fishery in the West Yakutat District. Entry level vessels fishing in the West Yakutat District caught well over the sideboard limit some years during the Pilot Program[17]. The Rockfish Program eliminated the entry level fishery program and gave vessels with participation during the qualifying years an allocation of Central GOA rockfish, and also included them in the sideboard limits developed under the Rockfish Program.

[17] The actual amount of catch cannot be reported because four or fewer vessels fished in these fisheries.

Table 14-1Catcher vessel sideboard limits in the West Yakutat District

RPP % of TAC	RP % of TAC	Species	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
			West Yakutat District CV sideboard										
1.7%	0.0%	PSR	5	4	4	7	7	Prohibited from directed fishing during July					
2.9%	0.0%	POP	33	32	32	58	56						

Note: Rockfish Pilot Program (2007 through 2011) sideboard limits are for the catcher vessel sector. Sideboard limits in the Western GOA were prohibitions on directed fishing and not set as a percentage of the TAC.

The Rockfish Program also prohibited catcher vessels from directed fishing in any target fishery in the deep-water complex in the month of July (except for Central GOA Rockfish). This limitation prohibits catcher vessels from directed fishing in the Arrowtooth flounder, deep water flatfish, and rex sole fisheries from July 1 through July 31. These restrictions were implemented to limit the ability of catcher vessels in these fisheries because they had not historically harvested these species in July. As a result of this sideboard Rockfish Program catcher vessels are limited to fishing species in the shallow-water complex during the month of July.

Two exemptions from sideboards were included under the Rockfish Program. The first applies to catcher vessels and LLP licenses that applied to be permanently exempted from the Rockfish Program and choose not to receive rockfish QS for which they would have otherwise qualified. During the analysis of the Rockfish Program alternatives at least one vessel operator and LLP license holder who had limited participation during the qualifying years for the Rockfish Program but was active in the West Yakutat District and Western GOA Rockfish fisheries and, to a limited extent, other flatfish fisheries and wanted to take advantage of this provision. The second was carried over from the Pilot Program and is specific to AFA catcher vessels that are subject to AFA sideboard limits. These vessels were exempted because the Council believed the catcher vessels did not need further limits since it determined that those sideboard limitations effectively constrained AFA catcher vessels from expanding their ability to harvest in other fisheries. Adding additional sideboard limits would have been duplicative and unnecessary.

The sideboard limits imposed under the Pilot Program and Rockfish Program have been very effective at limiting spill-over effects associated with vessels that were given an allocation of QS. Under the Pilot Program sideboard limits were more difficult to manage since NMFS would need to determine whether the sideboard limit would support a directed fishery. In years that it could, given expected effort, NMFS would need to monitor the fishery, project a closure date, and issue a closure notice. Under the Rockfish Program, NMFS does not need to determine if a directed fishery for sideboard limited vessel should be opened for the three primary species in the West Yakutat District. Each year LLP licenses that are issued QS and their associated vessels are prohibited from directed fishing in any target fishery in the deep-water complex. That method provides a straight forward management tool and achieves the desired objective.

The catch in the sideboard fisheries cannot be reported because too few vessels reported landings and the data are confidential. However, many years had no sideboard catch of primary rockfish species reported, and during the Pilot Program years either no catch was reported or the amounts were very small.

14.2 Catcher/Processors

The Rockfish Program included catcher/processor sideboard limitations to minimize potential adverse competition on non-Rockfish Program participants and potential conflicts among rockfish catcher/processor cooperatives in the Western GOA and West Yakutat District rockfish fisheries, as well

as GOA flatfish harvesters[18]. Sideboard limits were not set for other rockfish species because those species were not traditionally harvested in July so additional management measures were determined not to be needed. Because the Amendment 80 sideboard limits are set for all GOA species harvested by those vessels, the need for additional sideboard limits beyond the primary rockfish species and halibut PSC was mitigated.

Table 14-2 shows the catcher/processor cooperative sideboard limits under the Rockfish Program and Rockfish Pilot Program. These sideboards limit the amount of primary rockfish species a catcher/processor cooperative may use in the West Yakutat District and Western GOA fisheries during July. Under the Pilot Program the catcher/processor sideboard limits were sector limits as opposed to cooperative limits. Under the Rockfish Program the two catcher/processor cooperatives have been issued a share of the catcher/processor sector limit based on historical usage during the 2000 through 2006 qualifying period.

Table 14-2 Catcher/processor cooperative sideboard limitations (mt)

RPP % of TAC	RP % of TAC	Species	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
			Western GOA CP sideboard										
63.3%	72.3%	PSR/dusky	928	635	518	411	387	296	273	229	214	125	106
61.1%	50.6%	POP	2,593	2,252	2,269	1,769	1,710	1,064	1,032	1,214	1,165	1,385	1,329
78.9%	74.3%	Northern	1,135	1,689	1,621	2,133	2,030	1,602	1,492	970	911	340	297
			West Yakutat District CP sideboard										
72.4%	confidential	PSR	222	182	169	314	295	Confidential					
76.0%	confidential	POP	866	836	842	1,523	1,472						
		Northern	No sideboard limit set for Northern Rockfish										

*Northern rockfish was closed to directed fishing in the West Yakutat District from 2000 through 2006. As a result, no sideboard limit was set for that species in that area.

Notes; 1) The percentage of the TAC set as a Rockfish Program sideboard is confidential because the catch of three or fewer vessels was reported in fish ticket data and confidentiality rules established by the State of Alaska prohibit the release of that information, 2) Rockfish Program (2012 through present) sideboard limits are set for catcher/processor cooperatives, and 3) Rockfish Pilot Program (2007 through 2011) sideboard limits are for the catcher/processor sector

The Rockfish Program also established a sideboard limit on the amount of halibut PSC that could be used in July. The halibut PSC sideboard limits are based on historical halibut PSC usage during July. Halibut PSC sideboards were established for shallow-water species and the deep-water complex. The percentage assigned as a sideboard limit was based on the annual average halibut PSC used by vessels with LLP licenses subject to the sideboard limit during July from 2000 through 2006 relative to the total available. Using that method to calculate the sideboard limit, the catcher/processor sector's PSC deep-water complex limit was set equal to 2.5 percent of the GOA halibut trawl PSC limit. The catcher/processor's shallow-water halibut PSC limit was set equal to 0.1 percent of the GOA trawl PSC limit established in the harvest specifications.

Catcher/processors fishing under a catcher/processor LLP license with QS that decided to opt-out of participating in a rockfish cooperative was prohibited from directed fishing in any of the primary rockfish fisheries in the Central GOA during the entire year. Those vessels were also prohibited from directed fishing in any GOA groundfish fishery from July 1 through July 14, in which that vessel or LLP license does not have prior participation, except fixed gear sablefish. Fishing in the first two weeks of July is prohibited because participants historically participated in the rockfish fisheries during that time.

[18] Amendment 80 catcher/processors are also subject to GOA sideboard limits for the three primary rockfish species, pollock, and Pacific cod (see https://alaskafisheries.noaa.gov/sites/default/files/17_18goatable26.pdf). In the Western GOA they are 100 percent of the Northern rockfish TAC, 99.4 percent of the Pacific ocean perch TAC, and 76.4 of the pelagic shelf rockfish/Dusky TAC. In the West Yakutat District the limits are 96.1 percent of the Pacific ocean perch TAC and 89.6 of the pelagic shelf rockfish TAC. Amendment 80 sideboard limits apply for the entire year and not just July.

The Rockfish Program prohibits non-Amendment 80 catcher/processors from participating in the West Yakutat District and Western GOA rockfish fisheries during the month of July. Two non-Amendment 80 catcher/processors fished in at least one of these fisheries during the 2000 through 2006 period, but had limited participation during July. Prohibiting these vessels from these fisheries in July simplified management by eliminating the need to publish the annual sideboard limits for non-Amendment 80 catcher/processors, which would be confidential, and closing the sideboard fisheries since insufficient TAC would be available to conduct a directed fishery.

Information on the actual sideboard usage is not reported in this section because four or fewer companies typically reported catch in the West Yakutat District and Western GOA areas. However, the sideboard restrictions that have been implemented under both the Rockfish Program and Amendment 80 program have been effective in limiting spillover effects in the primary rockfish fisheries.

15 Fishing Vessel Safety

National Standard 10 states that "conservation and management measures shall, to the extent practicable, promote the safety of human life at sea". In response to National Standard 10, one of the stated goals of the Rockfish Pilot and Rockfish Program was to improve safety at sea. Since fishing practices and seasons are likely to be very similar under the Rockfish Pilot Program and the Rockfish Program, repercussions associated with the management changes on human safety at sea should be similar (North Pacific Fishery Mangement Council, 2011).

Prior to implementation of the Pilot Program participants in the Central GOA rockfish fishery would vie for a share of the Central GOA rockfish TACs during a brief season, early in July. Central GOA weather conditions tend to be relatively good during that time of the year. However, summer storms can cause inclement weather that may cause unsafe fishing conditions.

Economic incentives are created when competing to catch a share of the TAC, under the LLP, that may entice a vessel operator to go to sea or continue fishing in weather conditions that may pose a higher operating risk. Each person will respond differently to these incentives depending on the level of risk they are willing to accept and the vulnerability of their vessel to those weather conditions. Since the fleet is composed of relatively small trawl vessels they may be more susceptible to poor weather conditions that larger trawl vessels.

Management of the rockfish fisheries under the Pilot Program and Rockfish Program extended the fishing season and moved much of the fishing from July to May and June, but also allowed for fishing in late fall when Central GOA weather conditions can be less safe. Although a person's allocation will not be jeopardized by decisions to delay fishing to reduce safety risks, some incentives may exist for persons to fish in inclement weather - including market opportunities and operational cost savings (North Pacific Fishery Mangement Council, 2011).

The National Institute for Occupational Safety and Health (NIOSH) manages the Commercial Fishing Incident Database (CFID). CFID is a national surveillance system that contains information on work-related fatalities and vessel disasters in the U.S. fishing industry. For Alaska, CFID contains fatality data from 2000 through 2016 and vessel disaster data from 2000 through 2015. One limitation is that these data sources do not include other safety measures, including nonfatal injuries, vessel system failures not resulting in abandonment, and search-and-rescue missions. Study of these areas in the future could provide more insight into additional hazards.

NIOSH staff was provided a list of vessels that the AKFIN summary of CAS data indicated were active in the Central GOA rockfish fishery from 2003 through 2016. The list of Central GOA rockfish vessels was matched with all fishing vessels that had been added to CFID as the result of:

1. one or more crewmember fatalities that occurred on or otherwise involved the vessel; or
2. if the vessel sunk, capsized, or sustained other damage that required the entire crew to abandon the vessel.

The list of vessels was considered in terms of the Central GOA management program(s) they fished under, so the same three groupings of years were considered in this section as other sections of this paper:

1. pre-Pilot Program (2003 through 2006),
2. Pilot Program (2007 through 2011), and
3. Rockfish Program (2012 through 2016).

Based on vessel name, casualty date, and casualty location, it was determined that there were no work-related crewmember fatalities or vessel disasters among vessels when actively participating in the Central

GOA rockfish fishery during the pre-Pilot Program, Pilot Program, or the Rockfish Program. One potential reason for the good record of safety of human life at sea could include the extended fishing season that would reduce any race to fish and allow crews to choose when to operate in the event of inclement weather or crewmember fatigue.

16 Impact on Management Agencies

This section describes the impacts of implementing the Rockfish Program realized by the various management agencies. Staff[19] of the Alaska Department of Fish and Game indicated that implementing the Rockfish Program had limited impacts on their agency. As a result of those discussions, a section on ADF&G is not included in this section.

16.1 NMFS

National Marine Fisheries Service (NMFS) manages the Rockfish Program fisheries. The Alaska Fisheries Science Center (AFSC) generates scientific information and analysis necessary for the conservation, management, and utilization of the Rockfish Program species through trawl surveys, scientific research, and stock assessments. The Alaska Regional Office is responsible for in-season management, monitoring and enforcement, and recordkeeping and reporting.

16.1.1 Biological Management

One of the goals of the Pilot Program was to enhance resource conservation in the Central GOA rockfish fisheries. The Rockfish Program was intended to continue the cooperative management structure that provides the fleet with tools to minimize bycatch to the extent practicable, reduce discards and improve utilization of groundfish species. This section provides an overview of the status of the Rockfish Program primary and secondary species stocks before and after implementation of the program.

The Rockfish Program primary species are northern rockfish, Pacific ocean perch, and dusky rockfish. The Rockfish Program secondary species are Pacific cod, rougheye rockfish, shortraker rockfish, sablefish, and thornyhead rockfish. The Rockfish Program primary species are assessed biennially as three distinct species in Federal waters. The Rockfish Program secondary species are assessed either biennially or annually and GOA-wide biomass estimates are available each year. The Rockfish Program primary and secondary species are not overfished and are not approaching overfished levels.

There are three groundfish management areas in the GOA: Western, Central, and Eastern Gulf of Alaska, but the Rockfish Program is allocated TAC only in the Central GOA area.[20] The Central GOA TACs for the Rockfish Program primary and secondary species are apportioned to cooperatives each year in the GOA harvest specifications (GOA harvest specifications Table 10 and Table 12). For more information on current and historical TACs, please see Section 5.1. The Rockfish Program also receives an allocation of a portion of the total GOA halibut PSC limit specified under § 679.21. Rockfish Program sideboards limit harvest by program participants in other GOA fisheries (see Section 14).

16.1.1.1 Primary Species

The primary rockfish species in the program are Pacific ocean perch, northern rockfish, and dusky rockfish and they are assessed biennially as three distinct species. An ABC and TAC is specified for each species, which is apportioned to the GOA management areas (Western, Central, and Eastern) based on the distribution of survey biomass. The primary species TACs are further allocated in the Central GOA area by Rockfish Program catcher vessel and catcher/processor cooperatives.

[19] Personal communication with Trent Hartill

[20] https://alaskafisheries.noaa.gov/sites/default/files/fig3.pdf

Table 16-1 GOA biomass, OFL, ABC, TAC (metric tons) for Rockfish Program primary species in 2017

Species	Biomass	OFL	ABC	TAC
Pacific ocean perch	445,672	27,826	23,918	23,918
Northern rockfish	75,028	4,522	3,790	3,786
Dusky rockfish	57,307	5,233	4,278	4,278

Source: NMFS GOA Harvest Specifications, 2017 and AFSC Stock Assessments, 2016.

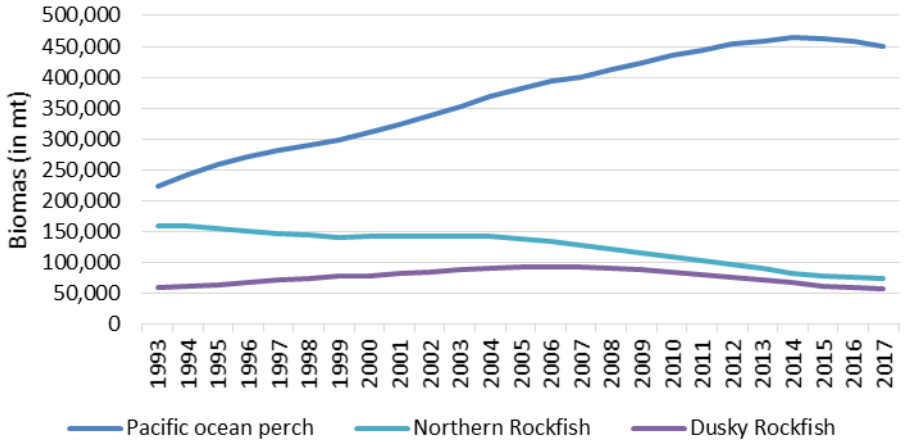
Pacific ocean perch are caught primarily by trawl gear. Prior to the 1990s, large foreign factory trawl vessels took the majority of Pacific ocean perch and evidence suggests that overfishing of Pacific ocean perch occurred. NMFS implemented a rebuilding plan in 1994 and since then, good recruitment and increasing biomass have resulted in larger TACs (see Figure 16-1). Since 1996, catcher vessels are fishing closer to shore and as a result, they harvest more middle-aged fish that school near shore rather than older fish.[21]

Most of the Pacific ocean perch biomass is in the Central GOA. Since implementation of the Rockfish Program in 2007, most of the Pacific ocean perch TAC in the Central GOA has been allocated to Rockfish Program participants in the catcher vessel trawl fleet that have formed cooperatives with processors and to vessels in the catcher/processor trawl fleet.[22]

The Central GOA is apportioned 69.7% of the overall GOA ABC and TAC for Pacific ocean perch. The TAC for 2017 was 23,918 mt in the GOA, a 2.1% decrease from 2016. [23]

Trawl vessels in the Rockfish Program typically target Pacific ocean perch first and then switch to northern and dusky rockfish. Pacific ocean perch has a higher value and substantially higher TAC relative to other rockfish species (see Figure 16-2).

Figure 16-1 GOA Biomass for Rockfish Program Primary Species (metric tons), 1993-2017



Source: AFSC Stock Assessments

[21] https://www.afsc.noaa.gov/REFM/Docs/2015/GOApop.pdf
[22] https://www.afsc.noaa.gov/Education/factsheets/10_POP_fs.pdf
[23] https://www.afsc.noaa.gov/REFM/Docs/2015/GOApop.pdf

Trawl vessels in the Rockfish Program typically target Pacific ocean perch first and then switch to northern and dusky rockfish. Northern rockfish is an abundant and commercially valuable rockfish species. Northern rockfish are targeted almost exclusively by trawl gear, and most of the Central GOA TAC is allocated to Rockfish Program cooperatives. The majority of the GOA harvest for northern rockfish occurs near Kodiak Island, with 88.5% of the ABC allocated to the Central GOA area.[24]

The GOA-wide northern rockfish stock has been stable or slightly declining since 2004 (see Figure 16-1). The TAC for 2017 was 3,786 mt in the GOA, a 5.4% decrease from 2016.

Trawl vessels in the Rockfish Program target dusky rockfish near Kodiak Island around the same time they target northern rockfish. Dusky rockfish is generally a bycatch species for hauls targeting northern rockfish. A large amount of the dusky rockfish TAC is unharvested, due to fishery closures triggered by other species such as Pacific ocean perch.[25] The GOA-wide dusky rockfish stock has been stable, with only a recent slight decline that began in 2015. 88.5% of the ABC is apportioned to the Central GOA region. The GOA-wide TAC for 2017 was set at 4,278 mt, an 8.7% decrease from 2016.[26]

16.1.1.2 Secondary Species

The Rockfish Program secondary species include Pacific cod, sablefish, rougheye rockfish, shortraker rockfish, and thornyhead rockfish. Secondary species are apportioned to cooperatives each year in the GOA harvest specifications. Pacific cod are allocated by gear type in the GOA. Sablefish are primarily targeted by longline IFQ vessels in the GOA with a proportion of the overall TAC allocated to the Rockfish Program. The remaining three rockfish species are targeted by vessels using trawl gear. The secondary species TACs are further allocated in the Central GOA area to Rockfish Program participants.

Table 16-2 GOA biomass, OFL, ABC, TAC (metric tons) for Rockfish Program secondary species in 2017

Species	Biomass	OFL	ABC	TAC
Pacific cod	426,384	105,378	88,342	64,442
Sablefish	139,000	11,885	10,074	10,074
Rougheye rockfish	41,650	1,594	1,327	1,327
Shortraker rockfish	57,175	1,715	1,286	1,286
Thornyhead rockfish	87,155	2,615	1,961	1,961

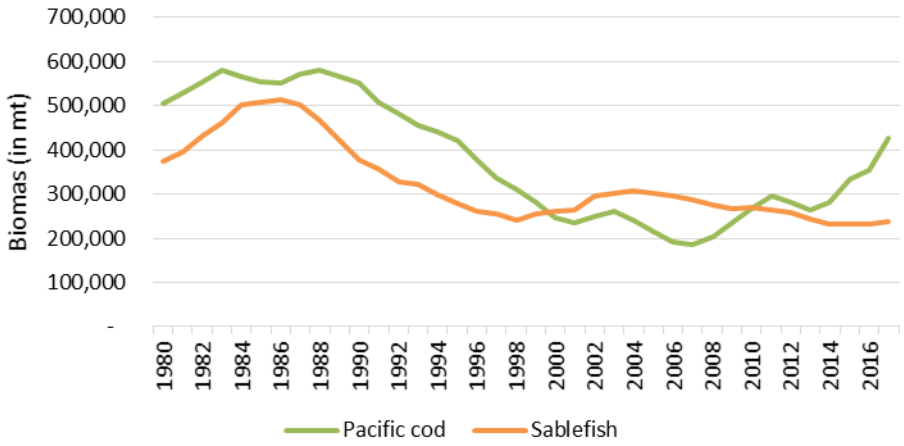
Source: NMFS GOA Harvest Specifications, 2017 and AFSC Stock Assessments, 2016.

Pacific cod is the one of the most abundant species in the GOA and majority of the catch comes from the Central GOA region. The annual TAC is divided by 60% into the A season (January 1 to June 10) and the remainder is allocated to the B season (June 11 to December 31). NMFS allocates Pacific cod TAC between gear type, operation type, and vessel length and the Rockfish Program is allocated 3.81% of the GOA TAC for the trawl sector.

The Pacific cod stock in the GOA is managed as one stock since it is widely distributed. While the Central GOA biomass has declined since 2011, the entire GOA biomass has been increasing since 2007 (see Figure 16-2). Historically, the majority of the catch has come from the Central GOA area. In addition to the federal TAC, there is a substantial amount set aside for the State of Alaska-managed fishery each year. The total TAC for 2017 was 64,442 mt in the GOA, a 10.4% decrease from 2016.[27]

[24] https://www.afsc.noaa.gov/REFM/Docs/2015/GOAnork.pdf
[25] https://www.afsc.noaa.gov/REFM/Docs/2015/GOAdusky.pdf
[26] https://www.afsc.noaa.gov/REFM/docs/2015/GOAdusky.pdf
[27] https://www.afsc.noaa.gov/REFM/Docs/2016/GOApcod.pdf

Figure 16-2 GOA Biomass for Rockfish Program Allocations of Pacific Cod and Sablefish (metric tons), 1980-2017



Note: Sablefish stocks are assessed as one stock in BSAI and GOA and the biomass estimates are Alaska-wide. Pacific cod biomass estimates are GOA only.
Source: AFSC Stock Assessments

Sablefish is the most valuable species per pound in the Rockfish Program and Rockfish Program participants receive an allocation of sablefish for the GOA trawl sector. NMFS allocates 80% of the Central GOA sablefish TAC to the fixed gear sector which is managed under an IFQ system. The remaining 20% of the TAC is allocated to the trawl sector. The Rockfish Program catcher vessel cooperatives are allocated 6.78% and the catcher/processor cooperatives are allocated 3.51% of the Central GOA sablefish TAC.

In the last few years, sablefish biomass, assessed as one population Alaska-wide, has declined slightly since 2000 (see Figure 16-2), resulting in the overall GOA TACs decreasing each year since 2013. The overall TAC for 2017 was 10,074 mt, a 10.8% increase from 2016.[28] 2017 was the first year the GOA TAC increased year-over-year since 2012.

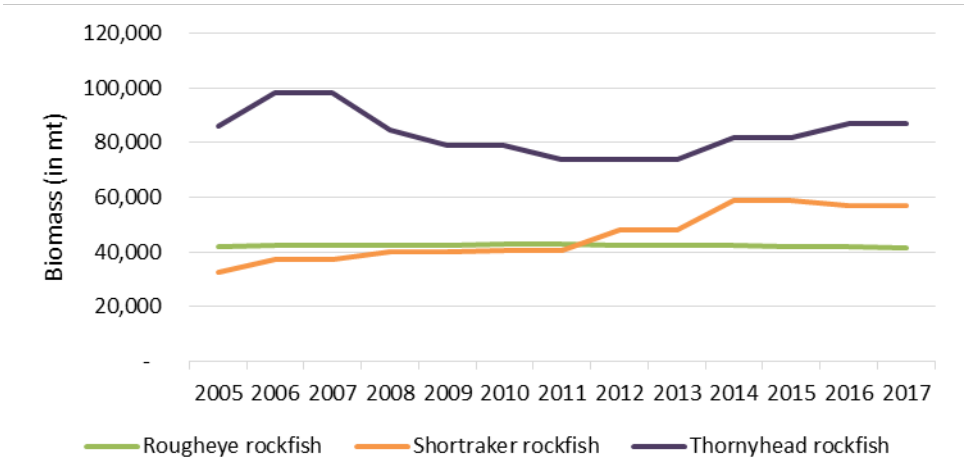
GOA-wide catch of rougheye rockfish remains stable and the Central GOA area is allocated 53.2% of the total GOA TAC. Rougheye rockfish are assessed as a complex with blackspotted rockfish populations biennially because they are physically similar species. 59% of rougheye rockfish were caught by trawl gear in the GOA area and 58.87% of the TAC is allocated to the catcher/processor cooperatives in the Rockfish Program.

The Central GOA rougheye rockfish population estimates have declined since 2007, however the GOA-wide population has remained steady (see Figure 16-3). The TAC for 2017 was 1,327 mt in the GOA, a 0.1% increase from 2016.[29]

[28] https://www.afsc.noaa.gov/REFM/Docs/2016/GOAintro.pdf

[29] https://www.afsc.noaa.gov/REFM/Docs/2016/GOAintro.pdf

Figure 16-3 GOA Biomass for Rockfish Program Secondary Rockfish Species (metric tons), 2005-2017



Source: AFSC Stock Assessments

Trawl and hook-and-line sectors equally divide the shortraker rockfish TACs each year, and shortraker rockfish are a target species for vessels in the Rockfish program. Shortraker rockfish are the most valuable trawl-caught rockfish in terms of landed price and the Rockfish Program catcher/processor cooperatives receive 40% of the Central GOA TAC.

The Central GOA biomass estimates of shortraker rockfish have remained stable (see Figure 16-3). The TAC for 2017 was 1,286 mt in the GOA, identical to the 2016 TAC.[30]

Thornyhead rockfish are a target species in the trawl sector, primarily by Rockfish Program participants. 50% of the ABC is apportioned to the Central GOA area. The Rockfish Program catcher vessel cooperatives and catcher/processor cooperatives receive 7.84% and 26.5% of the Central GOA TAC, respectively.

The thornyhead rockfish biomass estimates remained stable in the GOA (see Figure 16-3). The TAC for 2017 was 1,961 mt in the GOA, identical to the 2016 TAC.[31]

16.1.1.3 AFSC Research Priorities

The AFSC identified several research priorities that would further elucidate the impacts of the Rockfish Program on the biological management of primary and secondary species allocated to the Rockfish Program[32]:

- Changes in fishing practices before and after implementation of the Rockfish Program
- Economic implications to the community of Kodiak that resulted from the Rockfish Program
- Rockfish Program as a case study for successful cooperative fishing behavior

[30] https://www.afsc.noaa.gov/REFM/Docs/2016/GOAshortraker.pdf
[31] https://www.afsc.noaa.gov/REFM/Docs/2016/GOAthorny.pdf
[32] Personal communication with Pete Hulson, AFSC

16.1.2 In-Season Management

Prior to implementation of the Rockfish Pilot Program in 2007, in-season management of the rockfish fishery consisted of opening the limited access fishery in July and closely monitoring directed harvest, bycatch, and PSC limits to ensure that TACs were not exceeded. Implementation of the Rockfish Pilot Program and the continuation of the cooperative structure under the Rockfish Program reduced several challenging fishery management issues that ultimately led to increased flexibility for the fleet and improved monitoring and data collection for the fisheries. The day-to-day responsibility of managing cooperative allocations falls to the cooperative managers and the net monitoring burden has been reduced for NMFS. The extended, non-derby style season has allowed cooperative members to improve harvesting efficiency in the target fisheries while minimizing incidental bycatch of prohibited species relative to the derby fishery through better fishing practices and efficient fleet monitoring and information distribution.

NMFS actively manages groundfish harvests by trawl vessels targeting other groundfish species that incidentally catch rockfish species allocated to the Rockfish Program. In addition to accounting for rockfish species harvested in the Rockfish Program, NMFS accounts for this incidental catch of rockfish species in trawl groundfish fisheries. NMFS establishes an incidental catch allowance for each of the three primary species in the Rockfish Program based on previous years' harvests and current year allocations of species to fisheries in which incidental catches of these species occur. Current regulations authorize non-Rockfish Program trawl vessels to retain Rockfish Program species up to the MRA established for that species. The Rockfish Program requires full retention of rockfish program species caught by vessels participating in the program.

Monitoring and Data

Monitoring and data collection improved substantially after the Rockfish Pilot Program was implemented. Prior to the program, observers were required onboard 30% of the total trips taken by catcher vessels under 125 feet and vessels over 125 feet were required to have 100% observer coverage. Since implementation, all rockfish trips are required to have 100% observer coverage. In addition, under the Rockfish Program, NMFS in-season management collects real-time catch and observer data from the fisheries and continues to communicate with the cooperative managers who monitor for overages for both direct and incidental catch of non-Rockfish Program species by Rockfish Program vessels. Cooperatives are responsible for monitoring their cooperative harvests and are prohibited from exceeding their CQ limits for primary and secondary species and halibut PSC. The attention to detail allows all fisheries to remain open to optimize harvests to catch as much of the TAC as possible while ensuring a sustainable fishery.

The primary management impact from implementation of the Rockfish Pilot Program and Rockfish Program is that more timely information from the fisheries has reduced the incidence of regulatory area ABC overages. Regulatory area ABCs are the spatial distribution of the NMFS FMP management area-wide ABC. For the Rockfish Program, the Central GOA regulatory area is a sub-area of the GOA area. Prior to implementation of the program, rockfish harvests over the Central GOA ABC occurred more frequently. Harvesting below the GOA ABC but above a regulatory area's ABC can create localized stock depletions in that area. Regulatory areas are used to spatially distribute catches.

NMFS also notes that incidental catch of the primary species allocated to the Rockfish Program by vessels targeting arrowtooth flounder who "top off" during their fishing trip by retaining rockfish species up to the MRA has increased since implementation. In general, these vessels have increased the amount of Rockfish Program primary species to the extent allowed since the Program began, likely because rockfish species have higher value than arrowtooth flounder.

Improvements after the Pilot Program

The Rockfish Program addressed three issues from the Pilot Program that drastically reduced the burden of management on NMFS: (1) sideboards that were too small to be opened for directed fishing, (2) trawl entry level fisheries whose small quotas were difficult to manage, and (3) maintaining limited access as an alternative to joining a cooperative.

The following section discusses the impacts of the Rockfish Program on NMFS' management of species managed in the program. This section also identifies several current management issues and suggestions for regulation changes that would create a more efficient program from a management and administrative perspective.

Sideboards

The Council recommended sideboards for participants in the Rockfish Pilot Program to limit the impact of the program on other fisheries that are not managed by catch share programs. Participants in the catcher vessel and catcher/processor sectors were subject to sideboards that established limits on the amount of groundfish that Rockfish Program vessels could collectively harvest. The sideboarded fisheries were closed to directed fishing (with some exceptions for the catcher/processor sector) because the amounts of groundfish TAC allocated to the fisheries were not sufficient to provide for a directed fishery. Although the sideboarded fisheries were closed to directed fishing, NMFS still had to actively manage these fisheries because Rockfish Pilot Program vessels were catching sideboard fishery species incidentally while targeting other groundfish species. The agency used a complex database that required substantial programmer hours to develop and maintain. The Rockfish Program eliminated the small sideboards for these fisheries and this resulted in cost savings for NMFS.

The Rockfish Pilot Program and the Rockfish Program offered an opt-out provision for catcher/processor vessels. Some vessels were strategically choosing to opt-out of the program to avoid sideboards and fish in the open access fishery. Implementation of the Amendment 80 Program substantially reduced the incentive for a catcher/processor eligible for the Rockfish Program to opt out of the fishery because the fleet became limited by Amendment 80 sideboards outside of the rockfish program.

The Council considered an action to amend the sideboards in the Rockfish Program to remove the Bering Sea stand down provision that applies to cooperative participants and certain limited access participants, but not to eligible catcher processors that opt-out, which was the source of this concern. However, the Council determined that implementation of Amendment 80 had alleviated this concern and the revisions to the catcher/processor sideboards were not necessary.

Trawl entry level requirements

This section describes the entry level management and issues that arose in those fisheries in the first year of the Rockfish Pilot Program. There was a trawl and fixed gear entry level fishery available in the Pilot Program to allow new entrants access. In the program's first year, participation was limited to three vessels; very few vessels registered for either sector initially. The relatively small allocations to the entry level fishery, in comparison to the cooperative quota share allocations, deterred most participants from registering for the entry level.

The entry level fishery posed substantial challenges for both participants and managers. The administrative burden on NMFS was significantly high in comparison to the actual fishing activity. The system NMFS used to allocate the TAC between trawl and fixed gear entry level fisheries was difficult to manage in a limited access, race-for-fish system because the entry level fisheries received a relatively small TAC

allocation. In the few years that the trawl entry level fisheries were in operation, allocations for individual fisheries were 200 metric tons and less. Since vessels can harvest on the order of 100 metric tons in a day, timing a closure to avoid overharvests was very difficult. The allocation to the fixed gear entry level fishery went largely unutilized.[33]

Management of the small allocation to trawl vessels in the entry level fishery was problematic for NMFS and the complication of managing catch in the entry level sector had spillover effects on processors. If a fishery cannot be prosecuted, entry level processors lost any product they hoped to receive from the fishery. In the first year of the program, delivery scheduling posed challenges for trawl and fixed gear participants as a result of the race for-fish management of the trawl fishery and the prohibition on deliveries to processors qualified for the Rockfish Pilot Program. The complicated fishery closure system relied on cooperation within the sector and eventually led to voluntary cooperatives in the Gulf of Alaska entry level trawl fisheries by the end of the Rockfish Pilot Program.

The Rockfish Program incorporated participants in the Pilot Program entry level trawl fishery by allocating 2.5% of Rockfish Program species to LLP licenses designating vessels that participated in the Pilot Program entry level trawl fishery in 2007, 2008, 2009.[34]

Limited access

In the Rockfish Pilot Program, if a qualifying vessel did not register to be in a cooperative, the vessel was entered into the limited access sector by default. Additionally, if a participant was not in a rockfish cooperative, but holding an LLP license with rockfish QS, they could decide annually to fish in a limited access fishery. NMFS did not allocate a specific amount of fish to a specific harvester in the limited access fishery. All harvesters in the limited access fishery competed with all other such harvesters to catch the TAC assigned to the limited access fishery. The TAC assigned to the limited access fishery represented the sum of QS assigned to all the LLP licenses designated for the limited access fishery. No exclusive harvest privilege existed in the limited access fishery.

To implement the limited access provision, NMFS was required to create database tracking for harvest in this sector, even if the TAC was not sufficient to open the fisheries. The limited access fishery also required NMFS to expend staff time to prepare in-season closures for these fisheries in the event the fisheries were opened. The Rockfish Program eliminated the limited access sector to streamline operational efficiencies and to reduce unnecessary costs for the program.

16.1.3 Monitoring and Enforcement

The primary role of the USCG includes safety, prevention, and response. The USCG conducts mandatory commercial fishing vessel safety examinations and at-sea safety boardings. The USCG leads search and rescue efforts when situations occur.

NOAA Office for Law Enforcement (OLE), with assistance from NOAA SF and RAM, enforce the regulations that govern allocation of the Rockfish Program. These NOAA agencies monitor and enforce allocations and other elements of the program.

OLE has created a partnership with the State of Alaska Department of Public Safety through a Joint

[33] https://www.npfmc.org/wp-content/PDFdocuments/catch_shares/Rockfish/RPPreview508.pdf

[34] https://www.federalregister.gov/documents/2011/12/27/2011-32873/fisheries-of-the-exclusive-economic-zone-off-alaska-groundfish-of-the-gulf-of-alaska-amendment-88

Enforcement Agreement (JEA). The JEA provides a mechanism for state enforcement personnel to assist OLE in enforcing federal fishing regulations.

Relative to other fisheries and relative to the pre-Rockfish Pilot Program, the Rockfish Program fishery generally operates smoothly with very few compliance issues. The most common violations have been failure to check-in/out and bycatch overages. The number of violations has decreased as participants have become more familiar with new requirements. The catcher vessel participants host a pre-season meeting to review regulations; this and other "behind the scenes" work of the cooperatives prevents inadvertent violations.

16.1.3.1 Catch Monitoring Control Plan specialist

Monitoring requirements for Rockfish Program deliveries required a Catch Monitoring Control Plan (CMCP). A CMCP is developed by the processor and approved by NMFS, per criteria established in federal regulations at 50 CFR 679.28(g)(7). The CMCP details a series of performance-based standards that ensure that all delivered catch is accurately sorted and weighed by species. An additional monitoring component for the Rockfish Program is a NMFS employee, the rockfish CMCP specialist, who observes rockfish landings to provide impartial verification of a processor's adherence to its CMCP. NMFS uses a portion of the cost recovery fees collected under the Rockfish Program to support this Kodiak-based position. The role of the CMCP specialist is different from NMFS-certified observer and the CMCP specialist does not complete any observer duties such as assisting vessel observers or collecting biological or scientific data. The duties of the rockfish CMCP specialist are to monitor rockfish program deliveries to ensure compliance with the CMCP, to assist processors with rockfish species identification, to ensure accurate catch sorting and quota accounting, and to report the findings to NMFS.

A shoreside processor is required to include a description in their CMCP of how the CMCP specialist would be notified of rockfish CQ deliveries. Since the start of the program, consistently getting landing notices for all deliveries has been a bit problematic and NMFS has continued to work with processing plants to get advanced notification. Currently, CMCP's require that processor notify the CMCP specialist via email approximately 24 hours prior to an upcoming rockfish delivery. Also, processors are required to contact the CMCP specialist 1 hour prior to the actual delivery via phone (voice or text). However, processors often state that they often don't have this information from delivering vessels 24 hours in advance. The 1-hour phone notice is occasionally forgotten depending on personnel and shift changes and sometimes the delivering vessel does notify plant personnel of their arrival. In the future, NMFS may consider developing an online notification process to make the process more consistent or developing a method to require the delivering vessels to notify NMFS.

NMFS reports that fulfilling the role of the CMCP specialist has been a successful way to monitoring incoming deliveries. On average, about 85% of rockfish deliveries to Kodiak are monitored each season. The degree of monitoring is dependent on the number of simultaneous deliveries, time of day, and day of week. The CMCP specialist attempts to space monitoring events throughout 24 hours and over seven days a week to insure all time periods and days are covered. When only one vessel is delivering to a plant in Kodiak, then the entire offload may be monitored. For simultaneous deliveries, the CMCP specialist may decide to work at a processor that he has not monitored recently or move between processors to monitor a portion of different deliveries.

One of the duties of the CMCP specialist is to help staff at the processing plant accurately identify rockfish species, which are sometimes quite similar in appearance and can be difficult to distinguish. Throughout the May through November 15 fishing season, there can be quite a bit of turn-over in plant personnel who are responsible for sorting fish to species. So the CMCP specialist conducts ongoing training in order to

ensure accurate speciation and catch accounting. To assist in training, NMFS developed the "Processors Guide to Species Identification in the Gulf of Alaska Rockfish Fishery" that contains pictures of each of the primary and secondary species delivered in the rockfish program. The images are of specifically of dead fish, in the condition as they appear during a delivery, and accompanied by key identification characteristics in English, Tagalog and Spanish. The guide is printed on waterproof paper and spirally bound for easy use on the dock and processing facility. A similar 2-page guide for skate identification was also developed and distributed.

16.1.4 Recordkeeping and Reporting

The Rockfish Program includes requirements for CQ holders to report specific information to NMFS and other management agencies for management, monitoring, and enforcement purposes. These recordkeeping and reporting requirements for the Rockfish Program can be split into categories by subject:

Recordkeeping and reporting requirements for participants include a mix of electronic and paper submissions to NMFS. Since implementation of the Rockfish Program, NMFS has transitioned a number of recordkeeping and reporting submissions from paper to electronic applications and forms in an effort to simplify recordkeeping and reporting, reduce costs, and improve accuracy and timeliness of information for management agencies and fishery participants. In most cases, NMFS has maintained options for paper submission when fishery participants are unable to report electronically.

Two electronic recordkeeping and reporting systems are currently used in the Rockfish Program. The first is eLandings, an interagency program implemented in 2009 and is required for all Rockfish Program landings. The second system is eFISH, the NMFS Alaska Region online Fisheries Information System (eFISH). Participants in the Rockfish Program use eFISH to renew annual permits, submit ex-vessel volume and value reports, paying cost-recovery, transfer rockfish CQ between cooperatives, check in and out of the Rockfish Program, and pay observer program fees. Rockfish Program participants may also use eFISH to receive information from NMFS relevant to their permits or CQ holdings, including checking CQ balances, and printing LLP licenses.

NMFS has maintained paper submission requirements for a number of reasons, including requirements for original signatures on applications, occasional notarized verifications, and required additional documentation for eligibility requirements.

NMFS has sought out efficiencies in reporting, including removing requirements for a monthly report submitted by the cooperative managers that collected redundant information found in eLandings. It was eliminated in the current program to reduce costs and burden to the industry.

This section provides an overview of the current recordkeeping and reporting requirements for the Rockfish Program.

Application for Rockfish Cooperative Fishing Quota (Paper)

Each calendar year, the Regional Administrator determines the tonnage of rockfish primary species that will be assigned to participants in a rockfish cooperative. The members of a rockfish cooperative have an exclusive harvest privilege to collectively catch this CQ. Only persons who hold rockfish QS may join a rockfish cooperative. Each year the holder of an LLP license with rockfish QS must assign that LLP license to a rockfish cooperative in order to participate in the Rockfish Program. Rockfish QS can only be fished through cooperative membership. The cooperative must form an association with the processor to which it historically delivered the most rockfish. The cooperative/processor associations are intended to ensure that a cooperative lands a substantial portion of its catch with its members' historic processor. The exact terms of the association are subject to negotiation, are confidential to the parties, and require the approval of the associated processor.

Application for Inter-Cooperative Transfer of Rockfish CQ (eFISH)

Each rockfish cooperative receives an annual cooperative fishing quota (CQ). The CQ is an amount of primary and secondary rockfish species the cooperative is able to harvest in a given fishing year. Halibut Prohibited Species Catch (PSC) is also allocated to participants based on historic halibut PSC rates in the primary rockfish species fisheries. Shore-based processors receiving rockfish CQ must be located within the boundaries of the City of Kodiak, Alaska. Once NMFS issues annual CQ to a cooperative, the members of the cooperative may fish on that amount or may transfer catch amounts to another cooperative. The transfer of an annual catch amount is valid only during the calendar year of the transfer. A rockfish cooperative may transfer all or part of its CQ to another rockfish cooperative. A cooperative may only transfer or receive by transfer an annual catch amount if the cooperative submits online an application for inter-cooperative transfer to NMFS. In order for NMFS to approve an inter-cooperative transfer, both parties must be already established and recognized by NMFS as a cooperative prior to the transfer. Under the Program, catcher/processor cooperatives are not permitted to receive CQ transfers from catcher vessels cooperatives. This "one-way door" is intended to protect interests of shore plants and communities, in the event that catcher/processor production efficiencies exceed those of the shore-based sector.

Annual Rockfish Cooperative Report (Paper)

Each Rockfish cooperative must submit an annual Rockfish Cooperative report to NMFS detailing the use of the cooperative's CQ by December 15 of each year. The annual rockfish cooperative report must include at a minimum:

- The cooperative's CQ, sideboard limit (if applicable), and any rockfish sideboard fishery harvests made by the rockfish cooperative vessels on a vessel-by-vessel basis;
- The cooperative's actual retained and discarded catch of CQ, and sideboard limit (if applicable) by statistical area and vessel-by-vessel basis;
- A description of the method used by the cooperative to monitor fisheries in which cooperative vessels participated; and
- A description of any actions taken by the cooperative in response to any members that exceeded their catch as allowed under the rockfish cooperative agreement.

Vessel Check-in/Check-out Report with Termination of Fishing Declaration (eFISH)

The designated representative of a rockfish cooperative must designate any vessel that is authorized to fish under the rockfish cooperative's CQ permit before that vessel may fish under that CQ permit through a check-in procedure.

The designated representative for a rockfish cooperative must submit to NMFS a check-in report for a vessel:

- At least 48 hours prior to the time the catcher vessel begins a fishing trip to fish under a CQ permit; or
- At least 1 hour prior to the time the catcher/processor begins a fishing trip to fish under a CQ permit; and
- A check-in designation is effective at the beginning of the first fishing trip after the designation has been submitted.

The designated representative of a rockfish cooperative must designate any vessel that is no longer fishing under a CQ permit for that rockfish cooperative through a check-out procedure.

A check-out report must be submitted to NMFS within 6 hours after the effective date and time the rockfish cooperative ends the vessel's authority to fish under the CQ permit.

- If the vessel is fishing under a CQ permit for a catcher vessel cooperative, a check-out designation is effective at the end of a complete offload;
- If the vessel is fishing under a CQ permit for a catcher/processor cooperative, a check-out designation is effective upon submission to NMFS.

A Rockfish cooperative may choose to terminate its CQ permit through a declaration submitted to NMFS. NMFS will review the declaration and notify the cooperative's authorized representative once the declaration has been approved.

Rockfish Ex-vessel Volume and Value Report (eFISH)

A rockfish processor (shoreside processor) that receives and purchases landings of rockfish CQ must annually submit to NMFS a complete Rockfish Ex-vessel Volume and Value Report for each reporting period for which the rockfish processor receives rockfish CQ. The reporting period of the Rockfish Ex-vessel Volume and Value Report is from May 1 through November 15 of each year. The deadline for submittal on eFISH is no later than December 1 each year.

Rockfish fee payment (eFISH)

Under section 303A(e) of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), costs for management and enforcement of individual fishing quota and other limited access privilege programs (LAPPs) are recoverable from participants. The Rockfish Program is a LAPP established under the provisions of section 303A of the Magnuson-Stevens Act. Therefore, NMFS is required to collect fees for the Rockfish Program. The MSA also limits the cost recovery fee so that it may not exceed three percent of the ex-vessel value of the fish harvested under the Rockfish Program.

All rockfish CQ holders who harvest rockfish CQ must submit the cost recovery payment for all rockfish CQ landings made on their rockfish CQ permit. A rockfish CQ permit holder must submit any rockfish cost recovery fee liability payment(s) to NMFS no later than February 15 of the year following the calendar year in which the rockfish CQ landings were made. Payment must be made electronically in U.S. dollars by automated clearing house, credit card, or electronic check drawn on a U.S. bank account.

Each CQ holder must pay their cost recovery fee electronically using the Department of the Treasury's online payment system, pay.gov, which can be accessed through the eFISH system.

16.1.5 Additional Regulatory Issues

NMFS has not identified any issues of concern related to management of the Rockfish Program. Therefore, NMFS does not believe any revisions to Rockfish Program are necessary at this time. However, since the Rockfish Program will expire at the end of 2021, NMFS has identified several minor regulatory revisions that could be made at the time of Rockfish Program reauthorization to clarify current regulatory requirements and improve administration of the program. NMFS is identifying these issues for the Rockfish Program review to notify the Council and the public that it intends to include these recommendations in the Council analysis to reauthorize the Rockfish Program, currently scheduled for review by the Council beginning in 2018.

16.1.5.1 Additional regulatory issues

Category	Issue	Proposed Revision
Ex-vessel Volume and Value Report	Current regulations a "rockfish processor" to submit annually to NMFS a Rockfish Ex-vessel Volume and Value Report. The use of rockfish processor instead of "rockfish shoreside processor"	Clarify regulations at § 679.5(r)(10) to specify that only shoreside processors receiving Rockfish Program CQ must

(§ 679.5)	has created confusion for NMFS staff and catcher/processor participants because a rockfish processor could include Rockfish Program catcher/processors.	submit the Rockfish Ex-vessel Volume and Value Report.
Reporting Requirements (§ 679.5)	Current regulations require Rockfish Program cooperatives to report catch by "statistical area." Reporting by statistical area is arbitrary and unnecessary in the cooperative reports. Catches are reported in eLandings by the Central GOA management area for the program, not by federal statistical areas.	Modify language in § 679.5(r)(6)(iii)(B) to require Rockfish Program cooperatives to report catch by the Central GOA management area.
Reporting Requirements (§ 679.5)	Current regulations specify that a Rockfish Program cooperative annual report must include a description of any actions taken by the cooperative in response to any members that exceeded their catch as allowed under the rockfish cooperative agreement. "Any actions" is very broad and could include intra or inter-co-op transfers, which is unnecessary. The proposed rule implementing the Rockfish Program used "any civil actions" in § 679.5 to describe the reporting requirement and this term should have replaced "any actions" in § 679.5 when the Rockfish Program was implemented.	Revise § 679.5(r)(6)(iii)(D) - to replace "any actions" with "any civil actions."
Fishing Plan in Annual Cooperative Application (§ 679.81)	Current regulations require a Rockfish Program cooperative Fishing Plan to be included in the cooperative application for CQ. The cooperatives have to complete the application in February, far in advance of when they make fishing plans for the season. The timing of the requirement doesn't match up with when the information is available. This information is available and has been included in the cooperative annual reports required at § 679.5(r)(6).	Revise § 679.81 (i)(D)(3) to remove requirements for a Fishing Plan to be submitted with a cooperative application for CQ.
Plant observer requirements (§ 679.84 and § 679.28)	Current regulations require Rockfish Program processors to maintain an observer station at the plant. This requirement is no longer necessary since plant observers are not required for the Rockfish Program. Instead, the Rockfish Program employs a CMCP specialist, which negated the need for a plant observer. The current regulations negatively impact shoreside processors because it is costly for processors to maintain an observer workstation and platform scale.	Revise § 679.84(f)(1) to exempt shoreside processors under the Rockfish Program from the requirement to provide an observer work station and observer communication described at § 679.28(g)(7)(vii) and (viii).

16.2 NPFMC

Rockfish Program and Pilot Program impacts to the NPFMC fall into three basic categories, since there has not been substantial changes to the programs requested by stakeholders while they are in effect. Each of the three categories is described in the next sections.

16.2.1 Review cooperative reports

Annually, typically in April, the NPFMC receives reports from each of the Rockfish Program Cooperatives. Those reports are presented during the Council meeting and provide an opportunity to monitor progress of the cooperatives in meeting the goals and objectives of the program. During the annual review any issues that arose during the year could be noted and addressed either under that agenda item or staff tasking. To date, the NPFMC has not identified substantial problems during the cooperative reports.

The Rockfish Program cooperative reports are generally scheduled as part of several LAPP cooperative reports. The entire agenda item is expected to take about four hours, with the Rockfish Program portion of the cooperative reports taking an hour or less of the Council's time. These reports are generated by the fishing industry and the only staff time required is reviewing the presentations and coordinating their submission to the Council.

16.2.2 Required Program Reviews

This is the second required Central GOA Pilot Program/Rockfish Program review conducted by the NPFMC. Each review requires a significant amount of staff time to complete in order to address all of the issues identified by the Council and its advisory bodies and NOAA Fisheries under this catch share review guidance.

Program reviews also requires Council and stakeholder time to review the program review work plan and the program review document. Completing both of those tasks will require approximately 4 hours of Council, Advisory Panel, and Scientific committee Council meeting time, in addition to the time each members spends reading the document and preparing for the meetings.

16.2.3 EA/RIR Development

Each time the Rockfish Program expires a new EA/RIR must be drafted by staff, structured and reviewed by the Council and its advisory bodies, and implemented by NOAA Fisheries. The time are resources to develop the EA/RIR to the stage it may be submitted to NOAA Fisheries is highly dependent on the complexity of the program and the changes from the current program. For example, rolling over the current program would take less Council, staff, and NOAA Fisheries time than wholesale modifications of the program. At a minimum, the Council would need to develop alternatives at one meeting, have staff analyze the alternatives and bring back the analysis for initial review, and then address any requested changes and bring the document back for a final review and approval by the Council. This process often requires more than one review prior to Council approval. Each time the analysis must be brought before the Council it increases the overall cost in terms of time and available resources.

17 Observer Costs and Cost Recovery

17.1 Observer costs

All catcher vessel LLP licenses with Rockfish Program quota attached are endorsed for use on vessels with a MLOA of less than 125' LOA. Prior the Pilot Program, trawl catcher vessels that were less than 125 feet LOA, fishing in the GOA, were subject to 30 percent observer coverage. If the Rockfish Program were allowed to expire after 2021, based on current observer program regulations, the trawl catcher vessel fleet would **not** revert back to the 30 percent pay-as-you-go coverage structure. Instead, they would be subject to the current 1.25 percent observer fee levied against the ex-vessel value of landings for trawl catcher vessels in the GOA[35].

When the Pilot Program was implemented catcher vessels were subject to 100 percent observer coverage. That level of coverage remained when the Rockfish Program was implemented[36]. Catcher vessels were required to have a NMFS-certified observer aboard at all times the vessel was used to harvest fish under a cooperative fishing quota permit. The vessel must provide a computer for use by the observer for electronic data entry. The 100 percent coverage requirement begins on May 1 and end on November 15, or upon leaving the rockfish cooperative.

Observer coverage requirements in the limited access fisheries are similar to those vessels assigned to cooperatives. However, observer requirements for vessels in a limited access fishery would not begin until July 1, when the third quarter halibut allowance is released and the rockfish fishery is open to directed fishing. These requirements would remain in place until November 15, or until NMFS closes directed fishing for all three of the primary rockfish fisheries for the limited access fishery. Typically, these fisheries close in mid-July.

Observers are also required on all vessels subject to Rockfish Program sideboard limits that directed fish in the West Yakutat District, Central GOA, and Western GOA during July. Requiring vessels to have an observer aboard helps to ensure that vessels do not exceed the sideboard limits. The sideboard limits for the Western GOA and West Yakutat District rockfish fisheries are small relative to potential harvest rates and must be closely monitored to avoid exceeding sideboard limits. Halibut PSC limits in the deep-water and shallow-water fishery complex are also managed based on data gathered by observers.

Confidentiality restrictions prohibit a direct comparison of costs under the various time periods and observer regulations. There is only one observer provider that deploys observers into the Rockfish Program. Their business information that is held by NMFS is classified as confidential, precluding NOAA Fisheries from releasing any cost or invoice information. Instead this section of the analysis provides information on the number of days fished in the Rockfish Program, ex-vessel value of harvest in the rockfish target fisheries, and very rough estimates of observer costs for vessels.

Table 17-1 reports the estimated number of catcher vessel days fishing in the limited access rockfish fisheries from 2003 through 2016. The daily rate value for 2003 through 2006 was calculated as:

*Daily rate observer cost = Days fished * daily rate*0.3*

The 0.3 factor represents the 30 percent coverage that was applied to the catcher vessel fleet those years. A similar formula was used for 2007 through 2011, except the 0.3 factor was not included. During those years the vessels would have been subject to the 100 percent coverage requirement. It is important to note

[35] See § 679.51(a)(1)

[36] See § 679.51(a)(2)(i)

that days fished underestimates the total number of observer days because it does not include days traveling to or from the fishing grounds. Fishing days are only those days when hauls were recorded.

Table 17-1 Estimated catcher vessel observer costs in limited access fishery

Year	Total Days Fished	$400	$500	$600	Est. Ex-vessel Value of Fishery	1.25%
2003	48	$5,796	$7,245	$8,694	$4,296,200	$53,702
2004	62	$7,452	$9,315	$11,178	$3,774,795	$47,185
2005	35	$4,140	$5,175	$6,210	$3,503,051	$43,788
2006	32	$3,816	$4,770	$5,724	$4,146,135	$51,827
2007	15	$6,000	$7,500	$9,000		
2008	7	$2,800	$3,500	$4,200		
2009	8	$3,200	$4,000	$4,800		
2010	7	$2,800	$3,500	$4,200		
2011	4	$1,600	$2,000	$2,400		
2012						
2013						
2014			Trawl entry level fishery ended			
2015						
2016						

Source: NMFS in-season management data for days fished and AKFIN summary of CAS/COAR value data

For years 2003 through 2006, the 1.25 percent fee calculation was also included for comparison, even though it was not in effect those years. That estimate is much greater than the daily rate estimate, as much as 10 fold. The 1.25 percent estimate is not included for the years 2007 through 2011, because the value data is classified as confidential due to the number of participants.

Table 17-2 provides observer cost estimates for 100 percent coverage under the daily rate and for comparison the 1.25 percent fee. Moving to the Pilot Program (and changes in TACs) caused the number of days fished to approximately double. The increase was even greater under the Rockfish Program. The increase in days fished and the 100 percent coverage requirement resulted in a substantial increase in estimated observer costs. The estimated observer costs under the pay-as-you-go structure are estimated to be greater than the 1.25 percent for all but the $400/day rate. That rate has been described by industry as being lower than they experience[37], but is include to provide a range of estimates since the actual rate in unknown.

[37] But is close to the estimates that have been provided by NMFS for other analyses of other areas and fisheries in the past.

Table 17-2 Estimated catcher vessel observer costs in Pilot Program and Rockfish Program fishery

		Observer Fee at Assumed Daily Rate					Daily Rate Obs. Cost as % of Ex-vessel		
Year	Days Fished	$400	$500	$600	Est. Ex-vessel Value of Fishery	1.25%	$400	$500	$600
2007	152	$60,800	$76,000	$91,200	$4,843,447	$60,543	1.3%	1.6%	1.9%
2008	141	$56,400	$70,500	$84,600	$4,537,084	$56,714	1.2%	1.6%	1.9%
2009	134	$53,600	$67,000	$80,400	$3,521,552	$44,019	1.5%	1.9%	2.3%
2010	150	$60,000	$75,000	$90,000	$4,218,775	$52,735	1.4%	1.8%	2.1%
2011	142	$56,800	$71,000	$85,200	$5,404,220	$67,553	1.1%	1.3%	1.6%
2012	193	$77,200	$96,500	$115,800	$7,939,759	$99,247	1.0%	1.2%	1.5%
2013	174	$69,600	$87,000	$104,400	$5,568,703	$69,609	1.2%	1.6%	1.9%
2014	176	$70,400	$88,000	$105,600	$5,601,052	$70,013	1.3%	1.6%	1.9%
2015	192	$76,800	$96,000	$115,200	$5,594,289	$69,929	1.4%	1.7%	2.1%
2016	198	$79,200	$99,000	$118,800	$6,630,476	$82,881	1.2%	1.5%	1.8%

Source: NMFS in-season management data for days fished and AKFIN summary of CAS/COAR value data

Catcher/processors are required to have at least two NMFS-certified observers for each day that the vessel is used to harvest, process, or take deliveries from a catcher vessel. At least one of these observers must be endorsed as a lead level 2 observer. More than two observers are required if observer workload restrictions would preclude adequate sampling. This level of coverage is applied to all trawl catcher/processors regardless of the fishery, so the level of coverage is not determined by their participation in the Rockfish Program.

The formula used to estimate the total observer cost for the catcher/processor sector is:

*Daily rate observer cost = Days fished * daily rate*2.0*

That estimate, like the catcher vessel estimate, is based on days fished and underestimates the total days of observer coverage that the catcher/processor sector is required have under the program. The daily rate of $345 was taken from page 33 of the 2016 observer program's annual report (Alaska Fisheries Science Center and Alaska Regional Office, 2017). The estimated observer fee ranged from about 1 percent to 2 percent of the estimated ex-vessel[38] value of the fishery.

[38] Ex-vessel value was used to be consistent with the catcher vessel estimates. It is understood that catcher/processors do not generate an ex-vessel value for their catch, since the first sale of the fish occurs at the first wholesale level.

Table 17-3 Estimated rockfish program catcher/processor observer costs in the GOA rockfish fisheries

Year	Value of Rockfish Fishery CP	CP Days Fished	Est. Observer Fee	Total Observer Costs	Obs fee as % of value
2003	$3,118,402	89	$345	$61,410	2.0%
2004	$2,916,733	68	$345	$46,920	1.6%
2005	$3,837,305	67	$345	$46,230	1.2%
2006	$3,433,269	71	$345	$48,990	1.4%
2007	$2,243,644	50	$345	$34,500	1.5%
2008	$2,674,544	71	$345	$48,990	1.8%
2009	$2,185,282	61	$345	$42,090	1.9%
2010	$4,089,085	72	$345	$49,680	1.2%
2011	$5,593,281	68	$345	$46,920	0.8%
2012	$5,674,420	102	$345	$70,380	1.2%
2013	$4,124,160	87	$345	$60,030	1.5%
2014	$4,832,442	119	$345	$82,110	1.7%
2015	$4,808,334	124	$345	$85,560	1.8%
2016	$4,797,480	144	$345	$99,360	2.1%

Source: NMFS in-season management data for days fished and AKFIN summary of CAS/COAR value data

17.2 Plant modifications

Processors that provided information on plant modifications indicated that any changes that were made for their own purposes. It does not appear that processing plant operators incurred costs that were directly attributable to the Pilot Program or Rockfish Program for changing the structure of their processing facilities.

17.3 Cost recovery

Cost recovery was not part of the Pilot Program (2007-2011), but it was implemented in 2012 in conjunction with the Rockfish Program. Moving to cooperative management structure increased the monitoring and enforcement burden that was necessary to manage the fishery. Under section 303A(e) of the Magnuson-Stevens Fishery Conservation and Management Act (Magnuson-Stevens Act), costs for management and enforcement of individual fishing quota and other limited access privilege programs (LAPPs) are recoverable from participants. The Rockfish Program is a LAPP established under the provisions of section 303A of the Magnuson-Stevens Act. Therefore, NMFS is required to collect fees for the Rockfish Program, but the fee may not exceed 3 percent of the ex-vessel value of the fish harvested under the Rockfish Program quota allocations.

Cost recovery fees are assessed on the ex-vessel value of rockfish primary species and rockfish secondary species CQ harvested by Rockfish Program cooperatives (NMFS Sustainable Fisheries, 2017). Cost recovery fees do not apply to prohibit species catch CQ (since those species may not be sold), secondary species managed under an MRA (because CQ is not issued), or any other species for which CQ was not issued but are taken incidentally to species allocated under the Rockfish Program. The cost recovery fees do not apply to Rockfish Program entry level longline fishery and opt-out vessels because those participants do not receive rockfish CQ and as a result are not fishing under a LAPP subject to cost recovery.

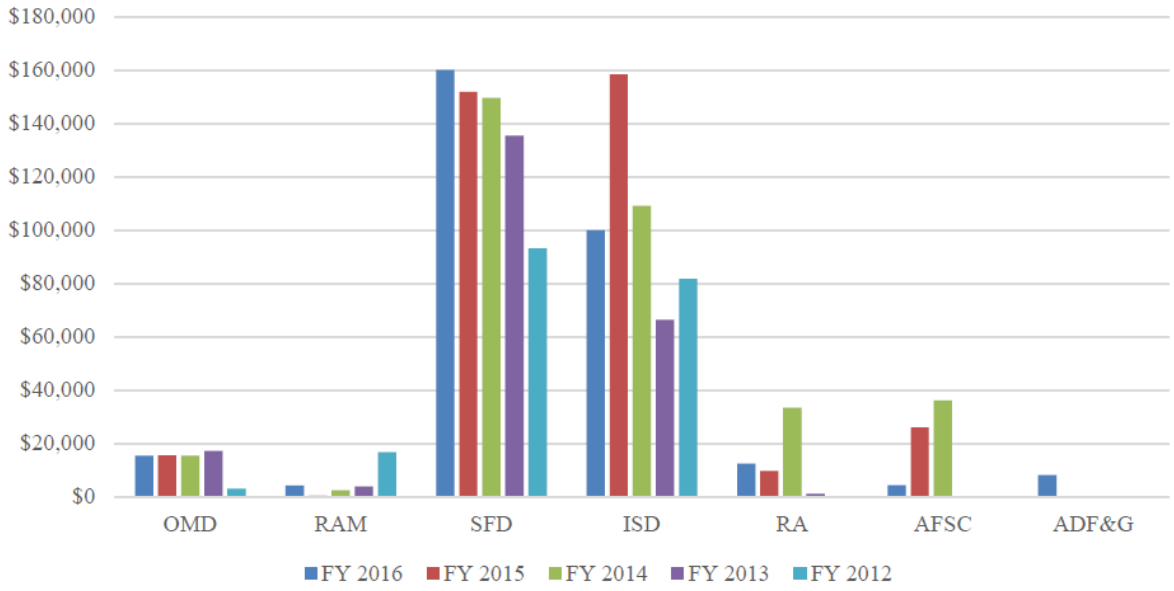
A rockfish processor that receives and purchases landings of Rockfish Program CQ must submit a complete Rockfish Ex-vessel Volume and Value Report to NMFS. The Rockfish Ex-vessel Volume and Value Report covers landings from May 1 through November 15 and must be received by NMFS by December 1. All processors have complied with this requirement under both the Pilot Program and the Rockfish Program.

NMFS determines recoverable costs for the various agency departments that incur recoverable costs. Those units include NMFS Restricted Access Management (RAM), NMFS Information Services Division (ISD), NMFS Office of Law Enforcement (OLE), NMFS Sustainable Fisheries (SF), NMFS Operations and Management Division (OMD), NMFS Alaska Fisheries Science Center (AFSC), NMFS Regional Administrator Office (RA), and Alaska Department of Fish and Game (ADF&G).

The 2016 fee liability was set at 2.54 percent (81 FR 10591; March 1, 2016). Overall, direct program costs for FY 2016 ($304,684) decreased compared to FY 2015 ($361,790). Additionally, the Rockfish Program fishery value increased in 2016 to $12,009,975, from the 2015 fishery value of $11,117,262. Both of these factors contributed to a lower fee percentage for 2016 than 2015 (NMFS Sustainable Fisheries, 2017).

The cost recovery fee percentages set for 2012 and 2013 were 1.4 percent and 2.5 percent, respectively. Because the fee percentage was below 3 percent it was set at the actual calculated amount. In 2014 and 2015 the fee was calculated to be 3.3 percent and was adjusted down to the 3 percent limit set by law.

Figure 17-1 Recoverable costs by department for fiscal years 2012 through 2016



Direct program costs (the annual cost recovery fee) for FY 2015 was $361,790 which was an increase compared to FY 2014 ($345,948), FY 2013 ($224,060), and FY 2012 ($194,561) (NMFS Sustainable Fisheries, 2016). Some operating units had high initial costs at the beginning of the Rockfish Program (such as the RAM division) due to management activities such as permit issuance that require significant time initially and then relatively fewer costs after program implementation. Other operating units have had an increase in management costs. Costs for ISD have increased due to infrastructure needs such as software upgrades needed to maintain the catch accounting system necessary to track quota allocation and use, and sideboard limits implemented under the Rockfish Program. The OMD also had an increase in management costs attributable to the Rockfish Program after the first year because of their role in overseeing the billing and collection of cost recovery fees. Those oversight costs did not accrue during the first fiscal year (FY

2012). The AFSC did not submit management costs for the first two years of the Rockfish Program (FY 2012 and FY 2013), but began collecting management costs for observer deployment and debriefing beginning with FY 2014; costs associated with the additional observer coverage and monitoring requirements implemented as part of the Rockfish Program.

Table 17-4 Recoverable costs by department for 2016.

Cost Recovery Cost Component	NMFS						ADF&G	Total
	OMD	RAM	SFD	ISD	RA	AFSC		
Personnel Costs	$8,800	$4,300	$119,600	$68,000	$12,500	$2,163	$7,279	$222,642
Contracts/Training costs	$5,000		$31,215	$18,296			$856	$55,367
All Other Costs	$1,600		$9,200	$13,600		$2,244	$31	$26,675
Total Costs	$15,400	$4,300	$160,015	$99,896	$12,500	$4,407	$8,166	$304,684

Source: NMFS 2016 Rockfish Program annual cost recovery report.

18 Fishery Allocation Review

At their June 2017 meeting, the Council directed staff to include the required fishery allocation review as part of the overall Central GOA Rockfish Program Review. Council direction stated that the review should be based on the structure identified in the June discussion paper[39]. That paper described a three-step review process. The first step determines whether the review trigger was met. Based on Council direction, the trigger for the Central GOA Rockfish Program review was met because the trigger is the linked to this overall program review. Step two is the completion of the fisheries allocation review, which is provided in this section. The Council indicated that the Rockfish Program LAPP review would explicitly include a section that evaluates the management goals and objectives to ensure they are relevant to current conditions and needs with respect to the allocation. This will ensure that all components of the required review are met, and thus this LAPP review will meet the allocation review policy. The third step in the process is the evaluation of the fisheries allocation options for an FMP amendment. Step three is implemented if the Council decides that development of new allocation options is warranted. That step, if necessary, will be part of the formal analysis process to prevent the Rockfish Program from expiring.

18.1 Review Process (Step Two)

This step in the review process is designed to assist the Council in determining whether or not the development and evaluation of allocation options is warranted. Guidance for the information that should be included in this step is discussed in more detail in the Council Coordination Committee (CCC) triggers document (Procedural Directive 01-119-01) and the NMFS fisheries allocation factors document (Procedural Directive 01-119-02). The information presented in this section is summarized from other, more detailed, sections of this document.

18.1.1 Stated Program Objectives

This fishery allocation review considers the GOA FMP objectives, Rockfish Program objectives, and other relevant factors that have changed and may be important to the fisheries allocation. Relevant factors that should be considered are described in the NMFS fisheries allocation factors document and are included later in this section.

The Council has developed a management policy and objectives to guide its development of management recommendations to the Secretary of Commerce. The GOA FMP includes the following statement on its review.

> *The Council will maintain a continuing review of the fisheries managed under this FMP, and all critical components of the FMP will be reviewed periodically.*
>
> *Management Policy: Objectives in the management policy statement will be reviewed annually.*
>
> *Essential Fish Habitat (EFH): The Council will conduct a complete review of EFH once every 5 years, and in between will solicit proposals on Habitat Areas of Particular Concern and/or conservation and enhancement measures to minimize potential adverse effects from fishing. Annually, EFH information will be reviewed in the "Ecosystems Considerations" chapter of the SAFE.*

That management policy and its objectives that is currently reviewed annually is presented below:

[39] http://npfmc.legistar.com/gateway.aspx?M=F&ID=d4f2c89a-350b-462d-8578-ea94f8e56661.pdf

The Council's policy is to apply judicious and responsible fisheries management practices, based on sound scientific research and analysis, proactively rather than reactively, to ensure the sustainability of fishery resources and associated ecosystems for the benefit of future, as well as current generations. The productivity of the North Pacific ecosystem is acknowledged to be among the highest in the world. For the past 25 years, the Council management approach has incorporated forward looking conservation measures that address differing levels of uncertainty. This management approach has in recent years been labeled the precautionary approach. Recognizing that potential changes in productivity may be caused by fluctuations in natural oceanographic conditions, fisheries, and other, non-fishing activities, the Council intends to continue to take appropriate measures to insure the continued sustainability of the managed species. It will carry out this objective by considering reasonable, adaptive management measures, as described in the Magnuson-Stevens Act and in conformance with the National Standards, the Endangered Species Act, the National Environmental Policy Act, and other applicable law. This management approach takes into account the National Academy of Science's recommendations on Sustainable Fisheries Policy. As part of its policy, the Council intends to consider and adopt, as appropriate, measures that accelerate the Council's precautionary, adaptive management approach through community based or rights-based management, ecosystem-based management principles that protect managed species from overfishing, and where appropriate and practicable, increase habitat protection and bycatch constraints. All management measures will be based on the best scientific information available. Given this intent, the fishery management goal is to provide sound conservation of the living marine resources; provide socially and economically viable fisheries for the well-being of fishing communities; minimize human-caused threats to protected species; maintain a healthy marine resource habitat; and incorporate ecosystem-based considerations into management decisions. This management approach recognizes the need to balance many competing uses of marine resources and different social and economic goals for sustainable fishery management, including protection of the long-term health of the resource and the optimization of yield. This policy will use and improve upon the Council's existing open and transparent process of public involvement in decision-making.

The Council's Rockfish Program problem statement and the goals and objectives are presented in Section 1. A summary of whether the Rockfish Program was successful in meeting those goals and objectives is presented in tabular form in the Executive Summary. Many of those program objectives are similar to those included in the FMP. Objectives that overlap include:

1. *Increasing habitat protections;*
2. *constrain bycatch;*
3. *provide socially and economically viable fisheries for the well-being of fishing communities;*
4. *balance many competing uses of marine resources and different social and economic goals for sustainable fishery management; and*
5. *provide for the optimization of yield of the Central GOA rockfish resource.*

18.1.2 Issues Considered

NMFS fisheries allocation factors document recommends considering specific issues when reviewing allocation decisions. The four issues specifically identified are described in this section. The allocation factors document notes that additional issues may be relevant, but none were identified for the Rockfish Program.

- **Evaluate and Update Council and Fishery Management Plan (FMP) Objectives**

As stated earlier, the Council annually reviews the GOA FMP objectives in its policy statement to ensure they are current. Should the FMP objectives become stale, they will be addressed as part of the annual review. GOA FMP and Rockfish Program objectives do not conflict, but they do require that the Council and Secretary, with public input, determine the appropriate allocation balance based on all available information.

- **Identify User Needs**

The specific needs and interests of the trawl catcher vessel participants, trawl catcher/processors participants, longline entry level fishery participants, and seafood processors vary. Trawl catcher vessels and catcher/processors want the ability to know how many pounds of each allocated primary, secondary, and PSC species they are allowed to harvest during the fishing year. This secure harvest privilege allows the participants to determine when and how to prosecute the fishery to have the least biological impact and generate the greatest economic benefits. Longline entry level participants want a set-aside that is large enough that it will not constrain their directed fishery for rockfish and is allowed to increase when necessary. The set-aside should also not be too large, so that it is unavailable to the trawl fisheries and optimum yield is not achieved. Seafood processors require a good working and negotiating position with catcher vessel operators to ensure that deliveries occur in an orderly and predictable manner. The balance of bargaining power between the two groups should not swing too far in either direction to maintain ex-vessel prices that are fair for both parties.

- **Minimize Speculative Behavior**

The current structure of the Rockfish Program minimizes speculative harvesting and processing behavior. The trawl vessels have secure harvest privileges and, to date, no public input has been provided that indicates those allocations should be modified. If the Council does consider modifying the allocations, it would be appropriate for the Council to consider a control date that corresponds with the announcement they are potentially planning to alter the allocations. The control date provides notice that, if an allocation decision is made in an FMP or FMP amendment, there is no assurance that any entrance or increased effort into a fishery after the defined date will be used to determine allocations.

- **Plan for Future Conditions**

The Council and NMFS receive an annual report from the Rockfish Cooperatives that provides updates on the fishery, its member's participation in the fishery, and any changes that may need to be addressed. This annual review of the program allows policy makers and fishery managers to plan for any changes in fishery conditions that are starting to emerge. If the anticipated future conditions require changes in regulations or FMP amendments, an action plan can be developed to remedy the situation.

18.1.3 Ecological, Economic, Social Factors

18.1.3.1 Ecological Factors

The Central GOA rockfish fishery is harvested almost exclusively with trawl gear by catcher vessels and catcher/processors. Because it is a trawl fishery and the areas of harvest and the

impacts on age and size of fish harvested would not be substantially impacted by changing the amounts of each primary and secondary species allocated to cooperatives, a redistribution of the allocation is not expected to have ecological impacts on the rockfish target species or secondary species.

As shown in Section 8.1 the retention rates of primary and secondary species have increased under the Rockfish Program. The allocations to cooperatives eliminated regulatory discards of Central GOA rockfish by cooperative members. Full retention requirements of allocated primary species have reduced cooperative members discard rates to almost zero for those species. Secondary species discards are also very low relative to the pre-Pilot Program years.

Catcher vessel halibut PSC usage rate have declined by approximately 90 percent when compared to the four years before the Pilot Program was implemented. Catcher/processor halibut PSC rates have also declined by about 50 percent.

Chinook salmon PSC rates and numbers continue to be highly variable on an annual basis and between tows. The nature of Chinook salmon PSC in the rockfish, and other trawl fisheries, make it more difficult to consistently have low PSC usage rates. The trawl fleets have modified gear to allow Chinook salmon to escape once in the nets, which has reduced Chinook salmon PSC usage. The fleet is also committed to using hot-spot reporting to try and avoid areas where high bycatch rates have been reported.

The Rockfish Program also includes sideboard limits that are imposed during July that prohibit cooperative members from exceeding their historical catch in other fisheries during times of the year when they traditionally fished rockfish. These limits have been effective in limiting effort increases in Western GOA and West Yakutat rockfish fisheries.

The annual GOA SAFE document provides an executive summary with ecosystem report cards for the Western and Eastern GOA and physical, environmental, ecosystem, fishing, and fisheries trends. The GOA SAFE also provides an ecosystem assessment and ecosystem indicators. None of the information provided in those sections indicate that modifying the Rockfish Program allocation is necessary.

Finally, Section 6 of this document provides a summary of impacts of the Rockfish Program on trawl gear contact with the sea floor. Information in that section indicates that the Rockfish Program has provided an opportunity for harvesters to modify the gear they use so that it has less bottom contact. The 2017 Fishing Effects Model indicates that the percentage habitat reduction for primary species allocated under the Rockfish Program has declined since 2003.

18.1.3.2 Economic Factors

Allocation of a fishery resource has economic consequences for affected user groups. The objectives of the Rockfish Program address the issues that were important to Council at the time the program was developed and implemented. NMFS allocation factors document also defines economic important economic issues.

Economic efficiency was improved under both the Pilot Program and Rockfish Program. Cooperative members were able to determine when to fish and modify their harvesting strategy to be more efficient. Harvesters were able to move the majority of harvest from July when vessels were tendering salmon and the seafood processors were more focused on salmon to May and June. These were traditionally slow harvesting and processing months. Moving the majority of the Central GOA rockfish fishery to those months provided opportunities for harvesters, seafood processors, and the labor force to fill a slack time of the year.

The members of the cooperative were also able to improve efficiency by determining which cooperative vessels are used to harvest the cooperative allocation. However, limits were placed on the amount of cooperative quota a vessel may harvest to ensure that a sufficient number of vessels and crew positions are available in the rockfish fishery. Eliminating those limits could improve efficiency, but based on past experience the Council has determined that the lost harvesting efficiency is made up for in other social and economic measures.

A quantitative cost-benefit analysis was not conducted as part of the Allocation Review or the Rockfish Program Review. Specific indicators were described that indicate the program has increased net-benefits to the Nation. Those factors include more efficient harvesting and processing of the Central GOA rockfish fishery, increase product quality, less waste that could have been utilized (either in the trawl fishery or other fixed gear fisheries), and less impact on the benthic habitat. Data are currently unavailable to quantify all these impacts. To do so would require very specific cost data associated with fish harvesting and seafood processing firms. That cost data would need to be specific enough to separate the impacts of the Rockfish Program with the other costs incurred during their annual fishing/processing year. Vessel operators have stated on numerous occasions that they are unable to provide costs at that level of detail without making numerous assumptions which are expected to reduce the accuracy of the information. Seafood processors have also indicated that the same issues exist for their sector. It is also worth noting that the Magnuson-Stevens Fishery Conservation Act does not grant the Councils or NMFS authority to mandate the collection of these data from shorebased seafood processors.

Consumer surplus is expected to have improved as a result of higher quality products being sold and the rockfish fishery having little impact on the world price for whitefish. However, this paper does not attempt to determine the difference between the total amount that consumers are willing/able to pay for fish harvested under the rockfish program and the total amount that they actually do pay. It is also worth noting that seafood processors have not been successful to date in developing new product forms for rockfish, because of the relatively high labor and shipping costs for those products and the relatively low market price.

Changing the rockfish program allocation would have distributional impacts between the participants. There would be winners and losers. Changing the allocation would also increase uncertainty in the fishery and perhaps make accessing short-term and long-term financing more difficult. Lenders are typically less willing to loan money when they are uncertain if the quota shares held by a harvester will change over the time period of the loan.

If the allocation formula is based on recent participation in the fishery, no new entrants will be allocated quota. Under the Pilot Program the Council included an entry level trawl fishery. That allocation was relatively small (2.5 percent of the Central GOA primary rockfish species TACs) and difficult to manage. As a result, some of the vessels that participated in that fishery were allocated quota shares under the Rockfish Program. Vessels that entered the fishery after the cut-off date were excluded from being issued an allocation.

Because of the nature and structure of the Rockfish Program there has been little consolidation and the number of vessel and crew positions are about the same as prior to the Pilot Program. Seafood processors in Kodiak have been able to offer more employment opportunities during May and June as a direct result of the Pilot Program and Rockfish Program. Resident Kodiak processing plant workers that may have had to rely on unemployment payments during those months have a greater opportunity to be working in the plants.

18.1.3.3 Social Factors

Allocation of a fishery resource can have social consequences on individuals and communities. Because the Central GOA rockfish fishery is primarily based in Kodiak, it has the greatest impact on that community. Other communities are impacted to a lesser extent because they process fish harvested in the entry level longline fishery or are home to crew that works on vessels that participate in the Rockfish Program or work in Kodiak seafood processing plants.

Whether an allocation is fair and equitable is difficult to define. The Rockfish Program allocation was based on historical participation and was not dependent on where the U.S. citizen/legal resident resided. Public comments to date have been strongly supportive of the Rockfish Program and the allocation, with very few exceptions.

The Social Impact Assessment (Appendix 1) identifies minority populations and low-income populations potentially subject to high and adverse environmental effects, if any, of the Rockfish Program and identifies potential changes to patterns of subsistence resource use, if any, among minority populations and low-income populations that may have resulted from implementation of the program.

A detailed summary of the individual, local, and regional dependence and engagement in each Rockfish Program sector is provided in Section 13 and Appendix 1. The Rockfish Program includes several community protection features designed to provide for the sustained participation of Kodiak, the fishing community historically most closely associated with the Central GOA rockfish fishery. As measured by multiple indices, the level of Kodiak's engagement in and dependence on the fishery has increased under the Rockfish Program. While not all participants in all sectors have benefitted equally from the changes between the Rockfish Pilot Program and the Rockfish Program, no Rockfish Program-related adverse community impacts have been identified for Kodiak or any other community substantially engaged in or dependent upon the fishery.

Fishing vessels safety is described in Section 15. There were no work-related crewmember fatalities or vessel disasters under the Pilot Program or Rockfish Program. The good safety record may be due to an extended fishing season that reduce pressure to fish when weather is bad and can reduce crewmember fatigue.

18.1.3.4 Indicators of Performance and Change

Current conditions of a fishery and how they are changing are important when making allocation decisions. This section briefly considers some of those indicators.

As reported in the GOA SAFE for 2017[40], none of the stocks associated with the Rockfish Program are overfished and are not approaching an overfished condition. Page 9 of the GOA SAFE provides a figure that shows Summary of Gulf of Alaska stock status next year (spawning biomass relative to Bmsy; horizontal axis) and current year catch relative to fishing at Fmsy (vertical axis). That figure includes information for the primary and secondary species allocated under the Rockfish Program.

The distribution of species allocated under the Rockfish Program have not changed and are described in the GOA SAFE. The SAFE document is divided into chapters by species and each species distribution is presented in its chapter.

Trends in ABCs, TACs, and catch are presented in Section 5 of this document. Central GOA rockfish ABCs and TACs have been relatively stable for Northern Rockfish and dusky Rockfish, but have increased for Pacific ocean perch. Catches of cooperative quota have been managed by the cooperatives and have not exceeded their allocation.

The quality of information available for each sector or group is very good in terms of harvest, production and value. The available data on costs and expenditures is not complete or robust. The GOA trawl Economic Data Reports have provided vastly improved crew data for the trawl fleet and better resident information for shorebased processors. Section 19.8 of this document provides a summary of the information the analysts have determined is unavailable during the development of the Rockfish Program review.

[40] http://www.afsc.noaa.gov/REFM/stocks/assessments.htm

19 Summary and Conclusions

The Summary and Conclusions chapter utilizes information presented in the previous sections to briefly describe the overall impacts of the program on various components of the fishing industry, communities whose residents participate in the fishery, and the Nation. Sections are also provided that describe various regulations that the Council could consider revising as part of the reauthorization process and data that may have been useful for the review but was unavailable to the analysts.

In general, the program appears to be functioning as intended. It has provided benefits for all sectors to varying degrees and based on information available appears to have increased net benefits to the Nation. Because the fishery structure is functioning as intended most participants in the harvesting and processing sector are not recommending substantial changes to the program. However, the shifts in market power between the three periods considered, based on cooperative structures, remains an area of contention among some stakeholders.

19.1 Harvesters

The secure harvest privileges granted to harvesters provides the opportunity to employ better fishing and fish handling methods to reduce bycatch and habitat impacts. At the same time those practices can increase the quality of products produced, increase the value of the products, increase ex-vessel prices paid to harvesters, and increase net benefits to the Nation.

Under the fishing regulations in place during the pre-Pilot Program harvesters in the Central GOA trawl rockfish fishery were required to hold a valid GOA LLP license with a Central GOA trawl gear endorsement to participate in the directed rockfish fishery. Harvesters would compete with other LLP license holder to catch a share of the rockfish TAC before the fishery was closed. The race to harvest the quota typically meant the fishery would last three weeks or less.

Under the Pilot Program trawl vessels needed to have Central GOA rockfish QS assigned to their LLP license to fish in a cooperative or hold an LLP license with a Central GOA trawl endorsement and fish in the entry level fishery. Participants in the Rockfish Program are required to have rockfish QS assigned to their LLP license and fish in a cooperative.

The Pilot Program and the Rockfish Program have extended the duration of the Central GOA Trawl Rockfish fishery from about three weeks to potentially more than six months (May 1-November 15) for the fishermen that are members of a rockfish cooperative. The majority of the fishery now occurs in May and June. Changing the timing of the fishery has reduced conflicts with the July salmon fisheries.

The ex-vessel value of catcher vessel landings has increased under the Pilot Program and Rockfish Program. From 2006 to 2016 the real ex-vessel value of Pacific Ocean perch increased by 247 percent. Much of the increase was due to the increased landings, since the real ex-vessel price only increased about 6 percent. The dusky rockfish real ex-vessel value increased by about 100 percent over the same period, but the real ex-vessel price declined slightly. Northern rockfish real ex-vessel value was the same in 2006 and 2016. While the real ex-vessel price did not show dramatic increases over the 2006 through 2016 period, market forces were exerting downward pressure on first wholesale prices, so the price increases may have been less (or the decreases greater) without the LAPP management structure.

CQ allocations of sablefish allow harvesters to take directed sablefish trips as opposed to less efficient trips where sablefish was taken under an MRA and vessel operators would “top-off” on sablefish as part of directed rockfish trips. Allowing harvesters to take directed fishing trips for sablefish has allowed harvesters to take shorter trips and deliver a higher quality product. Table 10-1 indicates that the average real ex-vessel price of sablefish prior to the Pilot Program was about $1.50/lb. During the three most recent years (2014

through 2016) the average real ex-vessel price was about $2.50/lb, or more than a 60 percent increase. The reported price was even greater than that average in some years with the 2011 average real ex-vessel price approaching $4.00/lb.

The catcher vessel sector has successfully harvested most of its allocation with few overages. Transfers of quota from the catcher/processors to the catcher vessel cooperatives were substantial under the Pilot Program because of the cooperatives that formed. The majority of those transfers were between cooperatives with the same parent processing company. Transfers increased the amount of rockfish species delivered to shore-based processors. When the Rockfish Program was implemented the changes in the qualifying years resulted in those delivery patterns being entrenched in the sector allocations, and resulted in the catcher vessel sector being allocated 2.18 percent less of the Central GOA TAC for Northern rockfish, and 10.35 percent more of the Pacific ocean perch TAC and 16.27 percent more of the dusky rockfish (PSR) TAC. The catcher/processor sector realized percentage changes in the TACs of the same magnitude but opposite signs.

Allocations and MRAs applicable to shortraker rockfish and rougheye rockfish resulted in catches of those species in the catcher vessel sector that were substantially below the amounts permitted (see Table 5-10). The catcher/processor sector was allocated shortraker and rougheye rockfish, and their harvests were below their allocations (see Table 5-8 and Table 5-10)

An important effect of the Pilot Program and the Rockfish Program is the substantial reduction in discards in the Central Gulf rockfish fisheries. From 2003 through 2006 discards of Pacific ocean perch regularly exceeded 5 percent of total catch of the species. Discards of sablefish exceeded 100 metric tons in some years and exceeded 250 metric tons in one year. Under the Pilot Program and Rockfish Program, at-sea discards of CQ species are generally not permitted by cooperatives, reducing discards to near zero. Any discards that do occur are required to be noted in the annual cooperative report. Typically, these discards result when a cod-end is too big to bring safely aboard the vessel. Any discards that do occur are deducted from the cooperative accounts by NMFS and the vessel's account by the cooperative.

Halibut mortality dropped sharply under the Pilot Program and Rockfish Program, most notably in the catcher vessel sector. Annual halibut mortality rates dropped from between 1.5 kg/mt to 3.0 kg/mt of groundfish basis species during 2003 through 2006 period, to 0.1 kg/mt to 0.3 kg/mt during each year of the Pilot Program and Rockfish Program. These numbers indicate that in most years the halibut mortality rate in the Pilot Program and Rockfish Program is about 10 percent of the rate realized in the four years prior to the Pilot Program. In the catcher/processor sector, the halibut mortality rates were 0.6 kg/mt to 1.0 kg/mt in the 2003 through 2006 period, to 0.3 kg/mt to 0.6 kg/mt of basis groundfish species during the Pilot Program and Rockfish Program. The catcher/processor rates in the Pilot Program and Rockfish Program were about half the rate realized in the four years prior to the Pilot Program. These rates indicate that both the Pilot Program and Rockfish Program were very successful in reducing halibut mortality rates in the Central GOA rockfish fisheries.

Chinook salmon PSC usage in the rockfish fishery did not realize the same magnitudes of reported by catch reductions as halibut PSC. Chinook salmon bycatch rates were highest in 2008 and 2015, but very low in 2016. The variability of the Chinook salmon PSC rates highlights the difficulties associated with avoiding Chinook salmon, even when gear is modified to allow some salmon to escape and the fleet communicates bycatch hot spots in close to real time. The reported rates are also influenced by the basket sampling methods that are employed to estimate total bycatch for the vessel, or prior to 100 percent observer coverage in the rockfish catcher vessel fleet, similarly situated vessels[41].

In addition to the conservation benefits from these discard and mortality reductions, the use of more pelagic gear in the fishery has provided habitat benefits. Annual rockfish allocations provided the opportunity to

[41] Vessels fishing the same general areas and times that did not have observer coverage.

develop and implement gear modifications that reduced contact with the sea floor. Use of semi-pelagic bottom trawl gear (doors off bottom) beginning in about 2008 (under the Pilot Program) decreased the bottom contact from the heaviest portion of the gear. In 2014, mandatory sweep modifications for flatfish trawls were implemented that raise the majority of the trawl off the bottom have been used in other fisheries as well, as sweeps are difficult to replace for specific other target trips. These gear innovations are reported by members of the fishing industry to have spread to other areas of the US and the world.

Cooperative members have collaborated to improve fishing practices. For example, they have developed voluntarily inter-cooperative agreements focused on coordinating quota management, setting up reserves to cover overages, and implemented incentives to avoid halibut. The halibut bycatch measures include setting maximum halibut bycatch rates and imposing restriction on members with halibut bycatch rates over the limit. These types of measures have, in part, helped to reduce halibut PSC in the Central GOA rockfish fishery.

The attachment of catch history to the LLP license and making it non-severable has limited consolidation since QS cannot be stacked on fewer LLP licenses. The non-severability of quota from a license also means that a person would need to sell the entire LLP license to sell the quota. Selling the LLP license would result in a vessel operator giving up all the other endorsements associated with the LLP license. The vessel operator would need to have access to another LLP license with the appropriate endorsements to continue fishing the GOA/BSAI with trawl gear.

Ownership and use caps have been effective in limiting vessel consolidation. Fleet consolidation has not occurred as a result of the Pilot Program or the Rockfish Program. About the same number of catcher vessels (approximately 25 each year) and catcher/processors (approximately six) fished in the Central GOA rockfish fisheries before the Pilot Program was implemented through the current year.

Vessel safety is discussed in Section 15. NIOSH staff determined that there were no work-related crewmember fatalities or vessel disasters among rockfish vessels when actively participating in the Central GOA rockfish fishery during the pre-Pilot Program, Pilot Program, or the Rockfish Program. The good record of safety of human life at sea was attributed to the extended fishing season that would reduce any race to fish and allow crews to choose when to operate in the event of inclement weather or crewmember fatigue. Maintaining vessel safety achieved under the Pilot Program was a Council stated goal of the Rockfish Program.

19.2 Processors

Kodiak processors are heterogeneous in both their business models and physical plants. Because of these differences, the Pilot Program and Rockfish Program have had different impacts of different processing companies. All shorebased processors that **qualified** for the Pilot Program benefited from the cooperative associations that helped facilitate their coordination of deliveries, relative to the pre-Pilot Program - LLP management structure. Processors that were not part of a rockfish cooperative could only take deliveries from vessels that fished in the entry level trawl[42] fisheries or possibly limited deliveries of CQ with the agreement of all parties to the cooperative contract. These processors were in a limited entry fishery and could not coordinate deliveries. The entry level trawl catcher vessels were racing to harvest the sector's allocation (2.5 percent of the TAC) before it was taken or halibut PSC limits were reached and fisheries dependent on the deep-water halibut complex were closed to directed fishing.

Shorebased processors that qualified for the Rockfish Program continued to benefit from the cooperative associations that facilitated coordination of deliveries. This coordination maintained the longer fishing

[42] Only processors that were not cooperative members could take deliveries from entry level fishermen.

seasons. Longer fishing seasons have allowed higher quality fish to be delivered to processors who can produce higher quality products.

All processors indicated that there have been improvements in product quality. The most notable increase in product quality was between the pre-Pilot Program years and the Pilot Program. Moving to the Pilot Program increased product quality immediately since fish were delivered in better condition and processors were able to coordinate deliveries to reduce the time between when the vessel arrived and the fish was processed. Since the Pilot Program went into place processors have maintained the product quality improvements and continued the trend to produce better quality products. After the Pilot Program was implemented, improvements have been more gradual and have been attributed to better handling of the fish and better equipment and technology (refrigeration systems, etc) on the catcher vessels. The improvements in technology and equipment have benefitted all fisheries and not just those taken under the Rockfish Program.

The agreements between processors and harvesting cooperatives have stabilized deliveries over a longer period of time; processing plants now receive deliveries during months that have historically been slow, keeping plants open that would normally have closed. It also reduced conflicts between the timing of deliveries of salmon and rockfish during July. Moving the majority of the Central GOA rockfish harvests to May and June has allowed harvesters and processors to fill traditionally slower fishing times. In doing so, it has provided more work opportunities for the local Kodak labor force during that traditionally may have had to depend on unemployment compensation when the plants slowed production.

One significant program change, when the Rockfish Program was developed, was the elimination of the linkage between harvests and the processor to whom they historically delivered a majority of their catch. NOAA General Council determined that the Council and NOAA Fisheries did not have the authority to impose those linkages, and were only allowed under the Pilot Program because of explicit Congressional authorization. Removing the requirement that harvesters join the cooperative with the processor where they delivered the majority of their catch during certain years changed the market power between the two sectors, but it is difficult to quantify the magnitude of the change. Processors were granted relatively more market power under the Pilot Program compared to either the limited access fishery or the Rockfish Program because of the linkage of harvesters to processors based on historical landings. Information is not available to calculate rents by the various sectors, and the Council/NMFS do not have the authority to mandate the collection of such information from the shorebased processing sector.

Section 10.1 provides a summary of the change in the ratio of ex-vessel to first whole prices. While this is an indicator of market power there are many factors that are not accounted for in that simple ratio, including costs and profitability. So, while the information is pertinent, it is not intended to be considered a proxy for the division of rents between the sectors. Information reported in that section indicates that harvesters were generally paid a lower percentage of the first wholesale value during the Pilot Program, relative to the limited access years and Rockfish Program. The analysis does not attempt to determine an optimal division of the first wholesale price between harvesters and processors to maximize net benefits to the Nation. The information to make that calculation is not available and if it could be made would not account for political and social objectives that are outside of that purely economic solution.

Processors are not able to pass on increases in ex-vessel prices to the buyers of their products. First wholesale price is determined by the world whitefish market and the Central GOA rockfish fishery is a small component of the world whitefish supply and has little impact on changes in whitefish prices.

The 2008 review of the Pilot Program noted that job stability and working conditions have improved in the processing plants of Kodiak. This trend was reported to have carried over under the Rockfish Program. The redistribution of rockfish deliveries away from times of peak July salmon processing has reduced pressure on plant processing crews. Some processors have noted that the spreading out of the fishery has resulted in modest decreases in overtime hours. Other processors indicated that they had not realized changes in overtime hours for their workers.

Allowing the catcher vessels to maximize retention provides more raw fish to the plant and creates an opportunity to market those fish that would have been discarded in the limited access fishery. Discards of all CQ species in the rockfish program are minimal because of the retention requirements that are in place and the desire to generate as much value from an individual allocation as possible.

Monitoring has changed at the plants that take deliveries of CQ under the time periods considered. Prior to the Pilot Program shoreside and floating processors that processed in excess of 1,000 metric tons of groundfish in a calendar month were required to maintain 100 percent coverage to observe landings; those that processed less than 1,000 metric tons and more than 500 metric tons of groundfish in a calendar month were required to maintain 30 percent observer coverage (North Pacific Fishery Management Council, 2006). Processors that took trawl deliveries were generally in the 100 percent coverage category. Under the Pilot Program processors that took delivery of CQ were required to have 200 percent coverage. The additional coverage was needed to account for monitoring individual cooperative allocations. However, the additional coverage was costlier and some plants adjusted delivery patterns to reduce the hours deliveries occurred and the need to have observers in the plant 24 hours a day. The introduction of the CMCP in the Rockfish Program eliminated the 200 percent observer coverage requirement and reduced costs. Processor representative have indicated that the CMCP specialist has generally worked well.

Processors must notify NMFS within three hours of when a delivery will occur. This is necessary to ensure the offloads can be monitored. Processing company staff members have indicated that their workers understand the rule and it has not been a problem. Some processors noted that it was less burdensome than the halibut IFQ landings notification requirement.

Processors have been unable to develop significant new products or fresh markets for rockfish harvested by either the trawl fishery of the entry level longline fishery. The first wholesale price of those value added rockfish products, to date, has been too low to be profitable. Processors indicated they continue to explore potential new markets but the relatively high labor and shipping costs to produce those products have been a primary impediment.

Processing use caps are thought to be effective by the stakeholders. Use caps limit competition for deliveries to processors when one or more firm reaches the cap. Limitations prohibit firms at the cap from expand their rockfish operations and could potentially reduce efficiency by preventing a plant from operating at optimal capacity. Because processors are not issued an allocation of processing quota they must either provide incentives for a vessel to change markets or purchase a competing processing facility and retain the vessels that deliver there. Buying a competitor, as opposed to just quota, is much more capital intensive and encompasses more than just the rockfish fishery, since the plants are often also involved in other groundfish, halibut, salmon, herring, and shellfish processing. It is unlikely that a firm would acquire another plant for the sole purpose of additional access to the rockfish fishery.

Another benefit of the Rockfish Program was that it helped provide a structure that encouraged the fleet/processors to participate in the collection of data from Chinook salmon to understand stock composition. This data collection was voluntarily undertaken at the industry's expense and has provided a valuable source of information to determine the stream origin for each Chinook salmon taken and collecting additional information in the future could provide valuable information on whether the Chinook salmon taken in the trawl rockfish fisheries are from wild or farm raised stocks. This project has added some additional costs and implementation issues for both harvesters and processors, but stakeholders generally feel the benefits outweigh the costs.

Finally, processors are required to collect and submit the cost recovery fee for the Rockfish Program. Cost recovery was not part of the Pilot Program. This requirement has slightly increased costs and the reporting burden for processors. These costs were greatest when the program was first implemented since it required the firms set up a system to determine, collect, and submit the fees.

19.3 Communities

Kodiak is, by far, the fishing community most substantially engaged in and dependent on, the fisheries managed under the Rockfish Program. Kodiak experienced beneficial impacts across harvester, processor, and support services sectors because of the implementation of the Rockfish Program and has specifically benefitted from several community protection measures built into the program. Although not all individual operations have benefitted equally from the change in qualifying years between the Rockfish Pilot Program and the Rockfish Program, and therefore changes in the pattern of initial quota share allocations under the two programs, no substantial adverse sector-level or community-level impacts resulting from the implementation of the Rockfish Program have been identified for the community of Kodiak.

During the Rockfish Program years compared to the Rockfish Pilot Program years, Kodiak has experienced increases in annual average resident-owned trawl catcher vessel participation; resident ownership of relevant LLP licenses; and resident ownership of catcher vessel quota shares for northern rockfish, Pacific ocean perch, and pelagic shelf rockfish. All three catcher vessels that qualified for an initial allocation of quota under the Rockfish Program based on their participation in the entry level trawl fishery were either Kodiak resident-owned at the time of that allocation or have become so in more recent years. Given that the number of Kodiak resident-owned catcher vessels in the Central GOA rockfish trawl fishery has increased and the overall ex-vessel value of rockfish trawl-caught landings of those vessels has also increased under the Rockfish Program, it is assumed that the number of crew positions and payments to crew have similarly increased during this time. However, the impacts of quota leasing costs or changes to vessel operating costs, if any, on crew compensation is unknown, as are the impacts on crew employment, if any, of the increased number of Central GOA rockfish trawl fishing days per season.

Kodiak did experience the consolidation (by one) of shore-based processors that regularly accepted trawl-caught deliveries of Central GOA rockfish during the Rockfish Program years. However, at the transition from the Rockfish Pilot Program to the Rockfish Program, it experienced an increase (by two) of shore-based processors that were affiliated with rockfish cooperatives. While the transition from the Rockfish Pilot Program to the Rockfish Program was generally beneficial for Kodiak shore-based processing plants, specific outcomes varied between processors operating in the community due to different processing histories accrued during the different sets of qualifying years used for initial allocations under the two programs.

No systematically collected data on Kodiak fishery support service businesses in general or those linked to the Central GOA rockfish fishery specifically are available. However, the number of locally owned rockfish trawl vessels increased, Kodiak became the exclusive port of landings for all trawl-caught rockfish catcher vessel landings, the number of processors affiliated with rockfish cooperatives increased, and gross revenues accruing to both harvesting and processing sectors increased under the Rockfish Program. These increases have likely been accompanied by increased local spending by vessel owners, vessel crews, and processing workers, but the level of impact on the local purchase of goods and services is unknown. The percentage of Central GOA rockfish fishery landings related-revenues subject to taxes that directly benefit the city of Kodiak (and the Kodiak Island Borough) remain modest compared to several other fisheries. However, the percent attributable to the rockfish fishery has increased under the Rockfish Program compared to other years. The community protection feature of the Rockfish Program that ensures Central GOA rockfish trawl catcher vessel landings will occur in Kodiak also builds an additional measure of stability into the public revenue stream compared to previous conditions.

In addition to Kodiak, 20 other Alaska communities were directly engaged in the Central GOA rockfish federal open access rockfish longline and/or rockfish trawl fisheries during the 2003-2016 period as measured by a variety of indices. These include: resident ownership of catcher vessels in rockfish longline in the hook-and-line or jig sectors, local operation of shore-based processors that accepted longline caught deliveries of rockfish; resident ownership of rockfish trawl catcher vessel LLP licenses, resident ownership

of Central GOA rockfish trawl catcher processors, and local operation of shore-based processors that accepted trawl-caught caught deliveries of Central GOA rockfish in any year 2003-2016; and residents who served as crew members aboard Central GOA rockfish trawl catcher vessels and/or trawl catcher processors in 2015 or 2016 (the only years for which these data are available). None of these communities are considered to have been substantially engaged or substantially dependent upon the Central GOA rockfish fishery at the time of the implementation of the Rockfish Program, and no adverse community level impacts attributable to the Rockfish Program have been identified for any of these communities.

The Seattle MSA was substantially engaged in the Central GOA rockfish trawl fishery in several ways over the period 2003-2016. While changes have occurred in several sectors, no substantial community-level impacts resulting from the implementation of the Rockfish Program have been identified. Similarly, Lincoln County, Oregon was identified as substantially engaged in the Central GOA rockfish trawl fishery through catcher vessel ownership and while changes have occurred during the Rockfish Program years, no substantial community-level impacts resulting from the implementation of the Rockfish Program have been identified.

No high and adverse impacts resulting from the implementation of the Rockfish Program have been identified for any communities, nor have any issues of environmental justice concern. Similarly, no issues identified with the implementation of the Rockfish Program have put the sustained participation of any communities substantially engaged in or dependent upon the Central GOA rockfish fisheries at risk.

19.4 Entry Level Fisheries

The trawl entry level trawl fishery was eliminated when the Rockfish Program was implemented. Under the Pilot Program, there were management and performance concerns. The first year only three vessels registered to fish and that number increased to as many as six vessels in 2010. Some years vessels that fished coordinated their harvest activities with each other and NMFS in-season management staff to avoid overharvesting the TAC, simplifying management of the fishery closure. Increases in the number of vessel electing to participate in the trawl entry level fishery or the vessel operators choosing not to coordinate harvest created issues with staying within the harvest limit. Timing the closing of the fishery was more challenging when more vessel register to harvest the small allocation and could result in NMFS not open the fishery. As a result of these concerns the Rockfish Program allocated QS to the trawl catcher vessel LLPs that were active in the entry level fishery during 2007, 2008, or 2009. These qualification dates did not issue allocations to LLP licenses that entered the entry level fishery during 2010 or 2011.

A total of three LLP licenses were issued CQ in the Rockfish Program as a result of participating in the entry level fishery. These LLP licenses were allocated 2.55 percent of the catcher vessel primary species TAC.

When all trawl harvest in the Rockfish Program is managed under the LAPP, it reduces management concerns associated with the overharvest of small allocation and allowed the vessels that took advantage of the trawl entry level fishery to better coordinate their fishing activity. NMFS had noted that when number of vessels exceeded three, it was difficult to manage and it may need to close the fishery to directed fishing (76 FR 81248).

Processing trawl harvests from the entry level fisheries was hampered by logistical issues. Scheduling deliveries was, at times, reported to be difficult for entry level processors. Entry level vessels fishing out of Kodiak would have make deliveries in other ports or find a Kodiak processor that was not affiliated with a cooperative that could accept the deliveries.

The longline gear entry level fishery caught little of its allocation under the Pilot Program (see Table 5-1 and Table 5-2). Although only one vessel registered for the fishery, vessels that fish without LLPs and Federal fisheries permits could fish in State waters (inside 3 nm) without registering for the fishery.

Longline entry level fishery participants, fishing in the federal fishery, were prohibited from delivering the primary rockfish species to the processors associated with cooperatives under the Pilot Program. This prohibition was especially difficult for harvesters that had markets for other species with those processors. This delivery limitation was not applied to entry level longline fishers that did not have a federal LLP license or Federal Fisheries Permit.

The entry level longline fishery allocation that was not harvested by September 1st, was made available to the trawl fishery. Given the timing of the opening of the fishery, much of that allocation typically remained unharvested.

The Rockfish Program entry level longline fishery is predominantly used by jig gear vessels. The set aside of primary rockfish species has allowed vessels using jig gear to expand their primary rockfish species harvest in the Central GOA. The 20 mt increase in the dusky rockfish allocation in 2017 has allowed for some growth in that fishery, but is less than the reported 2016 harvest. The fleet is still about 150 mt from reaching their allocation limit, based on the current TACs. The Council may wish to track whether the step increases are sufficient, especially in the dusky fishery. Catch of Pacific ocean perch and Northern rockfish have not increased at the same rate. Those species may have lower CPUE using longline gear than dusky rockfish (Alaska Longline Fishermen's Association, 2005).

Participants in the Rockfish Program entry level longline fishery may deliver their harvest to any shorebased processing facility in any community in the GOA. This change in the delivery requirements has eliminated some of the logistical issues faced by harvesters that had markets for species with a processor in a Pilot Program cooperative, but were prohibited from delivering certain rockfish species catch to that processor.

Overall, entry level fishery has provided an opportunity for longline gear vessel to continue to develop markets for rockfish and harvest rockfish in both the State and Federal waters of the Central GOA. The current limits in the fishery provide room for additional harvests in the future. The benefits of the entry level fishery are expected to be greatest when lower diesel prices make the fishery more economically viable.

19.5 Regulations

Modifying regulations falls outside the scope of this program review. However, when the Council considers the future and future structure of this program, it could consider reviewing and potentially changing regulations. This section provides a brief summary of some regulations that have been identified for consideration when the Council develops potential elements and options for the program when the Rockfish Program expires.

1. Revise § 679.84(f)(1) to exempt shoreside processors under the Rockfish Program from the requirement to provide an observer work station and observer communication described at § 679.28(g)(7)(vii) and (viii). (recommended by NMFS in Section 16.1.5 and industry)
2. Revise § 679.81 (i)(D)(3) to remove requirements for a Fishing Plan to be submitted with a cooperative application for CQ. The reason for the suggestion is the information included is not very meaningful since stakeholders are not thinking about Rockfish Program fishing plans in February when the pollock and Pacific cod fisheries are underway. (recommended by NMFS in Section 16.1.5 and industry)
3. Consider options to roll unharvested Rockfish Program Pacific cod from the cooperative to the open access fisheries after the Rockfish Program fisheries close on November 15. The rollover would be to fixed gear fisheries. (recommended by industry)
4. Remove crab program sideboards for vessel fishing in the Rockfish Program since it makes no sense to have these sideboards in place within a catch share program. AFA sideboards were

removed for sideboarded vessels when the Rockfish Program was implemented and it was potentially an oversight that crab sideboards for vessels in the Rockfish Program were not eliminated at the same time. (recommended by industry)

5. Require annual NMFS Cost Recovery Reports in regulations. NMFS is currently posting this report for the Rockfish Program but it is not required in the regulations as it is for other LAPP programs. (recommended by industry)
6. Review whether the entry level longline fishery step-ups are keeping pace with the increased jig landings. (recommended by staff)
7. Consider removing the catcher/processor cooperative use limit. Given recent changes in the ownership structure it could provide the opportunity for the sector to form a single cooperative and provide greater coordination of the offshore harvest in the Rockfish Program. Whether the catcher/processor sector forms a single cooperative may be somewhat dependent on how the members decide to operate in the Amendment 80 fisheries. (recommended by staff)
8. Modify language in § 679.5(r)(6)(iii)(B) to require Rockfish Program cooperatives to report catch by the Central GOA management area.(recommended by NMFS in Section 16.1.5)
9. Revise § 679.5(r)(6)(iii)(D) - to replace "any actions" with "any civil actions." (recommended by NMFS in Section 16.1.5)
10. Clarify regulations at § 679.5(r)(10) to specify that only shoreside processors receiving Rockfish Program CQ must submit the Rockfish Ex-vessel Volume and Value Report. (recommended by NMFS in Section 16.1.5)

19.6 Net Benefits to the Nation

NOAA Fisheries policy guidance state that a program "review should contain an assessment of the program's effects on net benefits to the Nation, keeping in mind that net benefits are not exclusively economic in nature." (NOAA Fisheries, 2017). This report does not attempt to provide a quantitative estimate of changes in net benefits to the Nation, since the data to make those estimates are unavailable. A qualitative discussion of factors that change net benefits to the Nation is provided.

Factors that affect net benefits to the Nation include slowing the rate of fishing and extending the season which leads to substantial increases in production efficiency. These benefits are not assured, if small and sporadic deliveries over an extended season may reduce efficiency owing to a loss of economies of scale for processors. However, the flexibility and the incentives for harvesters and processors to work together mean it is possible to avoid these undesirable impacts, where those incentives did not exist in the race to fish.

Participants in both the harvesting and processing sectors work together to improve the quality of fish delivered and processed, resulting in higher value products than would have resulted under the race to fish. Some production benefit could flow to foreign-owned processing entities, but since increases in processor net benefits are expected to be relatively minor under the Rockfish Program, almost all of the gain in production efficiency should be realized by U.S. entities and citizens.

Production improvements should lead to benefits for U.S. consumers. Processors continue to try to develop profitable U.S. markets where consumers can purchase fillets. Development and expansion of these markets have been slow because of the relatively high processing costs to make and ship fillets and the relatively low price those products command in the market. Development of markets that reduce the amount of whole and head and gut products shipped abroad for reprocessing will increase net benefits to the nation.

Increased administration and oversight, necessary for cooperative allocations, and an extended season will result in an increase in costs of management, monitoring, and enforcement. To the extent these costs are taxes paid by the fleet through cost recovery they have no impact on net benefits to the Nation The increase in value derived from the fishery in addition efficiency gains in the harvesting and processing sectors are anticipated to more than offset those costs.

Catcher vessels fishing in cooperatives have dramatically reduced their halibut PSC mortality rates under both the Pilot Program and Rockfish Program relative to the pre-Pilot Program years. Those halibut PSC allowances can then be used to support a longer GOA flatfish fishery and potentially a late season Pacific cod fishery when the halibut PSC limit for the deep and shallow water complexes are combined. These halibut PSC reductions have arisen through the use of pelagic gear and semi-pelagic gear, which has reduced the amount of bottom contact by trawl gear in the fishery, creating benefits through less damage to habitat on the sea floor. The slowing of the pace of the fishery through the cooperative allocations has allowed harvesters to implement and fine tune these gear modifications. The knowledge gained under the Rockfish Program and Pilot Program has been used to introduce similar gear modifications to other GOA, BSAI, and West Coast trawl fisheries, which also increased net benefits to the Nation.

Reductions in the Chinook salmon bycatch rates have also been realized. Any savings in Chinook salmon will benefit other non-pollock trawl fisheries in the GOA, if they are needed to keep fisheries open. If those fish are not taken in the GOA trawl fisheries, they will benefit directed Chinook salmon fishery participants or the Chinook salmon resource.

Changes in directed fishing patterns has also provided benefits under the Pilot Program and Rockfish Program. Trawl catcher vessels targeting sablefish on separate trips has improved quality of landings, reduced costs associated travel and with keeping those higher value species separated from rockfish, and improved prices.

The Pilot Program and Rockfish Program have resulted in the redistribution of rockfish landings over a substantially longer period. The redistribution has allowed processors to avoid conflicts with other fisheries, most importantly salmon fisheries that peak during the month of July. This rescheduling has decreased the time vessels wait in queue to offload their catch, and allows processors to provide more consistent employment for their crews.

Fish processors have also benefited from changes in the plant observer requirements. Moving from the limited entry fishery to the Pilot Program increased costs associated with the moving from approximately 100 percent coverage to 200 percent coverage. When the Rockfish Program was introduced it eliminated the 200 percent plant coverage requirement and replaced it with the CMCP specialist. This change has been effective in monitoring the rockfish deliveries and has reduced costs to the firms in the processing sector.

Finally, elimination of the race for fish improves safety at sea. CQ allocations reduce the incentive for fisheries participants to take risks to maintain their share of the fisheries, including fishing when weather is poor or crew are fatigued.

19.7 Fishery Allocation Review

Allocation of fishery resources is a complex issue facing fishery managers and the needs for participants in the fishery are not static. However, based on the information presented by stakeholders, information presented in the Rockfish Program Review, and discussion with fishery managers, no evidence has been presented that suggests revisiting the Rockfish Program allocations is needed.

19.8 Unavailable Information

Certain data and information would have been useful if it could have been included as part of this review. Unavailable information is described in this section. The analysts do not advocate implementing data collection programs to collect all of the unavailable data. A discussion of the information that is unavailable, its potential uses, and any issues associated with collecting the data are presented the following table.

Table 19-1 Information that was unavailable when conducting Central GOA Rockfish Program review

Information	Uses	Issues
Rockfish QS and CQ market values	QS value can provide a measure of the expected stream of long term discounted rents from holding the asset. CQ leasing may provide information on the annual value.	It has been difficult to collect sufficient useful arm's length value information on QS sales and CQ leases in other LAPPs (Holland, 2015).
Time series data on crew employment	Determine impacts and crew and communities from changes in regulatory structures.	This information is currently being collected through the GOA trawl EDR. The issue is that only two years of data are currently available. It will not be possible to collect additional historical data.
Expenditures by harvesters and processors by location for vendors, suppliers, and support service businesses.	Determine economic impacts of purchases of goods and services by the fleets and processors in specific communities	This information could be collected from harvesters. It is difficult to assign purchases to specific fisheries and is sometimes difficult to differentiate where monies flow relative to the location a purchase was made. Collecting this information from vendors is also problematic because of the recordkeeping that would be required.
Additional Chinook salmon biological samples from fish taken as bycatch in the rockfish fishery	Currently biological samples are not collected to determine whether fish are hatchery stocks or wild stocks.	Information would be relatively easy to collect and does not appear to be controversial with the fleet or processors
Observer costs	Better understand the economic impacts of changing observer coverage levels on the fleet	NMFS has the information but it cannot be released because it is classified as confidential. As long as there are fewer than three observer provider companies or unless confidentiality wavers are

		signed, this information will not be available.
Vessel cost data	Catcher vessel cost data are unavailable. If they were available they could be used to determine changes in profitability of firms.	These data were considered as part of the GOA trawl CV EDR and it was determined that the cost of collecting those data outweighed the expected value that could be derived from their collection.
Shoreplant cost data	Cost data in association with value data currently collected could provide information on changes in profitability of firms over time.	The Council/NMFS do not have the authority, under the MSA, to mandate collection of these data from shorebased processors. Any data collection would be done on a voluntary basis. If the data were collected, it would difficult to attribute costs to specific fisheries and would require several assumptions which may or may not hold.

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Appendix 1

Bound Separately

Appendix 2

Fishing Effects on Gulf of Alaska Pacific ocean perch

As part of the EFH 5-year review, the impacts of commercial fishing on EFH in Alaska are assessed. New EFH definitions, maps, and the output from the Fishing Effects Model are used to assess the effects of fishing on Gulf of Alaska (GOA) Pacific ocean perch (POP) EFH. The approved methodology is a three-tiered approach. The first step is to determine whether GOA POP are above their Minimum Stock Size Threshold (MSST). Based on the results of the 2016 GOA POP stock assessment, female spawning biomass is above $B_{35\%}$ (for Tier 3 stocks, the MSY level is defined as $B_{35\%}$, Hulson *et al*. 2016). Therefore, GOA POP are above its MSST.

The next step is to determine whether the amount of disturbed habitat in the Core Essential Area (CEA) is 10% or greater. The CEA is defined as the predicted 50% quantile threshold of suitable habitat or summer abundance for each species. For GOA POP, two maps of habitat impact were developed. The first map is based on summer bottom trawl survey and fishery observer data. A spatial generalized additive model (GAM) was fit to CPUE data, and used to develop a map of relative abundance of GOA POP (Figure 1). The core EFH area was defined as the 50 percentile of the cumulative distribution of POP. It is the area within the GOA where the highest abundances of POP occur so that 50% of the total abundance is within that area (Figure 1). Impacts on POP habitat were evaluated by overlying the results from the Fishing Effects model and summing impacts (percent reduction in habitat) within the POP core EFH area.

The habitat reduction within the GOA POP CEA is shown in Figure 2. Fishing impacts on GOA POP are generally very low (<2% habitat reduction). The large majority of areas where impact occur are from 0 – 1% with areas with habitat reduction reaching up to 25% scattered within these areas of low impact. There are two small localized areas of higher habitat reduction (>25%): Alabatross bank south of Kodiak in area 630 and between the Shumagin Islands and Unga Island in area 610.

Overall the fishing impacts in the GOA POP CEA appear to be very low. The average percent habitat reduction (From January 2003 – November 2016) of the GOA POP CEA is 1.4%. The time trend of habitat impacts is very stable, and the overall habitat reduction did not exceed 1.8% in any month (Figure 3). The 10% threshold for additional analyses was not reached, and the percent habitat reduction was very low and stable. If the 10% threshold for additional analyses is exceeded, correlation between the proportion of habitat disturbed by fishing with time trends in indices of growth-to-maturity, spawning success, breeding success, and feeding success are requested. Even though the 10% threshold was not exceeded for GOA POP correlations were performed for evaluation and presentation to the September 2016 groundfish plan team and are included here.

To satisfy the request with growth-to-maturity, correlation analysis was performed between the proportion of habitat disturbed and indices of growth from the AFSC bottom trawl survey in the GOA (the dome-shaped selectivity for POP from the commercial fishery is such that growth parameters are difficult to estimate from the fishery). These indices of growth included average size-at-age of the most frequently caught ages in the bottom trawl survey (age-3 to age-15) and annual Von Bertalanffy function growth parameter estimates. Spawning success in this case was defined as the recruitment (age-2) estimated from the stock assessment model that survived to join the adult population. There is no time series of maturity data available for POP for correlation analysis. It is also unclear how to perform correlation with spawning or feeding distributions. However, to satisfy this request the simplifying assumption made here is that the stock assessment model's estimates of total (feeding) and spawning biomass across time are proportional to spatial distribution contraction/expansion so that correlation with the proportion of habitat disturbed could be performed. As the time series of average proportion of habitat disturbed across the time periods investigated were extremely similar the annual index of proportion of habitat disturbed by fishing was used to correlate with the life-history indices. The results of the correlation analysis, along with the *p*-values, is

shown in Table 1. The results of the correlation analysis did not result in *p*-values ≤0.1 Overall, the proportion of habitat disturbed in the POP CEA is minimal (<5%), and no life-history correlation with fishing effects is cause for concern at this point in time.

In summary, the proportion of habitat reduction in the GOA POP CEA is minimal (<2%), and the time trend is very stable. The conclusion is that due to low habitat impacts on GOA POP mitigation measures are not needed at this time.

EFH Research Priorities

More information on POP habitat preferences, particularly by season, would be useful to improve our understanding of EFH, particularly in localized areas of higher habitat reduction. Adults are found primarily offshore on the outer continental shelf and the upper continental slope in depths of 150-420 m. Seasonal differences in depth distribution have been noted by many investigators. In the summer, adults inhabit shallower depths, especially those between 150 and 300 m. In the fall, the fish apparently migrate farther offshore to depths of ~300-420 m. They reside in these deeper depths until about May, when they return to their shallower summer distribution (Love et al. 2002). This seasonal pattern is probably related to summer feeding and winter spawning. Better habitat mapping of the Gulf of Alaska would also be desirable and would provide information for survey stratification and the extent of trawlable and untrawlable habitat, a concern that is applicable to most rockfish species in the GOA.

The distribution and habitat requirements during the early life history stages of GOA POP are limited. The species appears to be viviparous (the eggs develop internally and receive at least some nourishment from the mother), with internal fertilization and the release of live young. Insemination occurs in the fall, and sperm are retained within the female until fertilization takes place ~2 months later. The eggs hatch internally, and parturition (release of larvae) occurs in April-May. Information on early life history is very sparse, especially for the first year of life. POP larvae are thought to be pelagic and drift with the current, and oceanic conditions may sometimes cause advection to suboptimal areas (Ainley et al. 1993) resulting in high recruitment variability. There is also insufficient information on distribution and habitat requirements of early juveniles. In general, little is known about the early juvenile stage distribution, habitat requirements, and interaction with other components of the ecosystem until they are about 2 years old and appear in fishery and surveys. Studies to determine the impacts of environmental indicators such as temperature regime on POP are needed.

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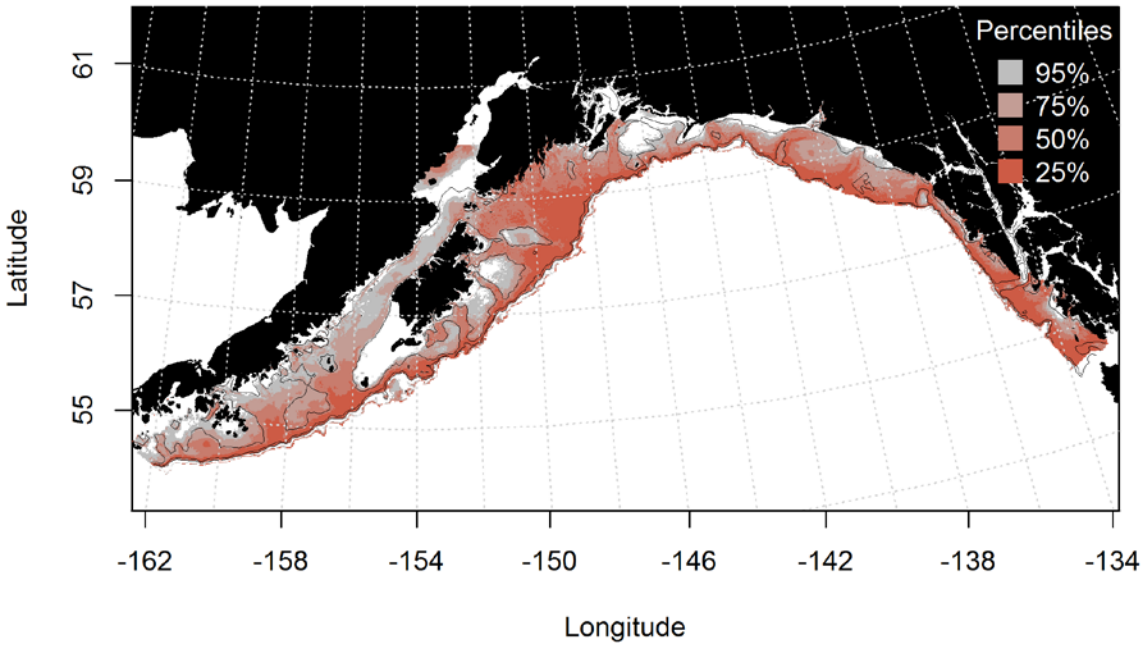

Figure 1. Areas representing the 25, 50, 75, and 95 cumulative percentiles of Pacific ocean perch in the Gulf of Alaska.

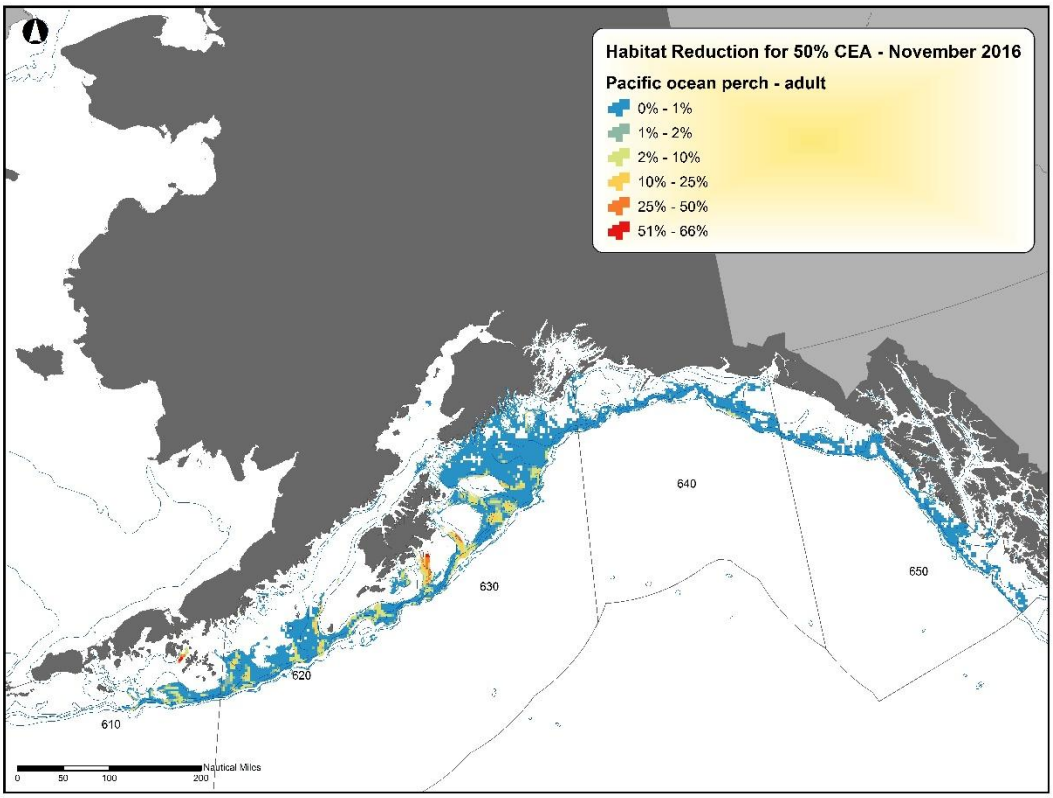

Figure 2. Cumulative habitat reduction for November 2016 in the Gulf of Alaska Pacific ocean perch Core Essential Area (summer core EFH area).

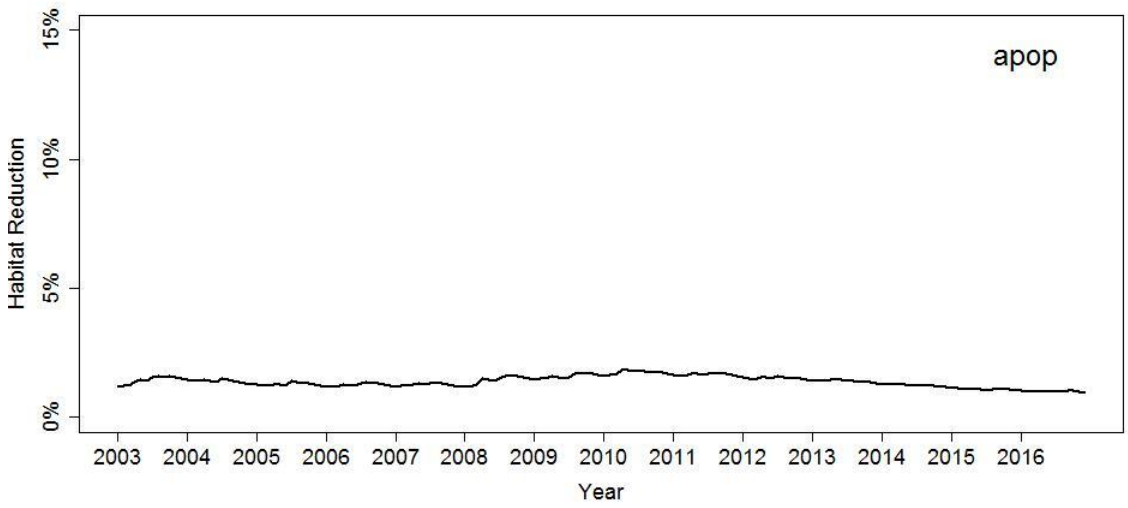

Figure 3. Monthly time series of habitat reduction for Gulf of Alaska Pacific ocean perch Core Essential Area (summer core EFH area).

Table 1. Pearson's correlation coefficient (ρ) between habitat reduction for Gulf of Alaska Pacific ocean perch Core Essential Area (summer core EFH area) and various life-history and assessment indices with corresponding p-values.

		ρ	p-value
Average size-at-age	age-3	-0.49	0.33
	age-4	-0.25	0.63
	age-5	-0.56	0.24
	age-6	-0.58	0.23
	age-7	-0.20	0.71
	age-8	-0.71	0.11
	age-9	-0.25	0.63
	age-10	-0.60	0.21
	age-11	0.02	0.97
	age-12	-0.40	0.43
	age-13	-0.38	0.46
	age-14	0.42	0.41
	age-15	-0.14	0.79
LVB params	L_∞	0.56	0.33
	κ	-0.64	0.24
	t_0	-0.64	0.24
Assessment output	Spawning biomass	0.43	0.17
	Total biomass	0.37	0.24
	Recruitment	0.33	0.30

Fishing Effects on Gulf of Alaska northern rockfish

As part of the EFH 5-year review, the impacts of commercial fishing on EFH in Alaska are assessed. New EFH definitions, maps, and the output from the Fishing Effects Model are used to assess the effects of fishing on Gulf of Alaska (GOA) northern rockfish EFH. The approved methodology is a three-tiered approach. The first step is to determine whether GOA northern rockfish are above their Minimum Stock Size Threshold (MSST). Based on the results of the 2016 GOA northern rockfish stock assessment, female spawning biomass is above $B_{35\%}$ (for Tier 3 stocks, the MSY level is defined as $B_{35\%}$, Hulson *et al*. 2016). Therefore, GOA northern rockfish are above its MSST.

The next step is to determine whether the amount of disturbed habitat in the Core Essential Area (CEA) is 10% or greater. The CEA is defined as the predicted 50% quantile threshold of suitable habitat or summer abundance for each species. For GOA northern rockfish, two maps of habitat impact were developed. The first map is based on summer bottom trawl survey and fishery observer data. A spatial generalized additive model (GAM) was fit to CPUE data, and used to develop a map of relative abundance of GOA northern rockfish (Figure 1). The core EFH area was defined as the 50 percentile of the cumulative distribution of northern rockfish. It is the area within the GOA where the highest abundances of northern rockfish occur so that 50% of the total abundance is within that area (Figure 1). Impacts on northern rockfish habitat were evaluated by overlying the results from the Fishing Effects model and summing impacts (percent reduction in habitat) within the northern rockfish core EFH area.

The habitat reduction within the GOA northern rockfish CEA is shown in Figure 2. Fishing impacts on GOA northern rockfish are generally very low (<2% habitat reduction). The large majority of areas where impact occur are from 0 – 1% with areas with habitat reduction reaching 10% scattered within these areas of low impact. There are small localized areas of higher habitat reduction (>25%) corresponding to northern rockfish fishing grounds south of Kodiak, but these areas are indistinguishable at the current map scale.

Overall the fishing impacts in the GOA northern rockfish CEA appear to be very low. The average percent habitat reduction (From January 2003 – November 2016) of the GOA northern rockfish CEA is 1.4%. The time trend of habitat impacts is very stable, and the overall habitat reduction did not exceed 1.9% in any month (Figure 3). The 10% threshold for additional analyses was not reached, and the percent habitat reduction was very low and stable. Therefore, no further analysis (Step 3) was conducted to examine indices of growth- to- maturity, spawning success, breeding success and feeding success (e.g., time trends in size-at-age, recruitment, spawning distributions and feeding distributions) to determine whether there are correlations between those parameters and the trends in the proportion of the CEA impacted by fishing.

In summary, the proportion of habitat reduction in the GOA northern rockfish CEA is minimal (<2%), and the time trend is very stable. The conclusion is that due to low habitat impacts on GOA northern rockfish, mitigation measures are not needed at this time.

EFH Research Priorities

More information on northern rockfish habitat preferences would be useful to improve our understanding of EFH, particularly in localized areas of higher habitat reduction. Previous studies have identified the highest concentrations of northern rockfish in the NMFS bottom trawl surveys are associated with relatively rough bottom on shallow rises or banks on the outer continental shelf at depths of about 75-150 m (Clausen and Heifetz 2002), which is consistent with the CEA resulting here. However, better habitat mapping of the Gulf of Alaska would provide information for survey stratification and the extent of trawlable and untrawlable habitat, a concern that is also discussed in the research priorities for northern rockfish stemming from highly variable and uncertain bottom trawl survey abundance estimates (Hulson et al. 2015).

The distribution and habitat requirements of GOA northern rockfish larvae are unknown. Like other *Sebastes* species, northern rockfish are presumed to be ovoviviparous with internal fertilization, although,

larval northern rockfish cannot be unequivocally identified to species at this time, even using genetic techniques, so information on larval distribution and length of the larval stage is unknown. There is also insufficient information on distribution and habitat requirements of early juveniles. In general, little is known about the early juvenile stage distribution, habitat requirements, and interaction with other components of the ecosystem until they are about 2 years old and appear in fishery and surveys. Studies to determine the impacts of environmental indicators such as temperature regime on northern rockfish are needed.

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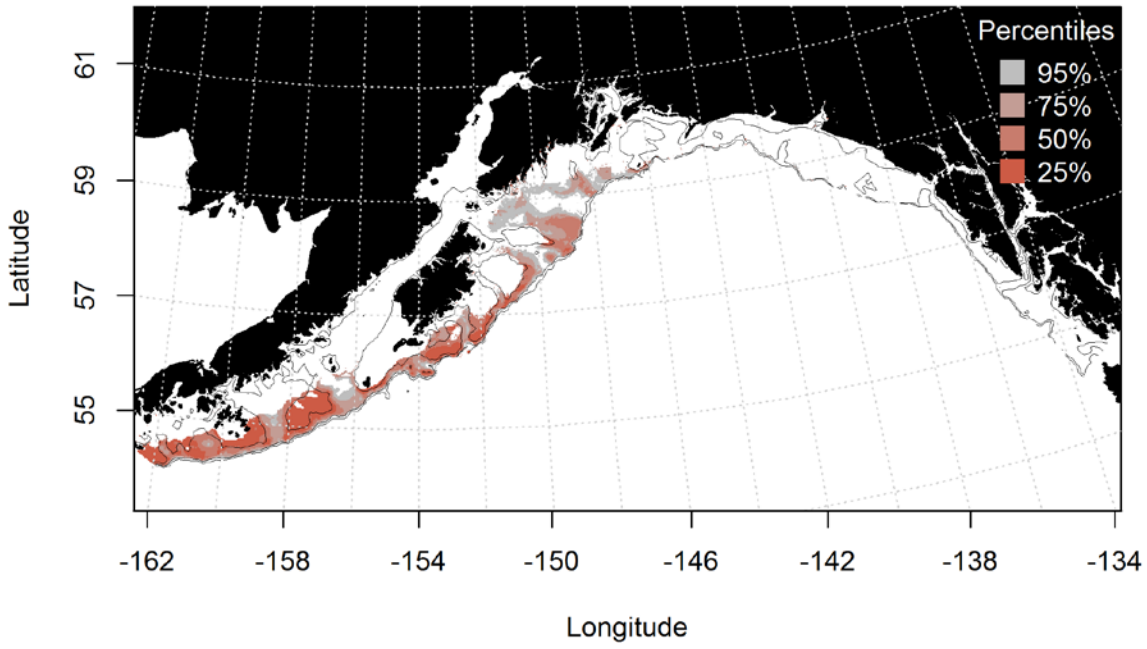

Figure 1. Areas representing the 25, 50, 75, and 95 cumulative percentiles of northern rockfish in the Gulf of Alaska.

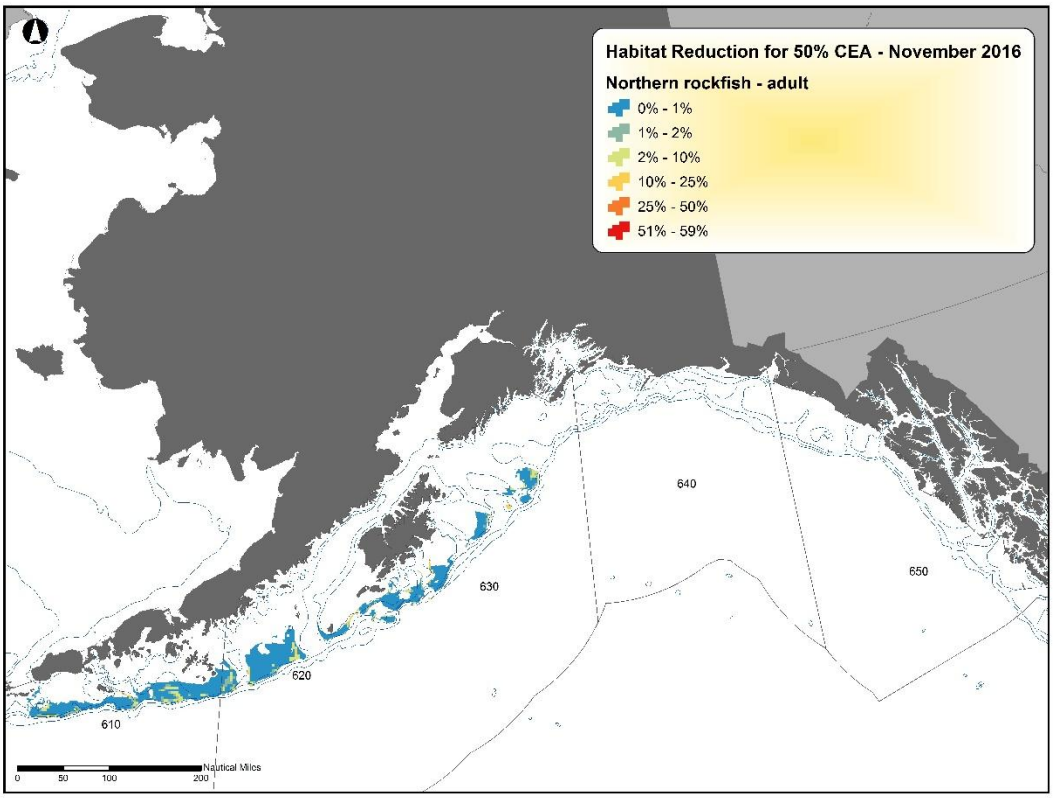

Figure 2. Cumulative habitat reduction for November 2016 in the Gulf of Alaska northern rockfish Core Essential Area (summer core EFH area).

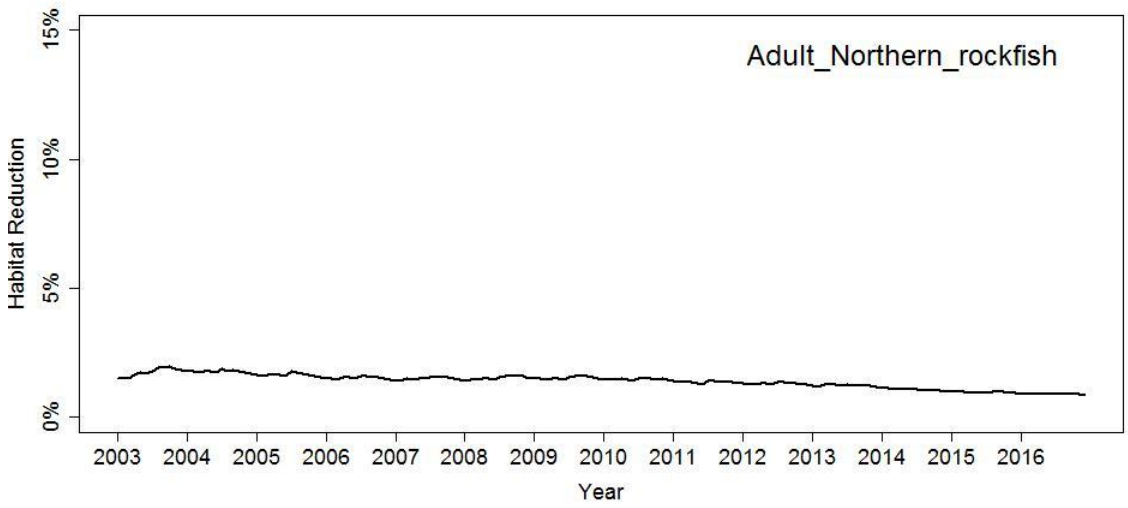

Figure 3. Monthly time series of habitat reduction for Gulf of Alaska northern rockfish Core Essential Area (summer core EFH area).

Appendix 3

Key Differences between the Pilot Program and the Rockfish Program

Management Provision	Pilot Program	Rockfish Program
Eligibility to receive QS	Participants must have made targeted legal landings of rockfish primary species during the qualifying years 1996–2002.	Participants must have made targeted legal landings of rockfish primary species during the qualifying years 2000–2006, or participated in the Pilot Program entry level trawl fishery in 2007, 2008, or 2009.
• Voluntary exclusion from the Rockfish Program	May not apply for or receive initial allocation of QS, but may still have sideboard limitations	LLP license holder may forgo QS and be exempted from specific sideboard limits if legal landings were made both in 2000–2006 and in the entry level trawl fishery during 2007, 2008, or 2009. Must apply for exclusion during initial application process.
Initial QS Allocations	Based on landings (best 5 of 7) years between 1996 and 2002	97.5% of the initial allocation is based on landings (best 5 of 7 years) between 2000 and 2006.
• Entry level trawl "transition" QS allocation	N/A	Participants in the Pilot Program entry level trawl fishery will be transferred into catch share management whereby 2.5% of the allocation will be given to licenses that participated in the Pilot Program entry level trawl fishery in 2007, 2008, 2009.
Rockfish Cooperatives	Yes	Yes
• Forming a catcher vessel (CV) cooperative	May only form cooperatives with other CVs and the processor to whom they	May only form a cooperative with other CVs with an association with any

Management Provision		Pilot Program	Rockfish Program
		historically delivered catch from 1996–2000. No minimum number of LLP licenses required for CVs to form a cooperative.	shoreside processor located within the geographic boundaries of the City of Kodiak. No minimum number of LLP licenses required.
• Annual CV allocation of CQ	Primary	Based on member QS	Based on member QS
	Secondary	• Pacific cod based on QS • Sablefish based on QS • Rougheye/shortraker maximum retainable amount (MRA), may not exceed 9.72% of TAC • Thornyhead based on QS	• 3.81% of Pacific cod TAC • 6.7% of sablefish TAC • 7.84% of thornyhead TAC • Rougheye/shortraker MRA may not exceed 9.72% of TAC.
	Halibut PSC	Based on member QS. Calculation based on 1996–2002 data.	Based on member QS. Calculation based on 2000–2006 data with a 12.5% reduction. 117.3 mt to cooperatives. 16.8 mt remains unallocated and stays "in the water."
• Forming a catcher/processor (C/P) cooperative		May join a cooperative with other C/Ps. Minimum of 2 LLP licenses required for C/Ps.	May join a cooperative with other C/Ps. No minimum number of LLP licenses required.
• Annual C/P allocation of CQ	Primary	Amount based on member QS	Amount based on member QS
	Secondary	• Pacific cod MRA • Sablefish based on QS • 30.03% of shortraker TAC • 58.87% of rougheye TAC • Thornyhead based on QS	• Pacific cod MRA • 3.51% of sablefish TAC • 40% of shortraker TAC • 58.87% of rougheye TAC • 26.50% of thornyhead TAC
	Halibut PSC	Based on member QS. Calculation based on 1996–2002 data.	Amount based on member QS. Calculation based on 2000–2006 data with a 12.5% reduction. 74.1 mt allocated. 10.6 mt remains in the water.
Transfer of CQ		• C/P may transfer to C/P or CV • CV may transfer to CV only. No minimum	• C/P may transfer to C/P or CV, except no shortraker or rougheye

Management Provision	Pilot Program	Rockfish Program
	number of LLP licenses required to transfer CQ.	may transfer from C/P to CV • CV may transfer to CV only • Minimum of 2 LLP licenses in each cooperative required to transfer CQ
Limited access fishery	Yes	None
Opt-out option for C/Ps	Yes, but subject to opt-out sideboards	Yes, but subject to opt-out sideboards
Halibut PSC % rollover of unused CQ	100% of unused CQ halibut PSC will be added to the last seasonal apportionment during the current fishing year	55% of unused CQ halibut PSC will be added to the last seasonal apportionment during the current fishing year. Resulting 45% of unused CQ halibut PSC remains in the water.
Use caps for rockfish primary species	A person may not hold or use more than: • 5% of the QS assigned to the CV sector. • 20% of the QS assigned to the C/P sector.	A person may not hold or use more than: • 4% of the QS assigned to the CV sector. • 40% of the QS assigned to the C/P sector.
	CV cooperative may not hold or use more CQ than: • 30% QS assigned to CV sector.	CV cooperative may not hold or use more CQ than: • 30% QS assigned to CV sector.
	A vessel may not harvest more than: • 60% CQ issued to the C/P sector.	A vessel may not harvest more than: • 8% CQ issued to the CV sector. • 60% CQ issued to the C/P sector.
	Processors may not receive or process more than: • 30% CQ issued to CV sector (rockfish primary species only).	Processors may not receive or process more than: • 30% CQ issued to CV sector (rockfish primary species, Pacific cod, and sablefish).

Management Provision	Pilot Program	Rockfish Program
Sideboards (in effect July 1–31)	Yes	Yes
• Catcher vessel	Exemption from sideboard limits: (1) Any American Fisheries Act (AFA) CVs not exempt under AFA regulations	Exemptions from sideboard limits: (1) Any AFA CVs not exempt under AFA regulations; (2) vessels that have been selected as being voluntarily excluded from the Rockfish Program; and (3) any vessels assigned an LLP license that has been selected as being voluntarily excluded from the Rockfish Program.
	• Prohibited from fishing in the BSAI groundfish fisheries and limits on Pacific cod • Prohibited from fishing in the West Yakutat/ Western GOA (for rockfish) • Deep and shallow water complex halibut PSC	Prohibited fishing restrictions: • West Yakutat District/Western GOA (rockfish primary species) • Deep-water complex—arrowtooth flounder, deep water flatfish, rex sole
• C/P	• Prohibited from fishing in the BSAI groundfish fisheries and non-program groundfish fisheries in the GOA • Deep and shallow water halibut PSC limit	• West Yakutat/Western GOA limitation (rockfish primary species) • Deep and shallow water halibut PSC limit • Prohibited from fishing rockfish primary species in the Western GOA and West Yakutat District for non-Amendment 80 vessels
• C/P Opt-out vessels	Subject to sideboards and receives the portion of each rockfish sideboard limit not assigned to rockfish cooperatives	
	Prevents directed fishing in GOA groundfish fisheries without previous participation in 1996–2002	• Prevents directed fishing in GOA groundfish fisheries without previous

Management Provision	Pilot Program	Rockfish Program
		participation in 2000–2006 • Prohibit directed fishing for rockfish primary species in Western GOA and West Yakutat for non-Amendment 80 vessels
Entry level fishery	Yes, trawl and longline gear	Yes, longline gear only
• Annual application	Yes. Processor affirmation required.	None. May deliver to any shoreside processing facility in the GOA.
• TAC	5% of the rockfish primary species TAC goes to the entry level fishery, divided equally between trawl (2.5%) and longline gear (2.5%).	Annual set aside of the TAC increases annually, to a predetermined cap, if the fishery harvests ≥ 90% of their allocation of a species in the previous year.
Monitoring and enforcement	Observer coverage: • 100% CV in July and when checked-in	• 100% CV when checked-in
	• 200% C/P cooperative for CQ or sideboards, and • 100% C/P opt-out vessels in July only.	
• Shoreside/stationary processors:	Catch Monitoring and Control Plan (CMCP) is required except for the entry level longline fishery.	
	Notify the observer at least one hour prior to offloading of each delivery of groundfish harvested in a Pilot Program fishery. An observer must be available to monitor each delivery	In the CMCP, describe how the CMCP specialist will be notified of deliveries
Cost recovery	None	Yes, fee liability payment is a maximum of 3% of the ex-vessel value of rockfish primary and secondary species. Payment due on February 15 of the following year. No fees for the entry level longline fishery.
Duration	5 years	10 years