BSAI Amendment 80 Program Review

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Abstract: The AM80 (AM80) Program was approved by the North Pacific Fishery Management Council in June 2006 and was implemented in 2008. The AM80 Program allocates Bering Sea/Aleutian Islands yellowfin sole, flathead sole, rock sole, Atka mackerel, and Aleutian Islands Pacific ocean perch to eligible trawl catcher processors and allows qualified vessels to form cooperatives. To provide a better understanding of the impacts resulting from the AM80 Program, the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act of 2006 included Section 303A(c)(1)(G) which requires a formal and detailed program review every 7 years after the initial 5-year review. This program review would satisfy this requirement by describing the changing conditions of the AM80 Program fisheries since the last program review completed in 2014.

For definition of acronyms and abbreviations, see online list: https://www.npfmc.org/library/acronyms
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Executive Summary

The Executive Summary (ES) provides an overview of all activities in the AM80 (AM80) sector. The first section of the ES describes all harvesting and processing of the AM80 fleet of catcher processors (CPs) in both the Bering Sea/Aleutian Islands (BSAI) and Gulf of Alaska (GOA). Following the overview, the ES examines the goals and objectives set by the Council in developing the AM80 Program. This section of the ES includes tables and figures that specifically address the question of whether and the extent to which the Council's AM80 goals and objectives have been attained.

1) Overview of AM80 Catch, Processing, and Revenues

Table ES-1 and Figure ES-1 summarize total harvest and total first wholesale revenue in all AM80 fisheries in the BSAI and the GOA, including CDQs, and processed catch of AM80 motherships. From 2008 through 2023 total harvest ranged from a low of 286,226 mt in 2009 to a high of 422,751 mt in 2014. Following the high in 2014, annual total harvest ranged from 370,000 to 395,000 except for 2021 when harvest dropped to 344,738 mt. Total first wholesale value over the review period ranged from lows in the $300 million in the early years of the program and during 2021 to highs near $600 million in 2011 and 2012 and 2017 and 2018. As noted in the Alaska Seafood Snapshot published on August 24, 2024, authored by NMFS, Alaska Fisheries Science Center (AFSC), the decline in the AM80 first wholesale revenue during the 2020 through 2021 period and again in 2023 was not isolated to just AM80 participants. During this period, the overall economic conditions in the Alaska seafood market underwent unprecedented and destabilizing changes that led to substantial revenue losses and increased costs for the Alaska seafood market. A few of the challenges faced by the AM80 sector included:

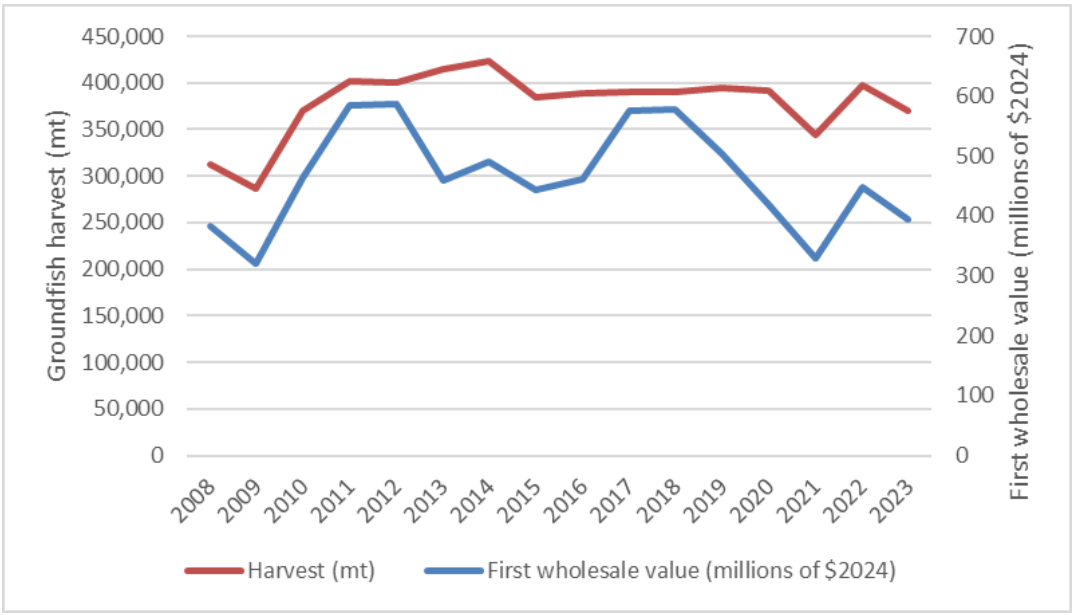
- Residual COVID-19 pandemic impacts that lead to logistical hurdles, increased costs in recruiting workers, maintaining health standards, and supply and market disruptions
- National and international market forces that have resulted in high inventories and low priced seafood throughout the global supply chain
- Tariff and trade issues over the past several years

Table ES-1 Harvest and first wholesale value of groundfish catch for all AM80 vessels in the BSAI and GOA

Year	Harvest (mt)	First wholesale value (millions of $2024)
2008	312,838	382
2009	286,226	320
2010	369,757	463
2011	401,912	585
2012	400,716	586
2013	414,444	459
2014	422,751	491
2015	384,342	444
2016	388,403	461
2017	389,687	575
2018	390,015	578
2019	394,949	505
2020	391,258	419
2021	344,738	328
2022	397,880	447
2023	369,808	395

Source: AKFIN; file is A80_Div(9-9-24)

Figure ES-1 Harvest and first wholesale value of total groundfish catch for AM80 vessels in the BSAI and GOA



Source: AKFIN; Source file: A80_Div(9-9-24)

In general, the AM80 fleet is highly focused on BSAI non-pollock groundfish. However, as noted in Table ES-2, AM80 vessels during the 2008-2023 period were more diversified in their total revenue than before the implementation of the AM80 Program. In addition, during the 2006-2007 period, the average number of AM80 vessels processing 90-100 percent of AM80 species was 13, but then declined to six vessels during the 2008-2014 period which an indication of the diversification of the fleet with regards to revenue. In the most recent years (2015-2023), for some AM80 vessels revenue from CDQ and mothership activity has increased in importance while revenue from the GOA activity has declined.

Table ES-2 Number of AM80 vessels processing AM80 by categorical percent of total revenue, 2006-2022

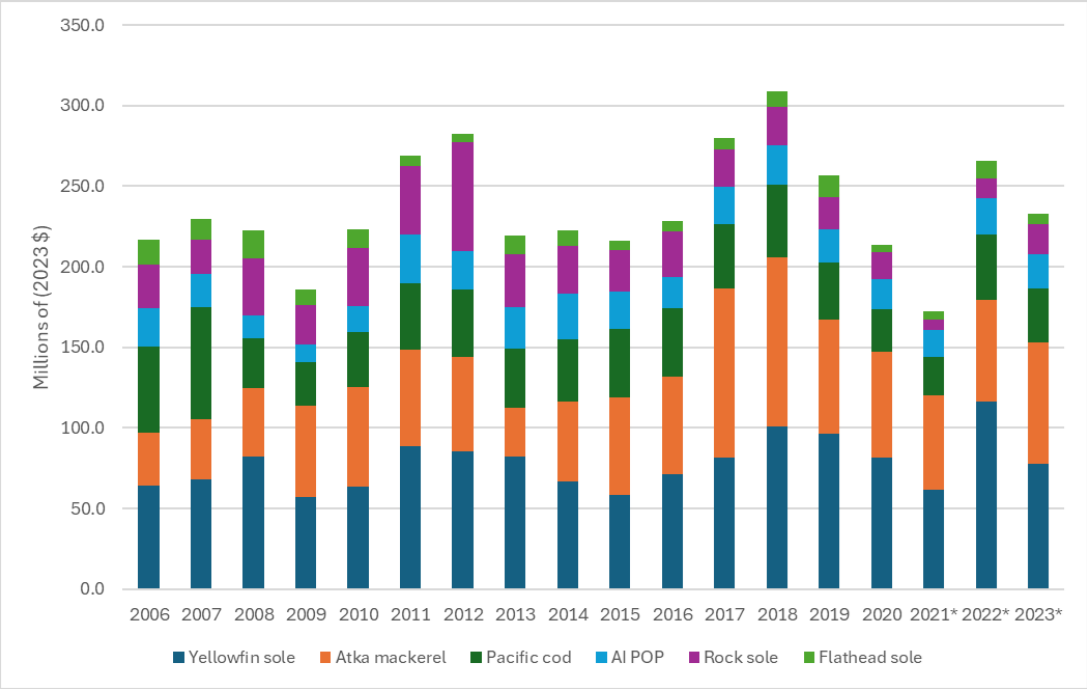
Revenue as a	2006-2007				2008-2012				2013-2018				2019-2022			
% of total	A80	CDQ	MS	GOA	A80	CDQ	MS	GOA	A80	CDQ	Mship	GOA	A80	CDQ	MS	GOA
<.1%	0.0	18.5	21.0	7.5	0.4	14.4	18.6	5.0	0.0	12.6	13.6	7.6	0.0	11.6	10.4	11.2
.1-10%	0.0	0.0	0.5	6.0	0.0	1.4	0.6	8.4	0.0	2.2	2.6	4.8	0.0	5.8	4.8	2.0
10-20%	0.0	0.5	0.5	3.5	0.0	3.2	0.4	4.0	0.0	3.2	0.8	2.6	0.0	1.4	2.0	2.6
20-30%	0.0	1.5	0.0	2.0	0.0	1.4	0.4	1.4	0.4	0.2	0.2	1.4	0.0	0.2	0.4	2.2
30-40%	0.5	1.0	0.0	2.0	0.8	0.0	0.2	1.0	0.6	0.2	0.2	0.6	0.2	0.0	0.2	0.6
40-50%	0.0	0.5	0.0	0.5	1.0	0.0	0.0	0.2	1.4	0.0	1.0	0.6	1.6	0.0	0.8	0.4
50-60%	0.5	0.0	0.0	0.0	1.2	0.0	0.2	0.0	0.6	0.0	0.0	0.4	1.2	0.0	0.4	0.0
60-70%	2.0	0.0	0.0	0.5	1.6	0.0	0.0	0.2	1.4	0.0	0.0	0.0	1.2	0.0	0.0	0.0
70-80%	2.0	0.0	0.0	0.0	5.4	0.0	0.0	0.2	2.8	0.0	0.0	0.4	2.4	0.0	0.0	0.0
80-90%	4.0	0.0	0.0	0.0	4.2	0.0	0.0	0.0	3.2	0.0	0.0	0.0	4.4	0.0	0.0	0.0
90-100%	13.0	0.0	0.0	0.0	5.8	0.0	0.0	0.0	8.0	0.0	0.0	0.0	8.0	0.0	0.0	0.0

Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_BLEND_CA

Table file is A80_Div (9-9-24)

As noted in Figure ES-2, amongst the AM80 species, yellowfin sole and Atka mackerel are the largest contributors of total first wholesale revenue for the sector, followed by Pacific cod and AI POP. The last two AM80 species, rock sole, and flathead sole, although contributing less to total revenue for the sector are nevertheless important species for some AM80 companies since the sector sorts roughly into companies or groups of vessels that primarily focus more on either flatfish or Atka mackerel and AI POP based on the qualified catch history associated with their permits.

Figure ES -2 Annual gross first wholesale revenue (2023$) for AM80 species, 2006 through 2023



Source: AKFIN; Source file: AM80_Species(8-2-24) & Am80 Allocation_Harvest_Value
AI POP values were adjusted using AKFIN file A80_Species(10-8-24)
* Denotes a cooperative catcher vessel that is mothershipping AM80 allocations.

Figures ES-3 through ES-8 depict annual harvest (mt) and first wholesale revenue (millions of 2024$) for each of the AM80 species from 2006 through 2023. As noted in the figures, yellowfin sole, AI POP, Atka mackerel, and Pacific cod have performed better than rock sole and flathead sole during the 2008 through 2023 period. As for the highest grossing species, yellowfin sole, Atka mackerel, and Pacific cod have been the top performers during the review period.

Looking at the overall economic performance of the AM80 sector, the results of this synthesis as reported in Table ES-9 underlines the severity of the adverse economic conditions the AM80 sector has faced in recent years, most severely in 2021. With gross revenues across the sector in sharp decline successively in 2019 through 2021, and aggregate expenses declining to a lesser degree, the AM80 sector saw the worst four-year period of financial performance of the 16-year management program period during 2019-2023. From a fleet aggregate gross revenue of $300 million in 2021, operating costs of $106 million, and overhead of $67 million, aggregate gross income in 2021 fell to $90 million, and operating income of $23 million (an operating margin of 7.8 percent of gross revenue), less than one-fourth the average annual value of $99 million (an average 21.9 percent operating margin) over the previous 13 years. Financial performance by these measures has marginally improved from 2021, with operating income reaching $41 million in aggregate during 2023 on gross revenue of $360 million (an 11.5 percent operating margin). Nonetheless, the most recent three years comprise the three lowest years of economic returns across the sector since the management program began in 2008.

Figure ES-3 Annual harvest and first wholesale revenue of AM80 Pacific cod, 2006 through 2023

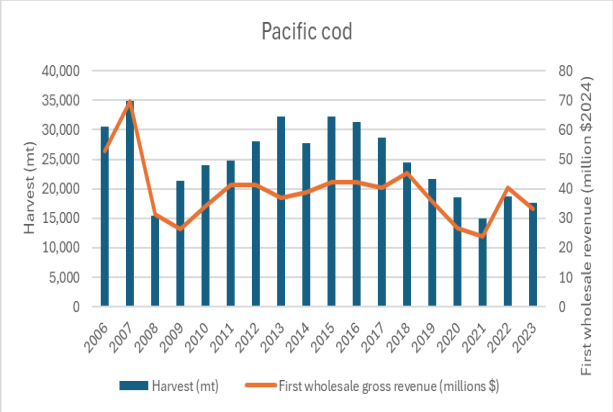


Figure ES-4 Annual harvest and first wholesale revenue of AM80 yellowfin sole from 2006 through 2023

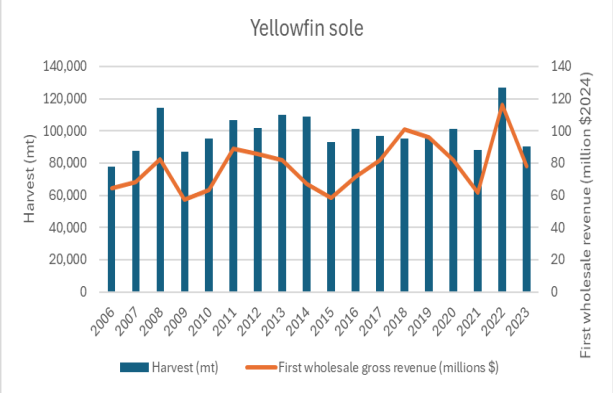


Figure ES-5 Annual harvest and first wholesale revenue of AM80 AI POP from 2008 through 2023

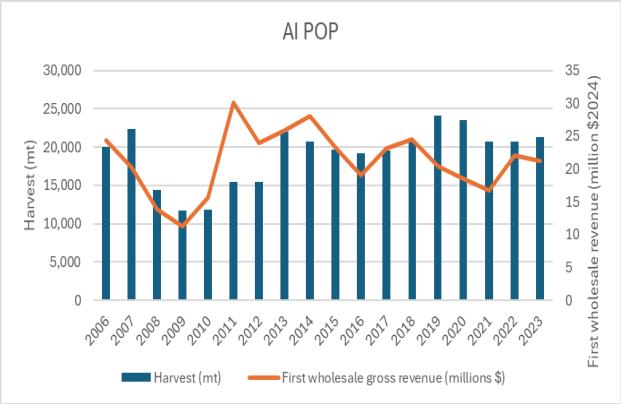


Figure ES-6 Annual harvest and first wholesale revenue of AM80 rock sole from 2006 through 2023

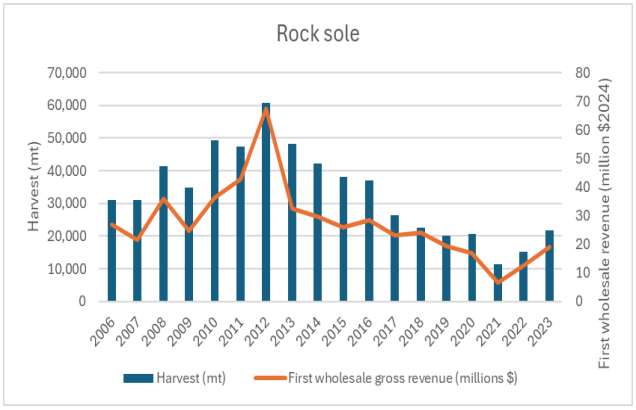


Figure ES-7 Annual harvest and first wholesale revenue of AM80 flathead sole from 2006 through 2023

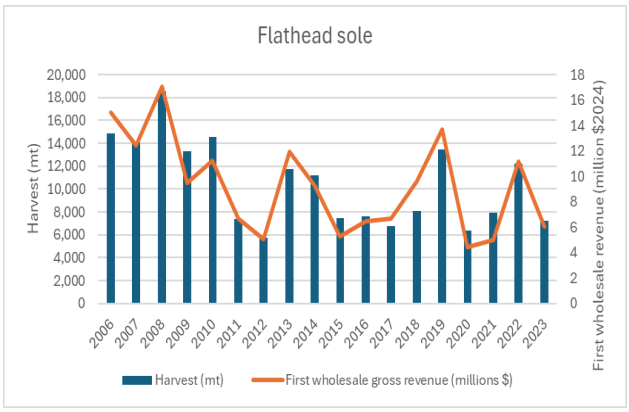


Figure ES-8 Annual harvest and first wholesale revenue of AM80 Atka mackerel from 2008 through 2023

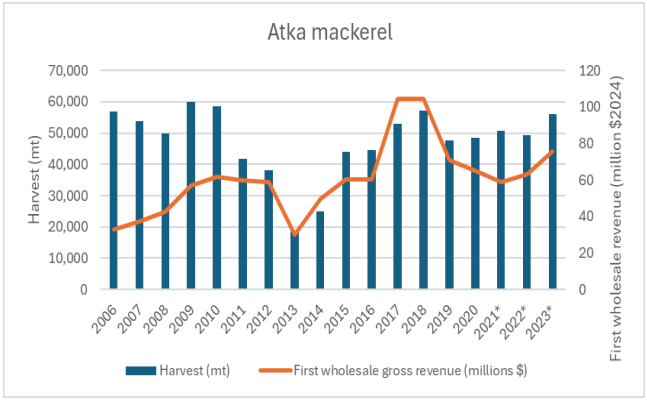
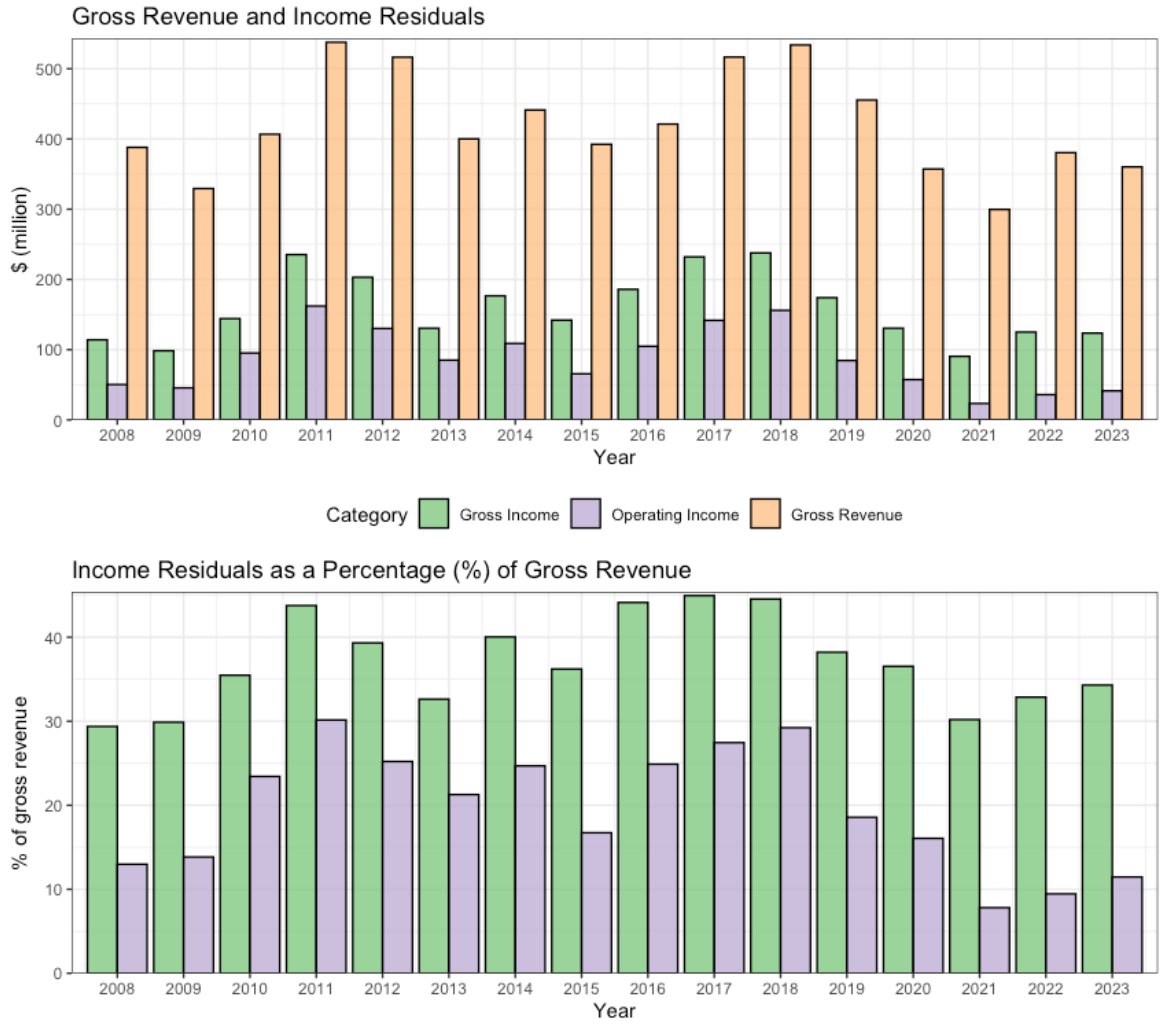


Figure ES-9 AM80 Gross Revenue and Income Residuals. All monetary values are adjusted to 2023 dollars



Note: See the 2024 Groundfish Economic SAFE, Table 8.11 for tabular results depicted in the above figure, in addition to results reported at the median vessel level.
Source: AM80 Economic Data Reports; source data and compilation are provided by the Alaska Fisheries Information Network (AKFIN).

2) Goals and Objectives of AM80

The AM80 problem statement provided in full in Section 1.2 articulates five specific goals. These are listed below:

1. To maintain a healthy marine ecosystem to ensure the long-term conservation and abundance of the groundfish and crab resources
2. To reduce bycatch
3. To minimize waste and improve utilization of the extent practicable
4. To provide maximum benefit to present generations of fishermen, including CDQ groups, communities, and the nation as a whole
5. To minimize negative impacts on other fisheries.

AM80 Goal 1: To maintain a healthy marine ecosystem to ensure the long-term conservation and abundance of the groundfish and crab resources

The success of the AM80 Program has led to the near elimination of the race for fish in the BSAI non-pelagic trawl fisheries. No longer forced by the race for fish to maximize catch and revenue per unit of time, participants in these fisheries have been much more amenable to gear changes and other behavioral changes that have reduced negative impacts of non-pelagic trawling on the ecosystem. Examples include the use of modified trawl doors and sweeps, ongoing experiments with gear modifications, and the use of excluders and deck sorting to reduce bycatch mortality. More detailed discussions of these points are included in Section 5.2 which summarizes bycatch mortality reduction strategies by the AM80 sector, Section 5.3 which examines the status of halibut deck sorting innovation and experimentation, as well as in Section 7 which summarizes gear modifications that lift trawl sweeps off bottom.

AM80 Goal 2: To reduce bycatch—a priority focus of AM80

One of the primary goals of the AM80 Program is the reduction of halibut and crab PSC. Participants with exclusive shares could have time to be more selective in targeting their allocation and thereby potentially reduce their halibut PSC. Overall, with the exception of some short duration spikes for some PSC species, catch of most prohibited species in the BSAI sector over the review period have declined. Similarly, bycatch rates for these prohibited species, measured as the ratio of volume of prohibited species catch to volume of groundfish catch, have also in general declined since implementation of the AM80 Program. As noted in Table 5-3, the AM80 sector did not exceed the halibut or crab PSC limits during the review period.

The annual halibut PSC and the halibut PSC rate by the AM80 fleet from 2015 through 2023 declined when compared to halibut PSC from 2008 through 2014. Annual halibut PSC averaged 2,057 mt over the 2008 through 2014 period, while the average annual halibut PSC averaged 1,314 mt during the 2015 through 2023 period. Annual halibut PSC rate averaged 6.865 kg of halibut per mt of total groundfish during the 2008 through 2014 period but declined to 4.282 kg of halibut per mt of groundfish during the 2015 through 2023 period.

PSC and PSC rates of red king crab (Zone 1) in the AM80 BSAI fisheries trended downward during 2008 through 2014 and continued to trend downward for this review period (2015 through 2023). PSC and PSC rates for red king crab (Zone 1) declined to the lowest level since implementation of AM80 Program during the 2022 and 2023 fishing season. Overall, the average PSC rate for red king crab by the AM80 sector declined during the 2015 through 2023 period to 0.053 red king crab (Zone 1) per mt of total groundfish catch relative to an average of 0.150 red king crab per mt of total groundfish catch during 2008 through 2014.

For *C. opilio* crab, PSC and PSC rates declined during the 2008 through 2014 period and continued declining from 2015 to 2017. Following the long decline in PSC and PSC rates, the sector experienced its highest PSC and PSC rate in 2018. Following the 2018 spike, PSC and PSC rates quickly declined through the 2022 fishing season but then increased during the 2023 season. Average annual PSC rate for *C. opilio* crab by the AM80 sector during 2008 through 2014 was 1.342 crabs per mt of total groundfish catch, while the PSC rate during the 2015 through 2023 was 1.597 crab per mt of total groundfish catch.

AM80 PSC and PSC rates for *C. bairdi* crab where more variable across the 2008 through 2023 period but the trend of *C. bairdi* crab per mt of total groundfish catch by the AM80 sector has declined during the 2008 through 2023 period. The average annual PSC rate for *C. bairdi* crab during 2008 through 2014 was 1.660 crabs per mt of total groundfish catch, while the PSC rate from 2015 through 2023 declined to 1.168 crabs per mt of total groundfish catch.

Chinook and non-Chinook PSC and PSC rates during the 2008 through 2023 period remained relatively low with the exception of a spike in Chinook salmon in 2015 and 2016 and non-Chinook salmon in 2018

and 2019. The large spikes for both Chinook and non-Chinook during the 2015 through 2023 resulted an increase in the average PSC rates for both Chinook (.011 Chinook salmon per mt of total groundfish catch) and non-Chinook salmon (0.016 non-Chinook salmon per mt of total groundfish catch) relative to the average PSC rates (0.003 for Chinook salmon and 0.004 non-Chinook salmon) during 2008 through 2014.

AM80 Goal 3: Minimize waste and improve utilization to the extent practicable

A major goal of AM80 is the improvement of retention and utilization of groundfish within the AM80 sector. To that end, the goal of improving AM80 retention and utilization has been successful.

Under Amendment 79, which was scheduled to be implemented in 2008, all AM80 CPs 125' in length overall (LOA) or longer would have been required to meet increasing retention standards while fishing and processing groundfish in the BSAI. The groundfish retention standard (GRS) was phased in starting at 65 percent in 2008 and peaking at 85 percent in 2011 and subsequent years. Implementation of AM80 superseded Amendment 79 but the GRS and it's phased in retention percentage still applied under AM80 Program, but it applied to all AM80 vessels regardless of length that operate in the BSAI. For vessels that choose to join cooperatives, the GRS was measured jointly over the entire co-op, while vessels choosing to operate in the AM80 limited access fishery was, as before, individually accountable to meet the standards.

On December 15, 2010, NMFS issued an emergency order exempting the AM80 fleet from the requirements of the GRS as implemented under AM80. In the Emergency Rule NMFS indicated they believed that the methodology used to calculate the GRS percentage had the effect of requiring retention well above that intended by the Council or as implemented by NMFS. In addition, NMFS indicated that the monitoring and enforcement of the GRS was much more complex and costly than anticipated. On February 25, 2013, NMFS publish a Final Rule to change the regulations regarding the GRS. The new regulation removed the requirement to meet the GRS, and instead require cooperatives to internally monitor their retention percentages and submit annual retention reports in their report to NMFS. This internal monitoring system is known as the Retention Compliance Standard (RCS). In addition, third-party audits of cooperatives' retention percentages would be required, which are provided by SeaState.

The overall levels of groundfish retention increased significantly from a low of 69 percent in 2004 (Northern Economic, 2014) to levels over 90 percent as measured by the RCS (see Table 8-1).

AM80 Goal 4: To provide maximum benefit to present generations of fishermen, including CDQ groups, communities, and the nation as a whole

This AM80 Program goal impacts many different groups including vessel owners, crew, CDQ, Alaska communities, and Seattle MSA and other communities which are briefly described below.

Vessel Owners
Despite the recent downturn in AM80 Program first wholesale gross revenue due to world seafood market conditions, the overall increase in first wholesale gross revenue since implementation of the program has provided benefits for the AM80 vessel owners. In addition, the flexibility provided by the AM80 Program through cooperative fishing has likely resulted in some sector efficiencies resulting in reduced cost for similar harvest levels.

Crewmembers and society
Overall, the aggregate gross wages for deck crew, processors and other crew increased during the 2015 through 2017 period, but has since declined from that peak. In recent years, the aggregate gross wages paid to deck crew reached a low of $12.8 million in 2021, increasing to $19.5 million in 2022, while

average annual gross wages per deck crew member employed during 2021 declined to $67.3 thousand for 2021, increasing to $91.6 thousand as of 2023. Total gross wages paid to processing employees declined to $34.6 million in 2021, and $27 thousand per processing employee, both setting record lows for the period. For other vessel crew, including officers, engineers, and others involved in onboard management and record-keeping, the fleet-aggregate gross wages declined by 5 percent to $36.6 million, and by 7% per-individual employed, to $87 thousand.

From a safety perspective, the AM80 sector has improved. The dominant driving forces behind this improvement in outcomes include: the implementation of a rationalized fishing model (AM80 itself), participation in the Alternative Compliance and Safety Agreement Program (ACSA), vessel replacement (or "fleet recapitalization"), and the exit from the sector of company-level entities that had been associated with a relatively higher incidence of vessel disasters resulting in loss. ACSA and AM80 implementation occurred at similar times, so it is impossible to say definitively which program influenced the decrease in serious vessel casualties the most. ACSA is more directly focused on vessel safety, but the AM80 program itself created the conditions for consolidation into a safer and, in some cases, modernized fleet of vessels with somewhat greater operational flexibility under which skippers have additional latitude to promote safety considerations above other decision-factors. It is possible that adoption of ACSA was initially responsible for improved outcomes over the first five years of the program but, more recently, fleet modernization and the fishery stability that has invited continued capital investments in the fleet is the driver of safety outcomes in recent years and moving forward. USCG experts familiar with the AM80 sector have affirmed that the presently active AM80 vessels that are not enrolled in ACSA do not need to be because they are classed, loadlined, and meet USCG safety standards.

CDQ groups

CDQ groups benefited from AM80 through increased allocations of most of their groundfish species within AM80. Allocations increased from 7.5 percent to 10.7 percent of the TAC for all CDQ groundfish species, with the exception of pollock, which was already allocated to CDQs at 10 percent.

CDQ non-pollock, non-IFQ groundfish catch is dominated by Pacific cod, yellowfin sole, and to a lesser extent Atka mackerel and rock sole. Non-pollock, non-IFQ CDQ groundfish catch is driven early in the year by Pacific cod in the hook-and-line CP sector and rock sole on AM80 platforms. Later in the year this category of CDQ harvest shifts more toward yellowfin sole on AM80 platforms. The exvessel revenue estimates for CDQ harvest on AM80 vessels (Figure 10-5) range between $13 million to $28 million (2023$).

None of the communities within the CDQ group regions have direct participation in the BSAI groundfish AM80 sector fishery through local vessel ownership address. Engagement of some CDQ region communities in the BSAI groundfish fishery includes being a product transfer location for processed product offload from CPs, including AM80 CPs. When these offloads occur, a Product Transfer Report is completed and the transfer is subject to the state Fisheries Resource Landing Tax, with the resulting tax revenues shared by the state with the community. A more complete description of this sharing process and estimated fish tax payments made by AM80 vessels is provided in Section 10.3.

Beyond the revenue benefits directly resulting from tax revenues, CP port calls may foster other economic activities involving local support service providers, such as crew transfers, fuel purchases, cold storage facility use, stevedoring, and logistics support, among others. There is, however, no publicly available, systematically collected data on the amounts and locations of these types of expenditures but the level of shared state Fishery Resource Landing Tax revenue may be taken as one rough proxy for the potential of this activity across the port communities involved.

Alaska communities
Taxes generated by the fishing industry, particularly the fish processing sector, are important revenue sources for communities, boroughs, and the State. There are two main sources of fishery taxes in Alaska: shared taxes administered through the State of Alaska, and municipal fisheries taxes independently established and collected at select municipalities.

Table 10-6 shows the results from the AM80 share fisheries tax calculations relative to the total reported shared fish taxes for those same communities and boroughs. As noted in the table, Dutch Harbor/Unalaska receives that largest share of fish taxes from the AM80 transfers ($2 million in 2022) followed by Kodiak Island Borough and Kodiak (each at $44 thousand in 2022).

Beyond the revenue benefits directly resulting from tax revenues, AM80 vessel port calls may foster other economic activities involving local support service providers, such as crew transfers, fuel purchases, cold storage facility use, stevedoring, and logistics support, among others. Of the Alaska communities, Unalaska/Dutch Harbor reported the most AM80 vessel port calls, with the community accounting for 75 percent of all AM80 port calls over the years 2015-2023. Unalaska/Dutch Harbor has easily the most developed support service sector capacity in the BSAI region with multiple marine fueling options, substantial cold storage capacity, multiple provisioning options, administrative support, and multiple electrical, electronics, hydraulics, welding, and mechanical services providers among others. Other Alaska communities with reported AM80 port calls include Adak, Kodiak, Sand Point, St. Paul, and Togiak.

Seattle MSA
The largest component of AM80 fleet ownership during any given year is, by far, the Seattle MSA, which included all vessels with Washington ownership addresses during the 2006 through 2023 period (annually averaging over 75 percent of all participating vessels), followed by "all other States" combined (annually averaging slightly under 25 percent of all participating vessels). Within the Seattle MSA, three different cities appear as ownership addresses in the 2006-2023 data to include Renton, Kirkland, and Seattle itself.

During the 2015 through 2023 period, Seattle MSA had the largest reported annual first wholesale gross revenue from AM80 groundfish fishing at $274 million while the remaining combined Washington communities and other States had an average annual first wholesale gross revenue of $92 million. For Seattle MSA, the $274 million annual first wholesale gross revenue from AM80 groundfish accounts for 18 percent of the $1,514 in total annual first wholesale gross revenue for all areas, gear types, and species. The remaining $92 million in first wholesale gross revenue from AM80 groundfish for ownership address other than Seattle MSA accounts for 86 percent of the total first wholesale gross revenue ($106 million).

AM80 Goal 5: To minimize negative impacts on other fisheries
Catch limits, commonly known as sideboards, limit the ability of AM80 vessels to expand their harvest efforts in the GOA. Otherwise, AM80 vessels could use the economic advantages attributable to AM80 to increase their participation in GOA fisheries, thereby adversely affecting the participants in those fisheries. GOA groundfish and halibut PSC sideboards prevent these undesirable effects by limiting the catch by AM80 vessels to historic levels in the GOA. The AM80 sideboards in the GOA are discussed more completely in Section 4.

Under AM80, AM80 vessels fishing in the GOA are subject to Central GOA (Area 620 and 630), Western GOA (Area 610) and West Yakutat (Area 640) northern rockfish, pelagic shelf rockfish, and Pacific Ocean perch sideboard limits, as well as limits on Pacific cod and pollock. Table 4-1 in Section 4.1 identifies the sideboards placed on the AM80 CPs participating in the GOA. The analysis indicates that AM80 vessels operating in the GOA generally have been able to stay within their sideboard limits for

Pacific cod, northern rockfish, and pelagic shelf rockfish but have exceeded limits for Pacific Ocean perch and pollock. NMFS-AKR manages the sideboards for pollock as a soft constraint that strictly limit the amount of targeting for pollock that vessels can undertake.

AM80 also imposes deep- and shallow-water halibut PSC limits for AM80 vessels fishing in the GOA. A total limit has been set at 357 mt for the deep-water species fishery (sablefish, rockfish, deep-water flatfish, rex sole, and arrowtooth flounder) and 117 mt for the shallow-water species fishery (pollock, Pacific cod, shallow-water flatfish, flathead sole, Atka mackerel, skates, and "other species"). There were instances during the review period, in which NMFS closed directed fishing by AM80 vessels for species that comprise the shallow-water species fishery or deep-water species fishery because the seasonal apportionments of the halibut PSC limits in the GOA had been reached.

1 Introduction

The AM80[1] (AM80) Program was approved by the North Pacific Fishery Management Council in June 2006 and was implemented in 2008. The AM80 Program allocates Bering Sea/Aleutian Islands yellowfin sole, flathead sole, rock sole, Atka mackerel, and Aleutian Islands Pacific ocean perch (POP) to eligible trawl catcher processors and allows qualified vessels to form cooperatives. The program establishes Gulf of Alaska (GOA) groundfish sideboard limits for pollock, Pacific cod, POP, northern rockfish, and pelagic shelf rockfish as well as GOA halibut PSC. Additionally, participation in the GOA flatfish fisheries is prohibited for vessels with less than 10 weeks of history in the GOA flatfish fisheries.

The AM80 Program is a Limited Access Privilege Program (LAPP) as defined in the Magnuson-Stevens Fishery Conservation and Management Reauthorization Act (MSA). This document serves as the required program review that meets the requirements of Section 303A(c)(1)(G) of the MSA. It will also serve as the allocation review required under NMFS' Fisheries Allocation Policy Directive 01-119 established in 2016 and two associated Procedural Directives[2].

1.1 Policy Guidance for Conducting Catch Share Program Reviews

NMFS policy guidance describes the information that should be included in Catch Share Program (CSP) reviews[3] . Based on that guidance, CSP reviews should contain the following eight elements. If an element is determined not applicable for a specific review, the Council should document in its final plan for the review its rationale for not conducting a more formalized analysis of that element. The eight elements are:

1) purpose and need of the review,
2) goals and objectives of the program, the Fishery Management Plan (FMP), and the MSA,
3) history of management, including a description of management prior to the program's implementation, a description of the program at the time of implementation (including enforcement, data collection, and monitoring), and any changes made since the program's implementation or the previous review (including an explanation of why those changes were made),
4) a description of biological, ecological/environmental, economic, social, and administrative environments before and since the program's implementation,
5) an analysis of the program's biological, ecological/environmental, economic, social, and administrative effects,
6) an evaluation of those effects with respect to meeting the goals and objectives (i.e., program performance), including a summary of the conclusions arising from the evaluation,
7) a summary of any unexpected effects (positive or negative) which do not fall under the program's goals and objectives,
8) identification of issues associated with the program's structure or function and the potential need for additional data collection and/or research.

Along with the eight elements, NMFS Policy guidance indicates the review should contain an assessment of the program's effects on net benefits to the Nation, including net benefits that are not exclusively economic in nature. It is worth noting that changes in employment and tax revenues are not economic benefits within a cost-benefit analysis. The latter is a transfer of money within the economy and the former is an example of an economic impact. Both these issues are important to policy makers, stakeholders, and the public and are considered as part of this AM80 Program review. However,

[1] AM80 to the Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands Management Area
[2] https://meetings.npfmc.org/CommentReview/DownloadFile?p=d8187f71-2494-4ba9-9bd7-28677715c094.pdf&fileName=D3%20Allocation%20Review%20Triggers%20discussion%20paper.pdf
[3] https://media.fisheries.noaa.gov/dam-migration/01-121-01.pdf

information that is available does not allow the formal calculation of net benefits to the Nation[4]. However, the data and discussion provided in this document suggests that net National benefits have increased relative to the pre-AM80 Program. For example, revenue has increased and costs have reduced.

Unlike the forward-looking analytical documents that are required to implement regulatory or plan amendments, the CSP reviews are retrospective to describe how the program has met its original (and current - as the program matures) goals and objectives. Because of this difference, CSP reviews compare the fishery before implementation against what has occurred under the program versus comparing the No Action alternative to the expected future program under the proposed FMP or regulatory amendment alternatives. After considering the information presented in a CSP review, the NPFMC may determine whether modifications to the AM80 Program should be considered. Those program modifications would be analyzed using the standard forward-looking analytical document development process.

1.2 Original Program Purpose and Need Statement

The Council adopted the following purpose and need statement when considering rationalization alternatives for the AM80 fisheries:

> *The Council's primary concern is to maintain a healthy marine ecosystem to ensure the long-term conservation and abundance of the groundfish and crab resources. To this end, the Council is committed to reducing bycatch, minimizing waste, and improving utilization of fish resources to the extent practicable in order to provide the maximum benefit to present generations of fishermen, associated fishing industry sectors, including the CDQ sector, communities, and the nation as a whole, while at the same time continuing to look for ways to further rationalize the fisheries. Focusing on reduction of bycatch and the attendant benefits of cooperatives and CDQ allocations in meeting bycatch reduction objectives are initial steps towards rationalization of the BSAI groundfish fisheries. Bycatch reduction measures for the Non-AFA trawl Catcher Processor sector is a priority focus in this step toward rationalization given this sector's historical difficulty in achieving acceptable bycatch levels. Allocations to this sector associated with cooperative management of catch and bycatch provide the opportunity for participants in this sector to mitigate the cost, to some degree, associated with bycatch reduction. In addition to reducing bycatch in one sector, assurance should be provided to minimize negative impacts on others.*

Concerns identified in this problem statement led the Council to develop the AM80 Program to mitigate these issues.

1.3 12-year Program Review Requirements

Section 303A(c)(1)(G) of the MSA requires a catch share program review every 7 years after the initial 5-year review. Councils are given the authority to conduct program reviews more frequently. This document serves as the program review that is required every 7 years.

[4] Operating costs not accounted for in available data are substantial, including other direct, variable vessel operating and capital maintenance and repair costs, and other expenses that enter cash flow, including overhead and financial (principal and interest) expenses. As such, the estimated residual values reported in these results represent an incomplete and imperfect index of actual gross profit of vessel operations within the active AM80 fleet. As such, results should be interpreted with caution, and should not be misinterpreted as estimates or indices of net operating profit.

1.4 Allocation Review Requirements

The National Oceanic and Atmospheric Administration (NOAA) Fisheries created the allocation review process to ensure fisheries allocations are periodically evaluated to remain relevant to current conditions and that fisheries are managed to achieve National Standard 1 (prevent overfishing and achieve optimum yield). The allocation review policy and complementary procedural directives provide guidance for the periodic assessment of fishery allocations. The Council has defined the primary trigger for determining when the AM80 Program allocation review should take place as a time-based trigger every seven years, corresponding with the Program Review.

1.5 Previous AM80 Program Reviews

As required by MSA, a 5-year review of the AM80 Program was completed in 2014 which is provided here as reference https://fisheries.noaa.gov/resource/document/five-year-review-effects-amendment-80). The program review provided invaluable information on the implementation of the program and whether the program was meeting the Council's goals. Of the Council's goals noted in the AM80 problem statement, the overarching goal is to maintain a healthy marine ecosystem to ensure the long-term conservation and abundance of the groundfish and crab resources. To accomplish this goal, the problem statement goes on to state that the Council is committed to reducing bycatch, minimizing waste, and improving utilization of fish resources to the extent practicable, in order to provide maximum benefit to present generations of fishermen, associated fishing industry sectors to include the CDQ sector, communities, and the nation as a whole, while at the same time, continuing to look for ways to further rationalize the fisheries.

1.6 Scope of AM80 Program Review

A workplan was presented to the Council and its advisory bodies at the October 2022 Council Meeting. After review by the Council's Scientific and Statistical Committee (SSC) noted that the set of metrics chosen to track performance on each element of the AM80 purpose and need to be informative, accessible, and appropriate. The SSC suggested deeper consideration of the following to the extent practicable:

- Capture ownership of the active vessels, with a specific focus on evolving ownership positions of CDQ groups (see Section 9.1),
- Describe the Alaska community engagement footprint of the fleet with respect to the location, nature, and magnitude of support service sector activities as informed, in part, by port call data (see Section 9.2),
- Estimate the share of community tax revenue attributable to the AM80 fleet landings/product transfers (see Section 9.3).

The Council approved the workplan and asked to include information on revenues by communities from the harvest of CDQ allocations of AM80 species.

Recognizing the opportunities for innovation afforded to rationalized fisheries in the management of Nation's fisheries, the MSA requires Councils to continue monitoring and reporting every 7-years, to assess whether the rationalized fishery is continuing to meet the intended goals of the program. Recognizing the AM80 Program has been operational and stable for nearly 15 years, this 7-year program review of the AM80 Program assess whether the program is continuing to meet the Council original goals and, if not, highlight those program areas that appear to diverge from those goals. As such, below is a summary of AM80 goals.

- **To maintain a healthy marine ecosystem to ensure the long-term conservation and abundance of the groundfish, halibut, and crab resources** – as shown in the 5-year review, the near elimination of the race for fish in the AM80 fisheries has led to an environment of gear innovation and changes in fishing behavior that works adaptively to respond to market and management needs for maintaining a healthy marine ecosystem. The elimination of the race for fish has provided greater flexibility on when and where to fish, which has allowed the AM80 sector to reduce its impact on the marine ecosystem through changes in fishing patterns that maximize harvest of allocations while reducing bycatch mortality of prohibited species, minimize marine mammal interaction, reduce impacts on habitat, and reduce or eliminate localized depletion of allocated species by dispersing the fisheries in space and time. In evaluating the AM80 Program to determine if the program is continuing the goal of maintaining a healthy marine ecosystem, this 7-year review provides a qualitative discussion of the sector's continuing gear and fishing innovations (Section 4).
- **To reduce bycatch (non-groundfish)** – since the 2014 AM80 Program review, the halibut PSC limit for the sector has been further reduced and management of halibut PSC limit for the sector was modified to an abundance-based limit at the starting in 2024. Included in the 7-year program review is a summary of halibut PSC in addition to summarizing changes in fishing behavior as the sector adapts to new halibut PSC management and limits. The 7-year program review also summarizes trends in crab PSC for the AM80 sector and changes in fishing behavior that reduce crab PSC (Section 7).
- **Minimize waste and improve utilization to the extent practical** – improving retention and utilization of the flatfish species was a primary driver of the AM80 Program. As noted in the 5-year program review, multispecies cooperatives lead to greater retention and utilization of the flatfish species. The 7-year review will include information on the sector's groundfish retention and utilization over time (Section 6 of the proposed table of contents).
- **To provide maximum benefit to present generations of fishermen, communities, CDQ groups, and the nation as a whole** – the 7-year program review will document incomes and employment for vessel owners and crew members, income and employment for community members in related industries, CDQ groups success in harvesting AM80 species, and tax revenues to local and state government (Section 8).
- **To minimize negative impacts on other fisheries** – the AM80 Program included provisions that limit, via sideboards, the activities of AM80 vessels in the Gulf of Alaska. The 7-year review includes a summary of AM80 vessel activities in the GOA relative to their sideboards (Section 5.5). The review will also include a summary of harvests by the AM80 sector in other groundfish fisheries which include arrowtooth flounder, Kamchatka flounder, Greenland turbot, and BS POP.

In addition to evaluating applicable AM80 Program goals, it is also reasonable to include an evaluation of applicable MSA program review requirements. The following additional issues are addressed in the 7-year program review.

- **Capacity Reductions:** Section 303A(c)(1)(B) addresses the issue of a LAPP's role in reducing excess capacity. The program review will provide an assessment of capacity measures. Capacity measures will include summaries of the number of vessels operating in AM80 fisheries. The review will examine the effects of consolidation on vessels and operations that remain in the AM80 fishery and on vessels.

- **Fishing Safety**: Section 303A(c)(1)(C) addresses the issue of a LAPP's role in improving fishing safety. While measures of fishing safety are not part of NMFS primary data collection process, it may be possible to assess changes in fishing safety using incident report data from the U.S. Coast Guard and NIOSH (Section 3 of the proposed table of contents).

Finally, during the June 2024 meeting, the Council, while reviewing the Crab Program Review, requested that all program reviews put key program elements in context with climate/environmental related instability highlighting both potential adaptive and maladaptive features of the program.

2 AM80 Allocation, Harvest, Revenue and Participation

In this section, the program review will summarize AM80 allocations, harvest, estimates of first wholesale gross revenue, and vessel participation in each of the AM80 allocated species.

2.1 Overview

AM80 to the BSAI Groundfish FMP, implemented in 2008, facilitated the formation of fishery cooperatives for trawl catcher processors (CPs) that are not eligible under the American Fisheries Act (AFA) to participate in directed pollock fisheries. AM80 originally allocated five BSAI non-pollock trawl groundfish species to permit holders that formed a cooperative within the non-AFA trawl CP sector. The AM80 sector is allocated a portion of the TAC for POP in the Aleutian Islands (AI), Atka mackerel, yellowfin sole, rock sole, and flathead sole in the BSAI, as well as an allowance of PSC quota for halibut and crab. Allocations were derived from the catch history of 28 original qualifying CPs from 1998 through 2004. Later, Amendment 85 allocated the AM80 sector 13.4 percent of BSAI Pacific cod. Other eligible permit holders initially participated in a limited access fishery for the balance of the catch allocated to the sector.

AM80 established criteria for harvesters in the sector to apply for and receive quota share, and for NMFS to initially allocate and transfer quota share. Vessels may choose to operate in a cooperative or in an open access fishery. Cooperative participants can consolidate fishing operations on a specific AM80 vessel or subset of AM80 vessels, thereby reducing monitoring, enforcement, and other operational costs, and permitting more efficient harvest. The ability to trade harvest privileges among cooperative members encourages efficient harvesting and discourages waste while being adaptive to changing seafood market conditions.

AM80 cooperatives receive an exclusive allowance of crab PSC and halibut PSC that may not be exceeded while harvesting groundfish in the BSAI. These halibut and crab PSC cooperative quotas are assigned to a cooperative in an amount proportionate to the groundfish quota shares held by its members; PSC quotas are not based on the amount of crab or halibut PSC historically removed by the cooperative members. The cooperative structure allows AM80 vessel operators to better manage PSC rates relative to operators who must race to harvest groundfish as quickly as possible before PSC causes a fishery closure or causes companies/vessels to deviate from their optimal harvest strategy. By reducing PSC through more efficient cooperative operations (e.g., gear modifications, “hot spot” avoidance, deck sorting, or the relative flexibility afforded in the time of fishing), AM80 vessel operators may also increase the harvest of valuable targeted groundfish species and improve revenues that would otherwise be forgone.

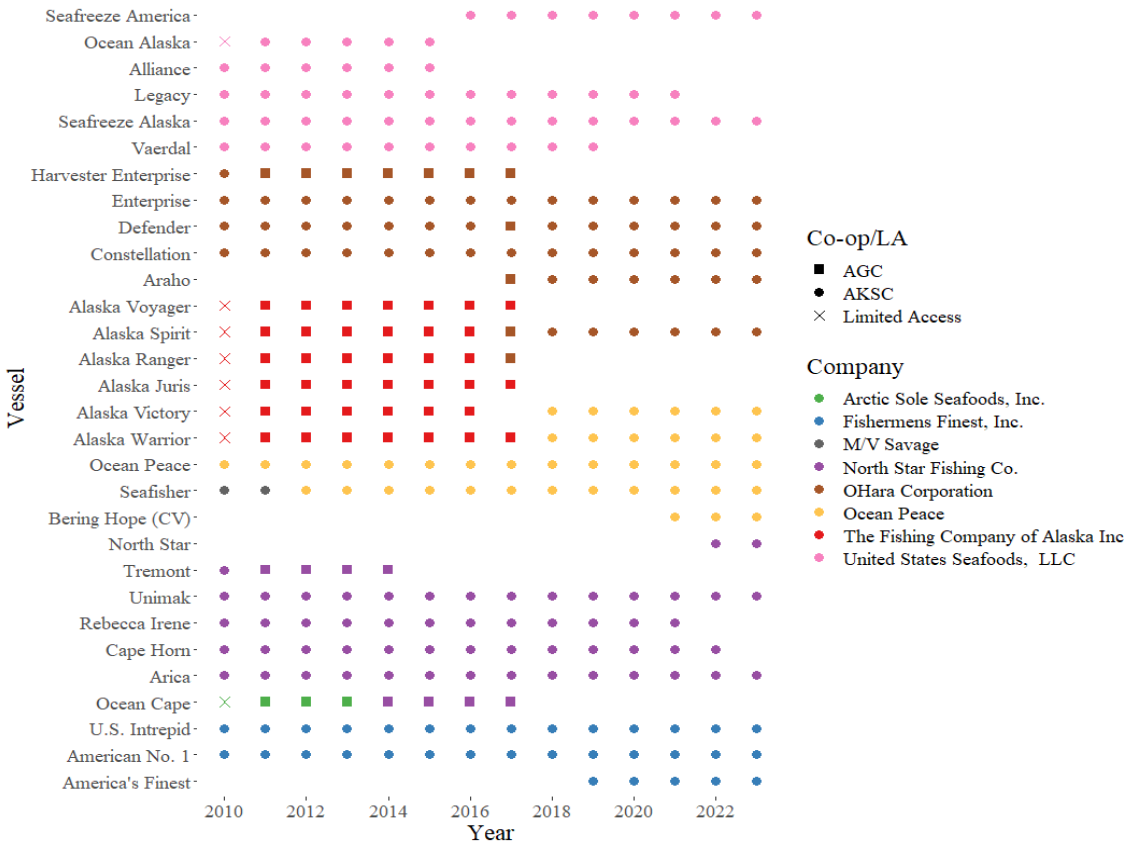
The AM80 sector initially included a set of vessels that formed a cooperative (Alaska Seafood Cooperative; AKSC[5]) and a set of vessels that fished in a competitive limited access fishery. Amendment 93 modified the requirements for a group of vessels to form a cooperative, removing unanticipated barriers, and prevented “persons” (companies) from participating in both a cooperative and the AM80 limited access fishery (Final Rule published at 76 FR 68354, November 4, 2011). This meant that a company could not fish its full amount of cooperative quota while also placing one company owned vessel in the AM80 limited access fishery to harvest fish that would not have been allocated to that company based on qualifying catch history. The rule eliminated barriers for vessels fishing AM80 limited access to form a cooperative and removed incentives for vessels that were in a cooperative to limit membership. The net effect was to increase cooperative participation and the associated benefits, such as more efficient targeting of catch, enhanced ability to avoid bycatch, and opportunities for improved product quality and value. Beginning in 2011, the AM80 sector prosecuted their allocations solely by vessels operating in a cooperative. From 2011 through 2017, AM80 consisted of two cooperatives that

[5] http://www.alaskaseafoodcooperative.org/

received annual allocations from NMFS, AKSC and Alaska Groundfish Cooperative. However, in 2017, the Fishing Company of Alaska terminated operations and sold its vessels leading to the sector consolidating into a single cooperative, the AKSC. Apart from the departure of the Fishing Company of Alaska, vessel ownership and cooperative membership has remained relatively stable through the 2015 to 2023 period.

Figure 2-1 identifies the 28 CPs that have been enrolled in the AM80 sector since 2010 by company and cooperative affiliation. Five of those 28 vessels were enrolled in a cooperative but have not actively fished in AM80 during the analyzed period. Nevertheless, they are shown in the figure because they appear on a cooperative roster; a vessel may be enrolled in the cooperative but not fishing due to the initial vessel-based-allocation structure of the AM80 program so that quota pounds can be fished on active platforms.[6] Inactive vessels might also be enrolled in a cooperative to meet the minimum requirements for a cooperative to be formed. Vessels that dropped out of the figure in more recent years (e.g., Alaska Voyager, Tremont, Ocean Alaska, Ocean Cape, Alliance, Vaerdal, Rebecca Irene, Cape Horn) have either been sold to another company or remain owned but are not active in the sector and their permit has been assigned to an active AM80 vessel. Some of those permits were reassigned to vessels that only appear in recent years (e.g., Seafreeze America, Araho, America's Finest, and North Star), which are newly built vessels. Starting in 2021, the catcher vessel Bering Hope owned by Ocean Peace was listed on the cooperative roster. The catcher vessel Bering Hope began harvesting AM80 species for delivery to AM80 CPs in 2021, 2022, and 2023.

Figure 2-1 AM80 Vessels by Company and Cooperative, 2010-2023.



(Source: Adapted from information published in annual AM80 Cooperative Reports and NMFS Permits & Licenses Issued)

[6] The vessel-based initial structure of AM80 also explains why the Alaska Ranger, which sank in 2008, appears in the figure; the permit and associated catch history linked to that vessel remained in the cooperative until the controlling company's assets were transferred in 2017.

2.2 Catch and Revenue

Officially, the final rule for AM80 published in the Federal Register on September 14, 2007 listed a total of 28 vessels that would be considered AM80 vessels. As noted in the previous AM80 program review (Northern Economics, 2014), of these 28 vessels, three have sunk and one of the named vessels has chosen to opt out of the AM80 but continues to participate in the GOA. Of the 24 vessels that actively participated in BSAI fisheries since implementation of AM80, the AM80 fleet has ranged from 21 to 18 active vessels. Table 2-1 and Table 2-2 summarizes AM80 activity across the AM80 species to include vessel count, allocations, harvest, percent of the allocations harvested, and the first wholesale revenue from 2006 through 2023.

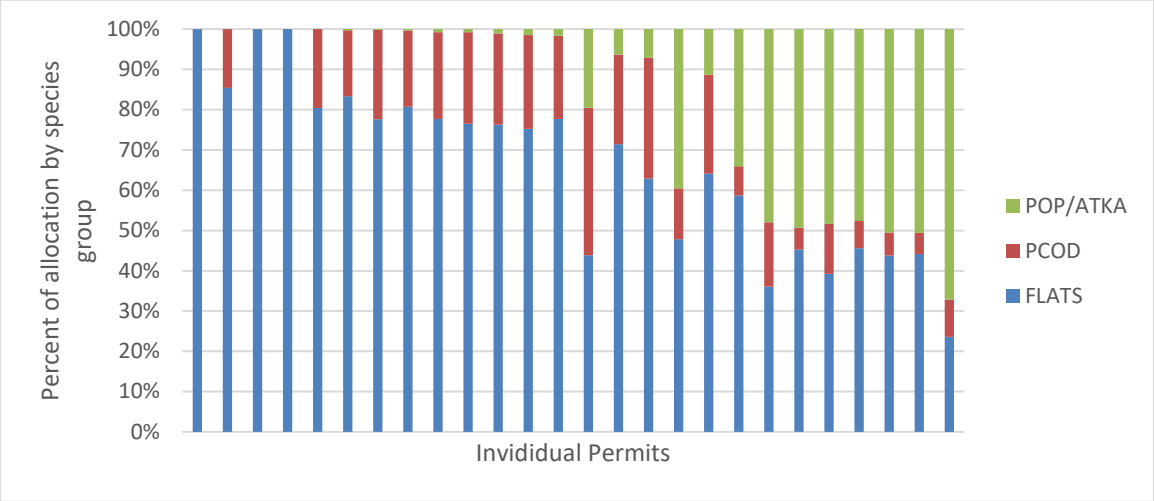
Officially, the final rule for AM80 published in the Federal Register on September 14, 2007 listed a total of 28 vessels that would be considered AM80 vessels. Of those originally listed vessels, 22 were active in the AM80 fisheries in 2006 and 2007 prior to implementation of program in 2008. Following implementation of the AM80 Program, the number of AM80 vessels listed in the AM80 regulations that were active in the AM80 fisheries declined during the early years of the program. As noted in Table 2-1, 20 active vessels were active in 2010 and 2011, 19 active vessels in 2012, and 18 vessels in 2013, 2014, and 2015. However, as noted in Table 2-2, the number of active AM80 vessels increased slightly ranging from 19 to 20 active vessels during 2016 through 2021 but declined to 18 vessels in 2022 and 17 vessels in 2023.

Nine AM80 vessels acted as motherships taking at-sea deliveries from the BSAI trawl CV limited access fishery (TLAS) in 2018, 2019, and 2020 (NPFMC 2021). NMFS limited the number of CPs that can receive deliveries of TLAS Pacific cod (BSAI FMP 120, 84 FR 70064, December 2019) and limited CVs that can deliver TLAS yellowfin sole to CPs acting as motherships (BSAI FMP Amendment 116, 83 FR 49994, October 2018). Only one AM80 CP is allowed to receive TLAS Pacific cod deliveries (as is one American Fisheries Act (AFA) CP). Eight CVs are able to deliver TLAS yellowfin sole to CPs acting as motherships. The majority of those eight CVs are owned by AM80 companies that also own the CP mothership to which they would likely deliver.

AM80 companies vary in the AM80 permits that they control, the number of CPs they own, whether or not they own the CVs with which they partner in the TLAS fisheries (vertical integration), and the portfolio of groundfish species and PSC limits available to them each year. The cooperative receives annual catch allocations and PSC limits for specific species. Subsequently the cooperative calculates individual vessel harvest shares and PSC limits and establishes a mechanism for quota transfers within the cooperative and with the other AM80 cooperative (if applicable). AKSC manages allocations by initially apportioning its annual NMFS-issued allocation to individual companies or vessels. Subsequently, AKSC companies can engage in transfers with other AKSC companies or vessels to maximize harvesting efficiencies. Because allocations are managed under hard caps, a portion of each of AKSC's allocations will be left unharvested to serve as a buffer prior to reaching allocation amounts (see Table 2-1 and Table 2-2).

The AM80 fleet sorts roughly into companies or groups of vessels that focus more on flatfish or roundfish based on the qualified catch history associated with their permits. Figure 2-2 shows the relative distribution of quota share for allocated AM80 species associated with each of the 26 permits issued for the 2024 fishing year. The allocation to 17 of the 26 permits is at least 50 percent flatfish, while seven of the permits are greater than or slightly less 50 percent AI POP and Atka mackerel. The QS units associated with a given permit do not reflect how a particular vessel will fish within the sector. Companies own multiple permits, and allocated pounds are transferable with the AM80 cooperative(s).

Figure 2-2 Proportion of species allocated on the AM80 quota share permits issued in 2024, by allocated species (FLATS = yellowfin sole, rock sole, and flathead sole; POP/ATKA = Pacific ocean perch and Atka mackerel; PCOD = Pacific cod)



Source: AKFIN file name: AM80_QS_figure(8-1-24)

AM80 vessels target an array of flatfish and roundfish species and retain secondary groundfish species for commercial use. Overall total catch of AM80 species in the BSAI has varied within a relatively narrow range over most of the management program's history, between 195 thousand and 254 thousand mt in aggregate, averaging 236 thousand mt per year over the period. In contrast with generally modest year-on-year variation in percentage terms (typically less than 3%), aggregate total catch of AM80 program species exhibited greater variation in recent years, with the time series low of 195 thousand mt occurring in 2021, increasing by 18 percent to 238 thousand mt in 2022, and declining by 11 percent in 2023 to 214 thousand mt. Collectively, AM80 target species comprise the largest share of total annual retained catch within the AM80 fleet, varying between 56 percent and 81 percent, and averaging 63 percent over the period.

Looking at the individual AM80 species, Table 2-1 and Table 2-2 summarizes vessel counts, allocation (mt), harvest (mt), percent of harvest, and first wholesale revenue (2023$) by AM80 species and Pacific cod from 2006 through 2023. As noted in Table 2-1 and Table 2-2 and Figure 2-3 through Figure 2-8, at times the harvest percentage for most AM80 species and Pacific cod was greater than 80 percent. However, in recent years, harvest of the allocation has declined for all AM80 species while Pacific cod increased. For rock sole, the highest harvest percentage during the review period was in 2012 at 90 percent and 2016 at 88 percent while the lowest harvest percentage was 27 percent in 2021. However, since 2021, harvest of rock sole allocation has increased to 41 percent. For flathead sole, the highest harvest percentage was in 2019 at 135 percent while the lowest harvest percentage was in 2023 at 25 percent. Harvest percentages of yellowfin sole allocation remained below 80 percent during the 2008 through 2014 period, above 80 percent from 2015 through 2020, and declined the last few years with a low of 58 percent in 2023. For Atka mackerel, harvest percentages were consistently above 90 percent for each year since the AM80 Program was implemented in 2008. AI POP harvest percentages were consistently above 90 percent before implementation of AM80 and since implementation. For Pacific cod, the ability to target the species is limited by the relatively small allocations of that species to AM80 QS holders (13.4% of the BSAI TAC) and the need to reserve Pacific cod quota to cover incidental catch of cod while targeting other AM80 species throughout the fishing year. As a result, most of the Pacific cod catch originates from test tows for other AM80 species that were not intended as Pacific cod target tows (NPFMC 2019). Nevertheless, Pacific cod is utilized at a high rate (Figure 2-3).

Table 2-1 and Table 2-2 reports the total gross revenues of all AM80 sector vessels during the 2006 through 2023 period. Typically, the highest grossing species for the sector in terms of cumulative gross value are yellowfin sole, Atka mackerel, and Pacific cod. Figure 2-9 shows gross first wholesale value (2023$) by individual species or species group from 2006 through 2023. Figure 2-10 shows price per mt for the AM80 species from 2006 through 2023. As noted in the figure, in general POP, Pacific cod, and Atka mackerel yield more value per mt than yellowfin sole, rock sole, and flathead sole during the review period and the difference in value between the two groups in general has expanded.

In addition to the six species for which BS and/or AI TAC is allocated to AM80 QS holders noted above AM80 vessels also catch and process many other groundfish species including arrowtooth flounder, Alaska plaice, sablefish, and pollock to name just a few. Table 2-3 and Table 2-4 provides total catch of groundfish, first wholesale revenue, and the number of participating AM80 vessels for BSAI non-AM80 species groundfish aggregated across the flatfish, rockfish, and other species from 2006 through 2023. Of the many BSAI non-AM80 species caught by the AM80 sector, pollock at 44 percent of the average annual non-AM80 species total gross first wholesale revenue, arrowtooth flounder at 15 percent, Alaska plaice at 10 percent, Kamchatka flounder at eight percent, Greenland turbot at eight percent, northern rockfish at six percent, and sablefish four percent are the most valuable to the sector.

Finally, Figure 2-11 provides the percent of total first wholesale revenue from both harvest of AM80 allocations and BSAI non-AFA groundfish from 2008 through 2023. Overall, 79 percent of the total first wholesale revenue during the 2008 through 2023 period was from harvest of AM80 allocations and 21 percent of the total first wholesale revenue was from harvest of BSAI non-AM80 groundfish. Since 2020, the percent of total first wholesale revenue from non-AM groundfish has increased, with the highest percent in 2023 at 27 percent.

Table 2-1 Count of AM80 vessels, allocations (mt) of AM80 species, harvest (mt) of AM80 species, percent of allocation harvested, and first wholesale revenue ($) by AM80 species from 2006 through 2014

Species		2006	2007	2008	2009^	2010^	2011	2012^	2013^	2014^
Pacific cod	Vessel count	22	22	22	21	20	20	19	18	18
	Allocation (mt)	N/A	N/A	20,429	24,125	24,028	27,277	33,232	37,212	33,631
	Harvest (mt)	30,612	34,961	15,437	21,323	24,076	24,739	27,991	32,261	27,714
	Percent harvested	N/A	N/A	76%	88%	100%	91%	84%	87%	82%
	First wholesale revenue ($)	52,959,949	69,722,013	31,221,187	26,445,473	34,254,001	41,224,699	41,348,061	36,884,665	38,697,308
Yellowfin sole	Vessel count	22	22	22	21	19	20	19	18	18
	Allocation (mt)	N/A	N/A	154,413	146,376	151,198	138,875	142,089	139,946	132,205
	Harvest (mt)	77,962	87,697	114,301	87,149	95,025	106,900	102,008	109,785	108,749
	Percent harvested	N/A	N/A	74%	60%	63%	77%	72%	78%	82%
	First wholesale revenue ($)	64,525,943	68,016,507	82,160,075	57,138,977	63,560,661	88,785,997	85,464,162	82,100,863	66,840,252
Rock sole	Vessel count	22	22	22	21	20	20	19	18	18
	Allocation (mt)	N/A	N/A	61,975	75,370	70,370	70,905	67,691	72,495	67,905
	Harvest (mt)	31,014	30,972	41,313	34,975	49,250	47,430	60,869	48,085	42,261
	Percent harvested	N/A	N/A	67%	46%	70%	67%	90%	66%	62%
	First wholesale revenue ($)	27,047,249	21,573,268	35,853,001	24,646,661	36,239,546	42,714,422	67,402,444	32,424,284	29,794,847
Flathead sole	Vessel count	22	22	22	21	20	20	19	18	18
	Allocation (mt)	N/A	N/A	40,150	49,080	48,580	32,102	25,482	15,270	16,879
	Harvest (mt)	14,839	14,101	18,533	13,326	14,522	7,419	5,787	11,746	11,226
	Percent harvested	N/A	N/A	46%	27%	30%	23%	23%	77%	67%
	First wholesale revenue ($)	15,034,282	12,413,928	17,057,148	9,498,669	11,260,898	6,649,765	5,051,611	11,909,224	9,311,009
AI POP	Vessel count	14	15	7	10	12	12	12	10	8
	Allocation (mt)	N/A	N/A	14,936	12,397	12,363	15,693	15,694	22,147	20,873
	Harvest (mt)	11,005	15,669	14,444	11,760	11,885	15,481	15,478	22,024	20,728
	Percent harvested	N/A	N/A	97%	95%	96%	99%	99%	99%	99%
	First wholesale revenue ($)	24,348,992	20,303,705	13,840,269	11,346,980	15,629,765	30,028,965	24,023,702	25,861,372	28,076,874
Atka mackerel	Vessel count	22	22	17	18	14	18	14	16	16
	Allocation (mt)	N/A	N/A	51,953	65,754	62,930	43,373	39,752	19,895	24,976
	Harvest (mt)	56,921	53,874	49,789	60,046	58,434	41,792	38,160	18,583	24,897
	Percent harvested	N/A	N/A	96%	91%	93%	96%	96%	93%	100%
	First wholesale revenue ($)	32,761,567	37,320,931	42,367,384	56,969,234	61,972,698	59,764,098	58,833,206	30,290,690	49,601,101

Source: AKFIN for vessel count, harvest, first wholesale revenue, and Harvest Specifications for allocations of AM80 species. Source file: A80_Species(8-2-24) and AM80 Allocation_Harvest_Value

AI POP was adjusted using file A80_Species(10-8-24)

^Denotes a reallocation of Pacific cod was included in the allocation total

Table 2-2 Count of AM80 vessels, allocations (mt) of AM80 species, harvest (mt) of AM80 species, percent of allocation harvested, and first wholesale revenue ($) by AM80 species from 2015 through 2023

Species		2015^	2016^	2017	2018	2019	2020	2021*	2022*^	2023*^
Pacific cod	Vessel count	18	19	19	19	20	19	19	18	17
	Allocation (mt)	32,216	31,397	28,647	24,391	21,622	18,619	14,979	18,681	17,654
	Harvest (mt)	27,171	28,818	23,203	22,589	20,170	16,800	13,300	16,731	16,014
	Percent harvested	84%	92%	81%	93%	93%	90%	89%	90%	91%
	First wholesale revenue ($)	42,355,349	42,311,505	40,343,072	45,254,850	35,791,200	26,662,146	23,830,658	40,478,422	33,236,143
Yellowfin sole	Vessel count	18	19	19	19	20	19	19	18	17
	Allocation (mt)	111,892	117,558	114,871	115,171	115,171	113,403	139,818	166,608	155,892
	Harvest (mt)	92,860	101,423	96,596	95,392	95,458	101,008	87,893	127,018	90,286
	Percent harvested	83%	86%	84%	83%	83%	89%	63%	76%	58%
	First wholesale revenue ($)	58,408,832	71,468,733	81,895,462	101,008,753	96,258,255	81,852,428	61,400,949	116,381,448	77,789,134
Rock sole	Vessel count	18	19	19	19	20	19	19	18	17
	Allocation (mt)	53,840	42,295	37,060	36,060	36,060	36,060	42,669	52,938	52,938
	Harvest (mt)	38,236	37,097	26,363	22,584	20,142	20,551	11,374	15,342	21,778
	Percent harvested	71%	88%	71%	63%	56%	57%	27%	29%	41%
	First wholesale revenue ($)	25,995,693	28,566,138	23,313,409	23,994,553	19,530,333	16,792,606	6,573,655	12,552,021	19,080,138
Flathead sole	Vessel count	18	19	19	19	20	19	19	18	17
	Allocation (mt)	16,655	9,003	8,949	8,949	9,949	14,414	19,325	28,702	28,702
	Harvest (mt)	7,483	7,643	6,802	8,093	13,451	6,352	7,955	12,193	7,264
	Percent harvested	45%	85%	76%	90%	135%	44%	41%	42%	25%
	First wholesale revenue ($)	5,304,677	6,454,960	6,696,508	9,610,903	13,725,784	4,457,281	4,984,376	11,178,729	6,085,240
AI POP	Vessel count	8	7	11	10	10	11	12	10	10
	Allocation (mt)	19,764	19,593	19,697	20,929	24,185	23,633	20,782	20,751	21,439
	Harvest (mt)	19,681	19,196	19,560	20,753	24,065	23,508	20,733	20,663	21,240
	Percent harvested	100%	98%	99%	99%	100%	99%	100%	100%	99%
	First wholesale revenue ($)	23,309,017	19,077,023	23,167,873	24,441,450	20,443,471	18,516,578	16,788,419	22,030,708	21,171,867
Atka mackerel	Vessel count	13	16	19	18	19	16	14	16	14
	Allocation (mt)	43,628	44,024	52,236	57,318	47,425	48,552	50,983	54,513	57,671
	Harvest (mt)	44,017	44,664	53,045	57,132	47,661	48,591	50,704	49,446	55,985
	Percent harvested	101%	101%	102%	100%	100%	100%	99%	91%	97%
	First wholesale revenue ($)	60,546,848	60,528,070	104,353,208	104,625,287	70,860,109	65,305,617	58,899,962	63,366,968	75,477,715

Source: AKFIN for vessel count, harvest, first wholesale revenue, and Harvest Specifications for allocations of AM80 species. Source file: A80_Species(8-2-24) and AM80 Allocation_Harvest_Value
AI POP was adjusted using file A80_Species(10-8-24)

* Denotes a cooperative catcher vessel that was harvesting AM80 allocations and delivering to an AM80 CP acting as a mothership

^Denotes a reallocation of Pacific cod was included in the allocation total

Table 2-3 Total catch (mt), first wholesale revenue (2023$), and vessel count of AM80 vessels harvest of non-AM80 groundfish in the BSAI from 2006 through 2014

	Species	2006	2007	2008	2009	2010	2011	2012	2013	2014
Flatfish[1]	Total catch (mt)	25,013	25,661	36,597	42,015	51,515	47,745	44,895	43,532	40,814
	First wholesale revenue ($)	$4,391,497	$4,101,920	$16,785,268	$24,410,896	$28,458,969	$36,120,675	$45,126,916	$25,178,597	$29,610,853
	Vessel count	22	22	22	21	20	20	19	18	18
Pollock	Total catch (mt)	23,596	21,062	20,325	20,238	17,332	19,364	17,958	32,568	41,907
	First wholesale revenue ($)	$11,026,425	$11,621,378	$25,004,128	$22,147,360	$21,151,314	$21,420,809	$19,875,017	$29,762,234	$33,149,254
	Vessel count	22	22	22	21	20	20	19	18	18
Rockfish[2]	Total catch (mt)	3,766	4,121	3,335	3,082	4,360	2,967	2,839	2,676	2,665
	First wholesale revenue ($)	$1,452,644	$1,425,669	$1,670,049	$1,976,562	$4,049,089	$5,036,745	$3,809,864	$2,586,195	$3,651,299
	Vessel count	20	21	19	21	19	20	19	18	18
Sablefish	Total catch (mt)	100	90	231	155	99	85	228	182	57
	First wholesale revenue ($)	$525,850	$545,615	$1,590,787	$1,136,998	$895,434	$845,418	$1,773,692	$1,354,476	$559,211
	Vessel count	15	18	21	19	18	18	18	15	15
Other[3]	Total catch (mt)	7,499	9,985	7,407	7,966	6,929	5,821	5,987	6,444	5,587
	First wholesale revenue ($)	$421,980	$682,771	$443,105	$246,854	$458,632	$279,013	$329,540	$291,359	$401,963
	Vessel count	22	22	22	21	20	20	20	18	18
Total	Total catch (mt)	59,974	60,919	67,896	73,456	80,235	75,982	71,908	85,403	91,030
	First wholesale revenue ($)	$17,818,396	$18,377,353	$45,493,337	$49,918,670	$55,013,439	$63,702,660	$70,915,029	$59,172,861	$67,372,580
	Vessel count	22	22	22	21	20	20	19	18	18

Source: AKFIN; source file is A80_All_Species(8-21-24)

[1] Flafish include the following: Bering flounder, Alaska plaice, arrow tooth flounder, general flounder, starry flounder, Kamchatka flounder, butter sole, Dover sole, english sole, flathead sole, rex sole, rock sole, sand sole, yellow fin sole, and Greenland turbot

[2] Rockfish include the following: Pacific ocean perch, black rockfish, dusky rockfish, harlequin rockfish, northern rockfish, other rockfish, redbanded rockfish, rougheye rockfish, shortraker rockfish, thornyhead rockfish, and yellow eye rockfish

[3] Other species include the following: octopus, sharks, sculpins, skates, and squid

Table 2-4 Total catch (mt), first wholesale revenue (2023$), and vessel count of AM80 vessels harvest of non-AM80 groundfish in the BSAI from 2015 through 2023

Species		2015	2016	2017	2018	2019	2020	2021	2022	2023
Flatfish[1]	Total catch (mt)	27,996	27,817	26,262	33,100	30,260	35,605	30,583	27,763	28,169
	First wholesale revenue ($)	$20,723,184	$23,928,203	$33,370,931	$28,642,976	$34,020,409	$33,873,238	$26,333,949	$31,395,435	$34,003,329
	Vessel count	18	19	19	19	20	19	19	18	17
Pollock	Total catch (mt)	32,603	36,034	27,500	33,039	33,798	37,408	31,947	38,733	42,375
	First wholesale revenue ($)	$26,151,193	$31,223,265	$25,653,986	$27,293,712	$31,556,808	$31,812,720	$23,716,077	$39,390,672	$37,046,781
	Vessel count	18	19	19	19	20	19	19	18	17
Rockfish[2]	Total catch (mt)	6,877	4,449	4,726	5,831	9,441	8,201	6,973	8,763	11,468
	First wholesale revenue ($)	$6,144,247	$3,556,305	$4,330,455	$4,517,672	$7,385,671	$3,813,931	$3,567,327	$6,290,788	$7,486,774
	Vessel count	18	17	19	19	19	17	19	16	15
Sablefish	Total catch (mt)	31	254	641	764	1,488	1,637	1,976	3,162	3,550
	First wholesale revenue ($)	$285,992	$1,970,477	$3,038,703	$2,592,821	$1,722,767	$1,793,330	$2,872,865	$6,698,175	$9,750,060
	Vessel count	18	18	18	19	20	18	19	15	16
Other[3]	Total catch (mt)	4,062	4,447	5,155	6,110	7,725	5,920	4,754	4,398	3,685
	First wholesale revenue ($)	$338,408	$461,651	$473,415	$1,071,355	$1,290,445	$697,368	$807,961	$482,665	$725,966
	Vessel count	18	19	19	19	20	19	20	19	18
Total	Total catch (mt)	71,569	73,001	64,284	78,844	82,712	88,770	76,234	82,820	89,247
	First wholesale revenue ($)	$53,643,023	$61,139,901	$66,867,489	$64,118,536	$75,976,100	$71,990,587	$57,298,178	$84,257,734	$89,012,911
	Vessel count	18	19	19	19	20	19	19	18	17

Source: AKFIN; source file is A80_All_Species(8-21-24)

[1] Flafish include the following: Bering flounder, Alaska plaice, arrow tooth flounder, general flounder, starry flounder, Kamchatka flounder, butter sole, Dover sole, english sole, flathead sole, rex sole, rock sole, sand sole, yellow fin sole, and Greenland turbo

[2] Rockfish include the following: Pacific ocean perch, black rockfish, dusky rockfish, harlequin rockfish, northern rockfish, other rockfish, redbanded rockfish, rougheye rockfish, shortraker rockfish, thornyhead rockfish, and yellow eye rockfish

[3] Other species include the following: octopus, sharks, sculpins, skates, and squid

Figure 2-3 Annual harvest percentage of AM80 Pacific cod allocation from 2008 through 2023

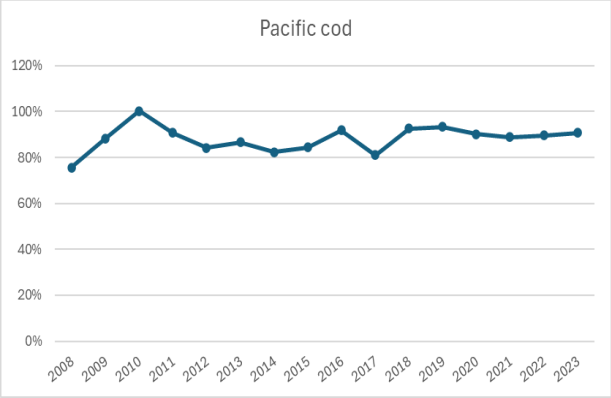


Figure 2-4 Annual harvest percentage of AM80 yellowfin sole allocation from 2008 through 2023

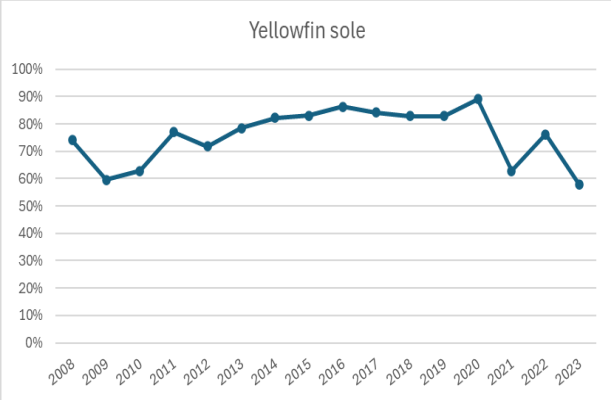


Figure 2-5 Annual harvest percentage of AM80 AI POP allocation from 2008 through 2023

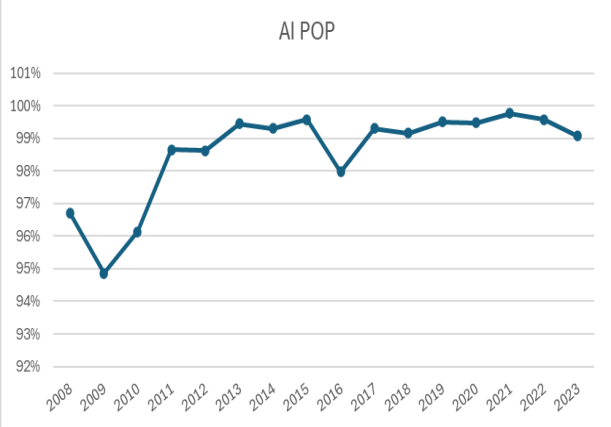


Figure 2-6 Annual harvest percentage of AM80 rock sole allocation from 2015 through 2023

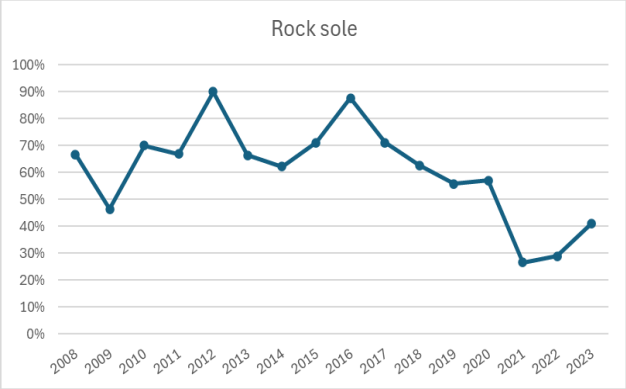


Figure 2-7 Annual harvest percentage of AM80 flathead sole allocation from 2008 through 2023

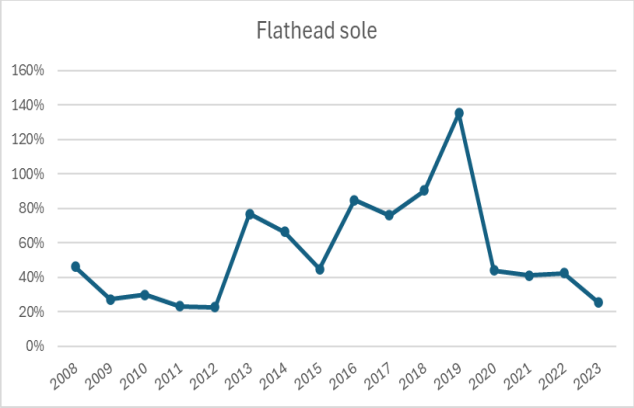


Figure 2-8 Annual harvest percentage of AM80 Atka mackerel allocation from 2008 through 2023

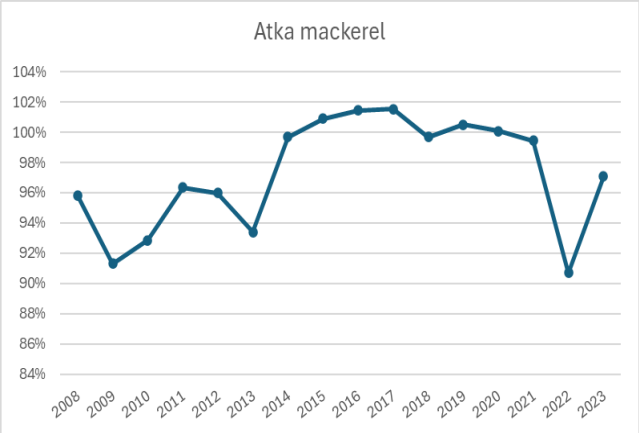
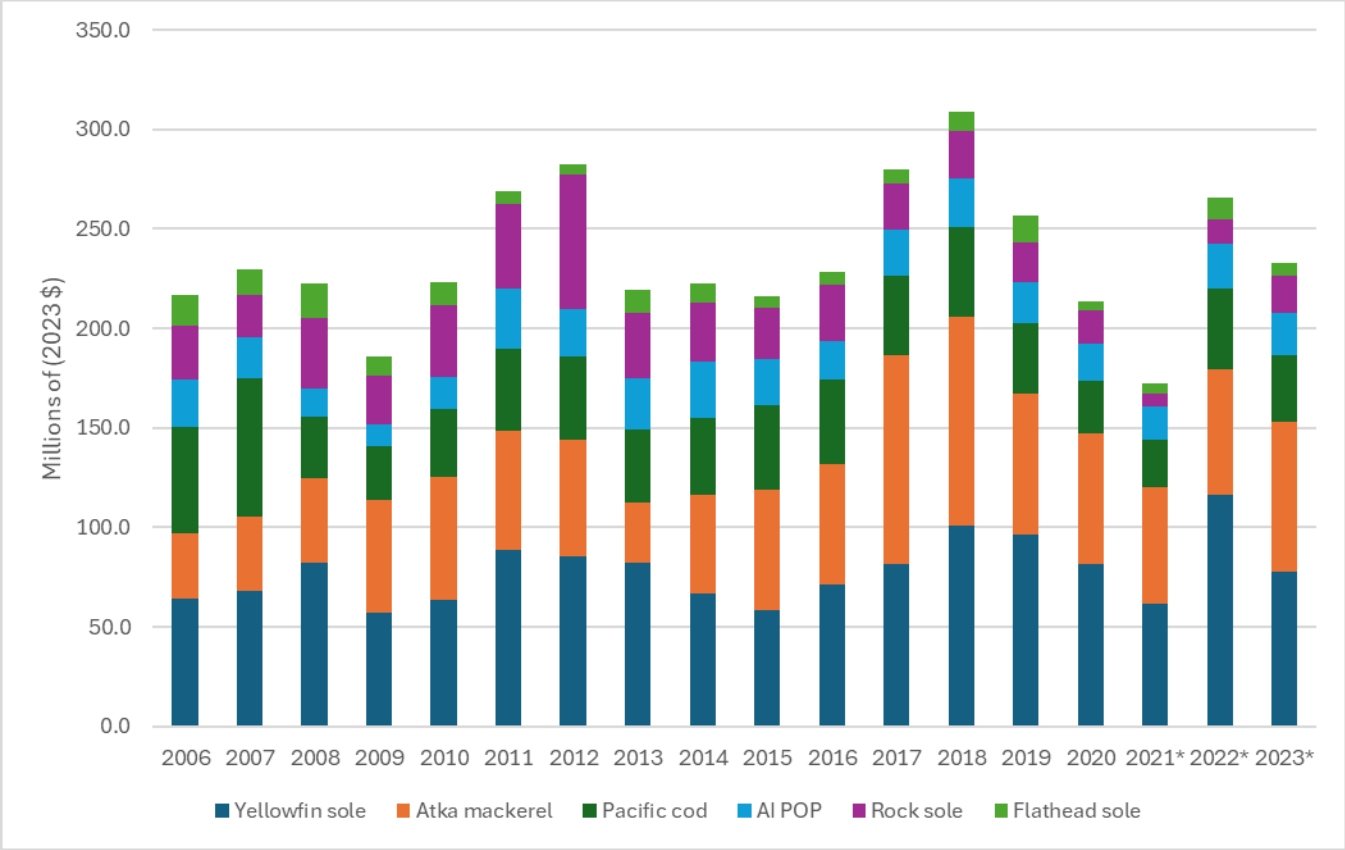
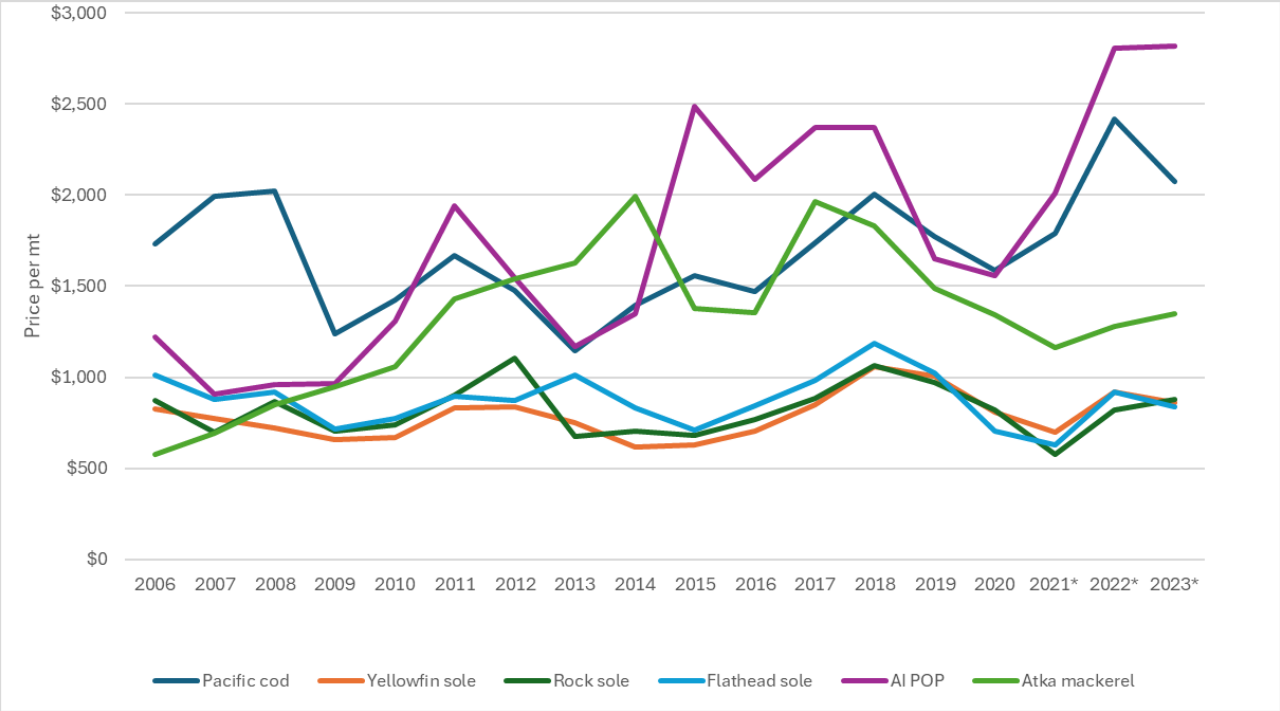


Figure 2-9 Annual gross first wholesale revenue (2023$) for AM80 species, 2006 through 2023



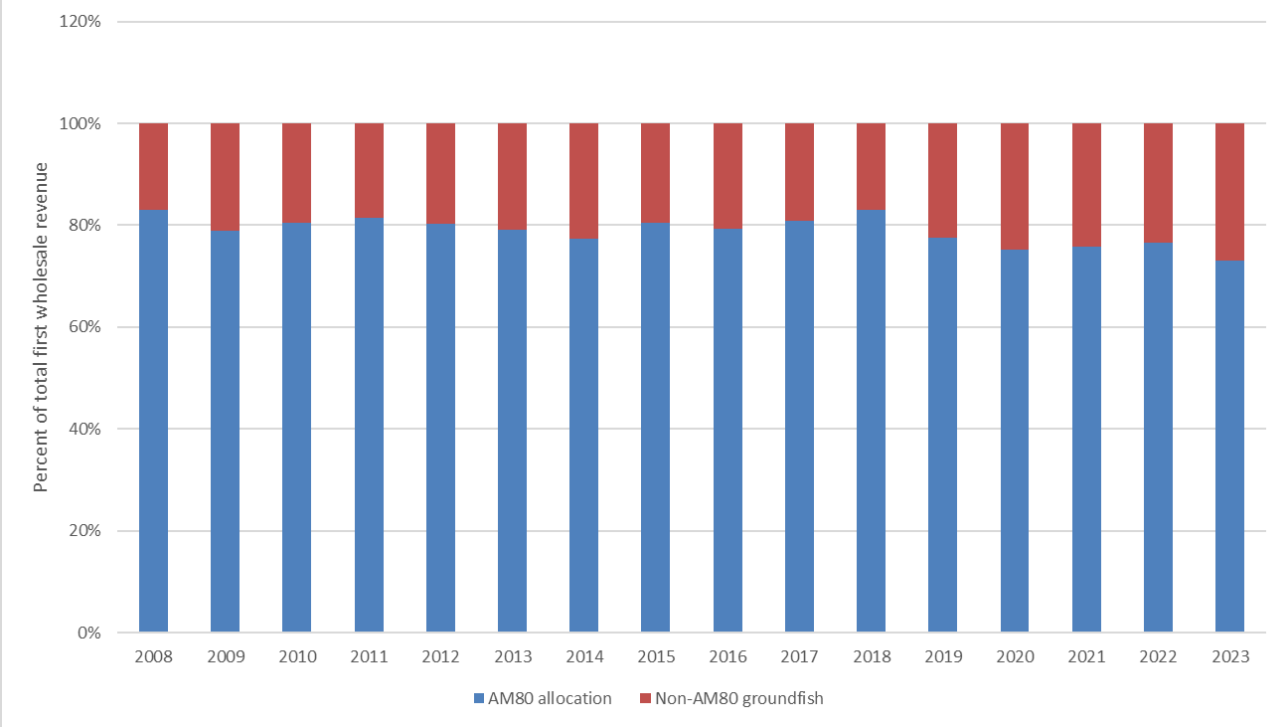
Source: AKFIN; Source file: AM80_Species(8-2-24) & Am80 Allocation_Harvest_Value
AI POP values were adjusted using AKFIN file A80_Species(10-8-24)
* Denotes a AM80 cooperative CV harvesting AM80 allocations and delivering to an AM80 CP acting as a mothership

Figure 2-10 Annual price per mt (2023$) for AM80 species, 2006 through 2023



Source: AKFIN; Source file: AM80_Species(8-2-24); AI POP prices were adjusted using AKFIN file A80_Species(10-8-24)

Figure 2-11 Percent of total first wholesale revenue from AM80 allocation and BSAI non-AM groundfish from 2008 through 2023



Source: AKFIN; Source file:A80_All_Species(8-21-24)
* Denotes a cooperative catcher vessel that is mothershiping AM80 allocations.

2.3 Economic Data Report (EDR) Review

The following section provides a summary of key metrics of fleet structure, operations, economic performance, and employment and labor earnings based on data collected over the 2008-2023 period by the AM80 Economic Data Report (EDR) program.[7] The EDR information provided below is primarily at the aggregate fleet level (sum of all AM80 vessels), unless stated otherwise. All monetary values under this section are inflation-adjusted to 2023 $USD using the GDP chain-type price index (consistent with the 2024 Groundfish Economic SAFE report). For additional metrics, greater statistical detail (including vessel-level median values), and other additional information and analysis on the AM80 fleet, please see Chapter 9 of the 2024 Groundfish Economic SAFE (forthcoming).

2.3.1 AM80 Fleet Structure and Physical Capacity

As of implementation of the AM80 program in 2008, 22 qualifying CP vessels actively participated in program fisheries. Since 2008, 10 vessels that participated in the program that year exited the fishery without subsequently returning; as of 2023, 13 vessels in the original fleet remain as active participants, and 4 replacement vessels have entered the fleet. In the last decade, the fleet has gone from 18 active vessels in 2014 to 17 in 2023. Over that period, with the entry of newly produced or converted vessels and capital investments in the remaining original fleet, the physical capacity of the AM80 fleet has increased substantially, as measured by physical vessel metrics including gross and net tonnage, vessel length, beam, and shaft horsepower (Figure 2-12). Aggregate gross tonnage displayed the greatest increase of physical metrics over the last decade; despite one fewer vessels in the active fleet from 2014 to 2023, aggregate gross tonnage increased by 59 percent, to 24.6 thousand tons, and median gross tonnage of 1,215 increased by 21 percent. The increase in physical size attributes of the fleet over the period was accompanied by modest increases in aggregate processing line and freezing hourly throughput capacity (up one percent and seven percent, respectively), while aggregate on-board cold storage capacity increased by one-third, to 9,800 kilotons.

2.3.2 Fleet Activity

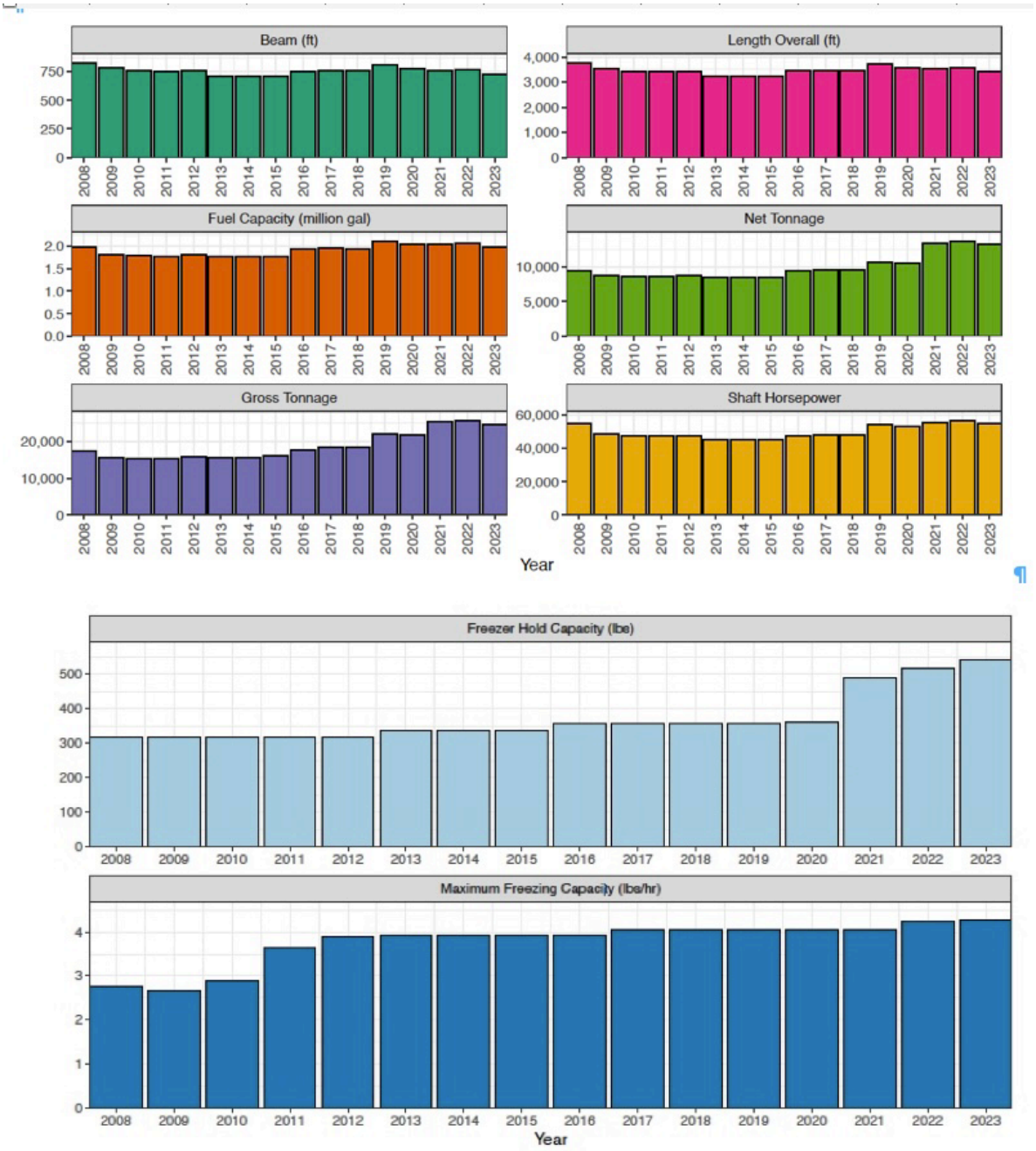
Metrics of operational activity have remained relatively constant over the life of the AM80 program (Figure 2-12). At the fleet level prior to 2023, total annual vessel-days of processing activity varied between 3,550 and 4,180 in the BSAI, and between 280 and 510 days in the GOA (noting that vessel-days fishing tracks closely and slightly lower than days processing). With the reduction to 17 active vessels during 2023, total processing days in the BSAI fell to 3,340, its lowest level to-date. However, on the basis of median days per vessel, at 219 days processing in the BSAI, 2023 was the highest value since 2019 and moderately above the time series average of 204 days at vessel-level median.

While eight vessels were active in the GOA during 2023, increasing from six in 2021 and seven in 2022, aggregate days processing declined by nine percent from 2022, to 299 days, and declined 32 percent at median, to 32 days. Over the longer term, a notable trend is the greater contraction of segment of the AM80 fleet active in GOA fisheries relative to the fleet as a whole. As noted above, between 2009 and 2022, the fleet as a whole varied between 18 and 21 vessels, without a consistent directional trend. In contrast, participation in GOA fisheries declined from 17 vessels in 2009 to 6 in 2022; prior to 2018, the GOA segment made up between 50 percent and 80 percent of the active A80 fleet as a whole in those years but has been a minority of the fleet from 2020 to 2023, and only one-third of the fleet during 2021. Across the active fleet during respective years, 2023 saw the lowest total fleet days transiting and offloading to-date, at 1,271 days; with vessel-level median of 68 days in 2023 equivalent to the average annual median over the time-series. Days inactive (in port and/or at-sea) during 2023 increased to 1,339 in aggregate and 79 at median, both the highest values since 2017. The comparative trends in aggregate

[7] See D5 Economic Data Reports Discussion Paper (NPFMC, April, 2019) for an extensive review of the EDR program.

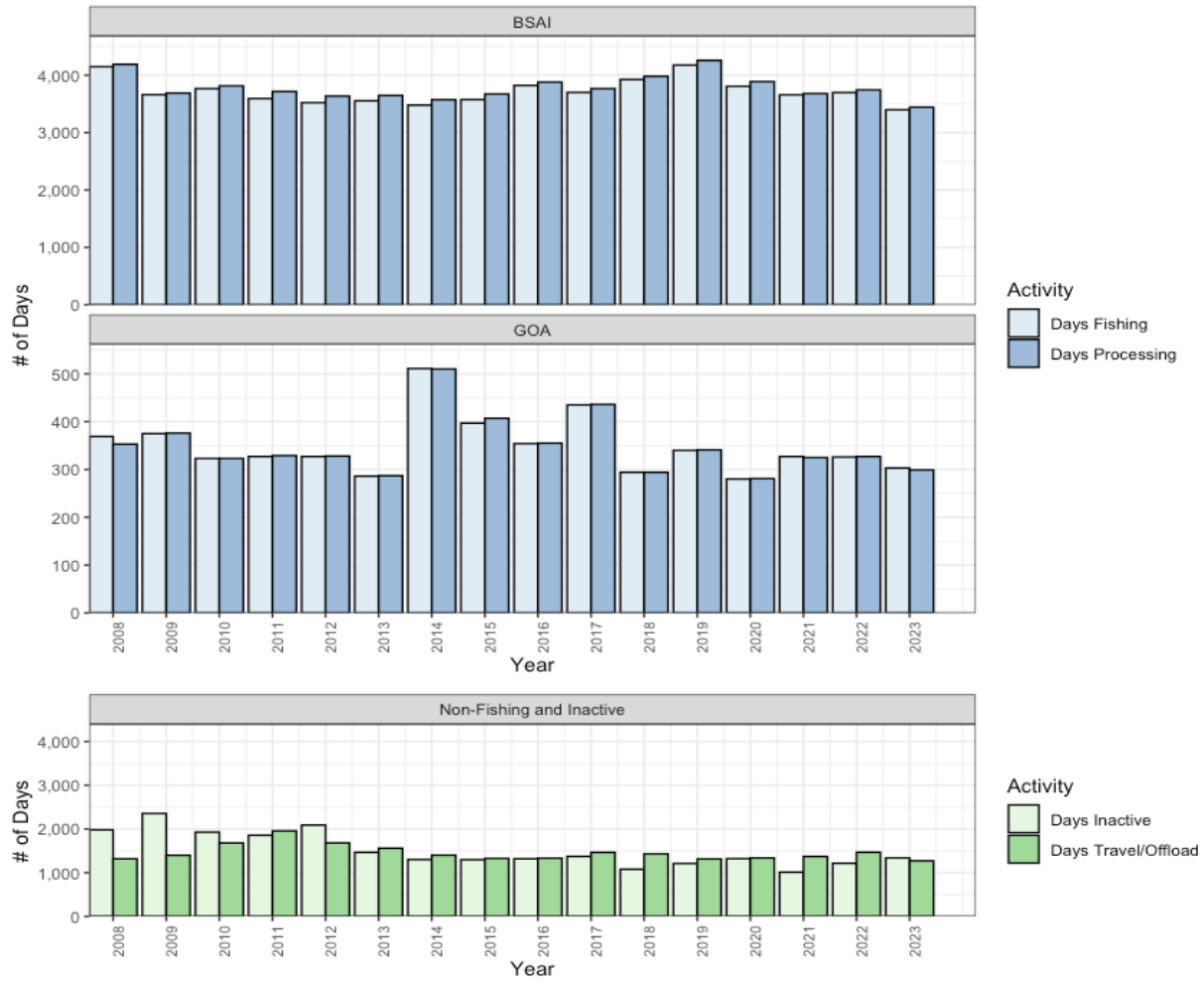
and median values, and in active operations and days in port suggest that contraction the 2023 contraction to the smallest active fleet in the last 16 years was the principal factor in the 2023 decline in aggregate operating days, while the increased physical capacity of the active fleet, due the recent entry of larger vessels, contributed to an increase in median active days processing and a decline in median days steaming and offloading during 2023.

Figure 2-12 AM80 Fleet - Aggregate Fleet Physical Capacity (statistics represent the summed value over vessel-level physical measurements reported for vessels active each year).



Note: See the 2024 Groundfish Economic SAFE (forthcoming, Table 9.1-9.3 for tabular results.
Source: AM80 Economic Data Reports; source data and compilation are provided by the Alaska Fisheries Information Network (AKFIN).

Figure 2-13 AM80 Fleet activity - Days Fishing and Processing by Fishery and Days in Transit/Offloading and Inactive in Port



Note: See the 2024 Groundfish Economic SAFE (forthcoming), Table 9.5 for tabular results.
Source: AM80 Economic Data Reports and NMFS Alaska Region At-Sea Production Reporting system data; source data and compilation are provided by the Alaska Fisheries Information Network (AKFIN).

2.3.3 AM80 Sector Economic Performance: Annual Revenues, Operating and Overhead Costs, and Net Income Residuals

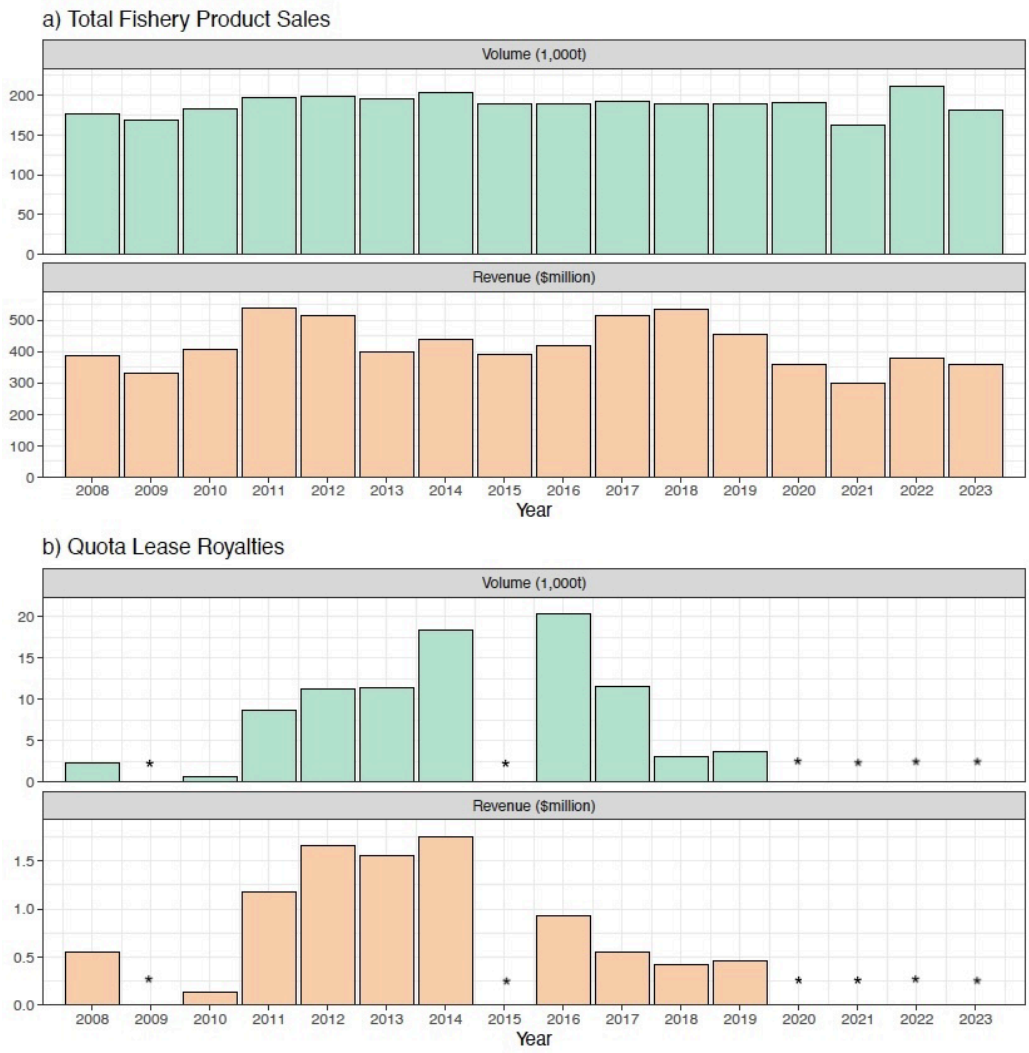
The following section provides a brief summary of the economic performance of the AM80 sector over the 16-year period since implementation of AM80 in 2008, in terms of sector/fleet-level statistics for annual gross revenues, annual operating expenses, and estimated net income residuals. The analysis is limited to reporting summarized results calculated from available revenue and cost data and does not currently encompass a broader analytical assessment of trends in reported outcomes and causal factors driving economic and financial performance of the sector.

Revenues

Figure 2-14 summarizes annual revenues for the AM80 sector (including all AM80 LLP holders and QS entities), by revenue source. Fishery product sales represent the overwhelming source of revenue for the sector; quota lease royalty revenue is received by a varying number of QS holders, always a minority and fewer than five from 2020 to 2023. As a reflection of the limited extent of QS lease activity within the sector, QS royalty revenue has varied between zero percent and 0.4 percent of aggregate annual revenue

across the sector in any given year (and, being offset by QS lease costs, royalty revenue solely represents an economic transfer within the sector; see discussion of QS lease costs below). Revenue from other sources has been negligible over the time period: income from non-production vessel services (e.g., tendering, charters, cargo transport) has been reported in only three years and by a single entity, and only one LLP sale has been reported in EDR data since 2008 (results are confidential for both revenue categories). Aggregate fishery product sales, which ranged from $329 million to $537 million between 2008 and 2017, reached a recent peak of $533 million in 2018, followed by a steady decline over the next three years, reaching the lowest level in the 16-year period in 2021, declining 16 percent from the previous year to $299 million in aggregate ($17.6 million at the median). Sales revenue recovered somewhat in 2022, to $380 million, but declined to $360 million in 2023; the period from 2020 to 2023 represents four of the five lowest years for aggregate sales revenue in the sector.

Figure 2-14 AM80 Sector Annual Revenue from All Sources, including Volume and Value of Total Fishery Product Sales, and Quota Royalties. All monetary values are adjusted to 2023 dollars. "*" indicates results are confidential.



Note: See the 2024 Groundfish Economic SAFE (forthcoming), Table 9.8 for tabular results depicted in the above figure, in addition to results reported at the median vessel level. Note that "*" in the figure indicates values are suppressed for confidentiality.
Source: AM80 Economic Data Reports; source data and compilation are provided by the Alaska Fisheries Information Network (AKFIN).

Operating expenses

Figure 2-15 summarizes sector-level aggregate annual expenses incurred by AM80 CPs from 2008 to 2023 as operating costs for all fishing and processing activity, by general category of expense item, and pro-rata indices of costs relative to 1) total vessel gross revenue, and 2) cost by category as a proportion of total vessel expenses, and Figure 2-16 reports annual aggregate operating and overhead expenses by individual expense item (see figure notes for references to tabular results, including aggregate and median values, reported in the 2024 Groundfish Economic SAFE). Annual expenses are grouped into the following categories:

- *labor costs* (including crew share, wages, and payroll taxes for deck crews, processing employees, and for officers and all other on-board personnel, and all benefits, travel, recruitment, and other labor-related expenses);
- *vessel costs* (repair and maintenance, fishing gear, equipment leases, and associated freight costs);
- *materials* (fuel, lubrication and fluids, food and provisions, production and packaging materials, and raw fish purchases);
- *fees* (fishery landing taxes, cooperative costs (which includes cost-recovery fees assessed by NMFS on A80 cooperatives), observer fees, and QS and other permit lease costs); and
- *overhead* (general administrative costs, insurance, and product and other freight services).

It should be noted that itemized annual expense data captured in the AM80 Economic Data Report constitute the majority of operating costs incurred, but are not inclusive of all annual expenses, notably excluding financial expenses (e.g., interest and principal payments on outstanding debt and, asset depreciation, which accrue to annual overhead expenses, do not tend to vary directly relative to annual operation and production cost, and primarily reflect annualized payments on prior years' capitalized purchases). As such, statistics reporting aggregate annual operating expenses herein represent a close lower-bound approximation of annual operating costs of production within the fleet, and a less-inclusive lower bound index of total (variable and fixed/overhead) annual expenses.

Over the 2008 to 2023 period, AM80 sector aggregate operating and overhead expenses averaged $334 million per year, varying from a high of $386 million in 2012 (with 20 active vessels), and reaching a low of $276 million in 2021 (with 18 active vessels). Prior to 2021, annual expenses as a proportion of gross revenue varied between 70 percent and 87 percent; beginning in 2018, the cost margin increased steadily, from 71 percent in 2018 to a peak of 92 percent in 2021, substantially exceeding the average of 78 percent over the previous 13 years. Over the last 16 years, combined labor costs (direct wages and bonuses, payroll taxes, benefits, and travel and recruitment expenses) consistently represent the greatest proportion of annual expenses, followed by overhead, materials costs, vessel costs, and taxes and fees representing the smallest proportion. Labor expenses are broken down into four categories:

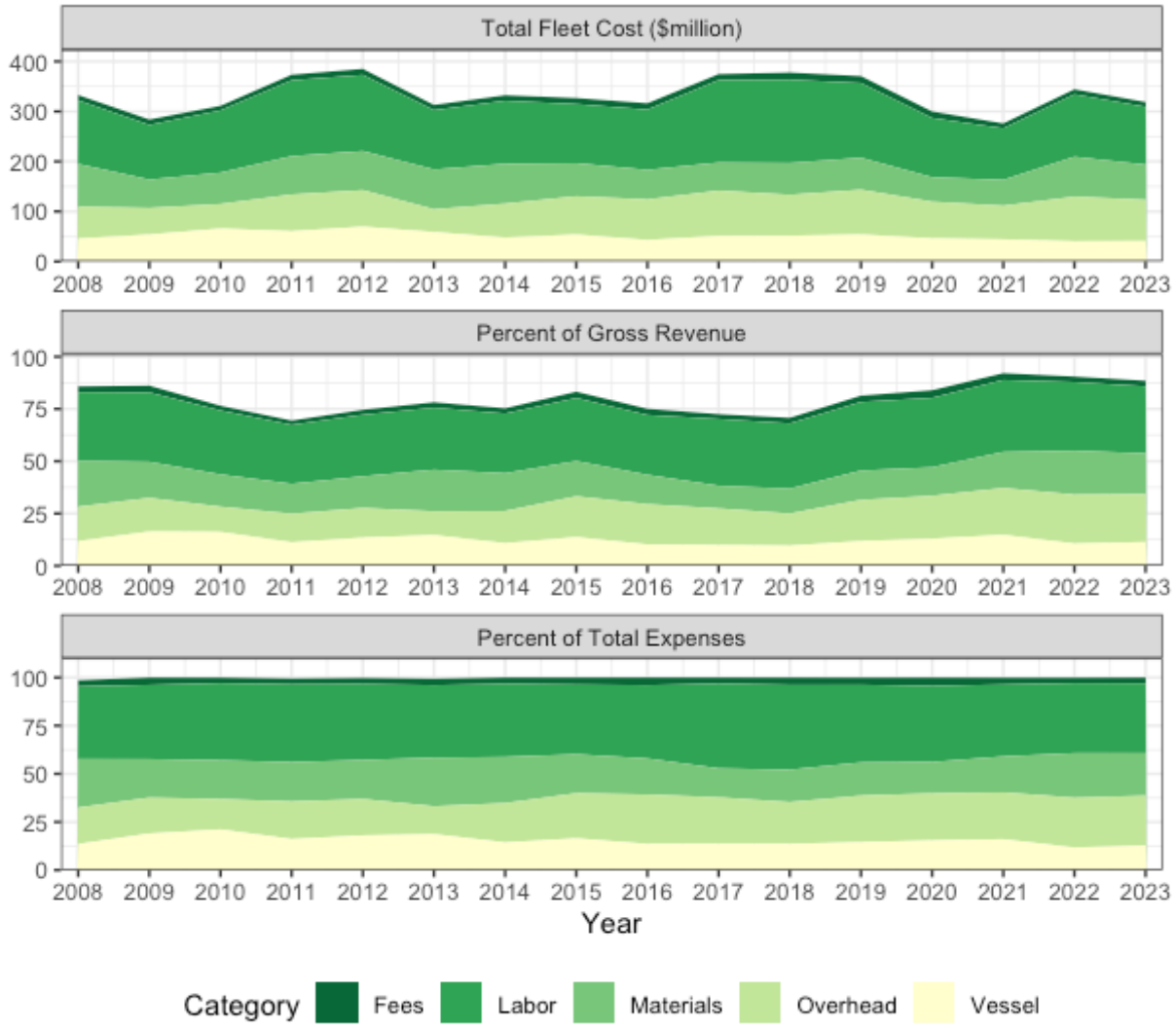
- fishing crew labor,
- processing employee labor,
- other on-board employee labor, and
- other employment-related costs (including employee recruitment, travel, and benefits expenses).

Of these categories, processing employees over the 16-year period represent the greatest proportion of total labor expenses, averaging 42 percent of total labor costs and 17 percent of total annual expenses. However, labor costs associated with processing employees reached a peak of $73 million in 2017 and declined each subsequent year to a low of $34.6 million in 2021 before increasing to $49 million in 2022 and $45 million in 2023. Processing labor cost is, on average, the largest single line-item cost, followed by fuel cost, labor cost for vessel officers, repair and maintenance cost, and product freight and storage. Aggregate fuel expenses averaged $50 million per year since the implementation of the AM80 Program, reaching a low of $32 million in 2020, nearly doubling by 2022 to $62 million. Aggregate freight and

storage expenses, averaging 32 percent of total costs over all years, increased 69 percent between 2021 and 2022, to $57 million (16 percent of total costs for that year).

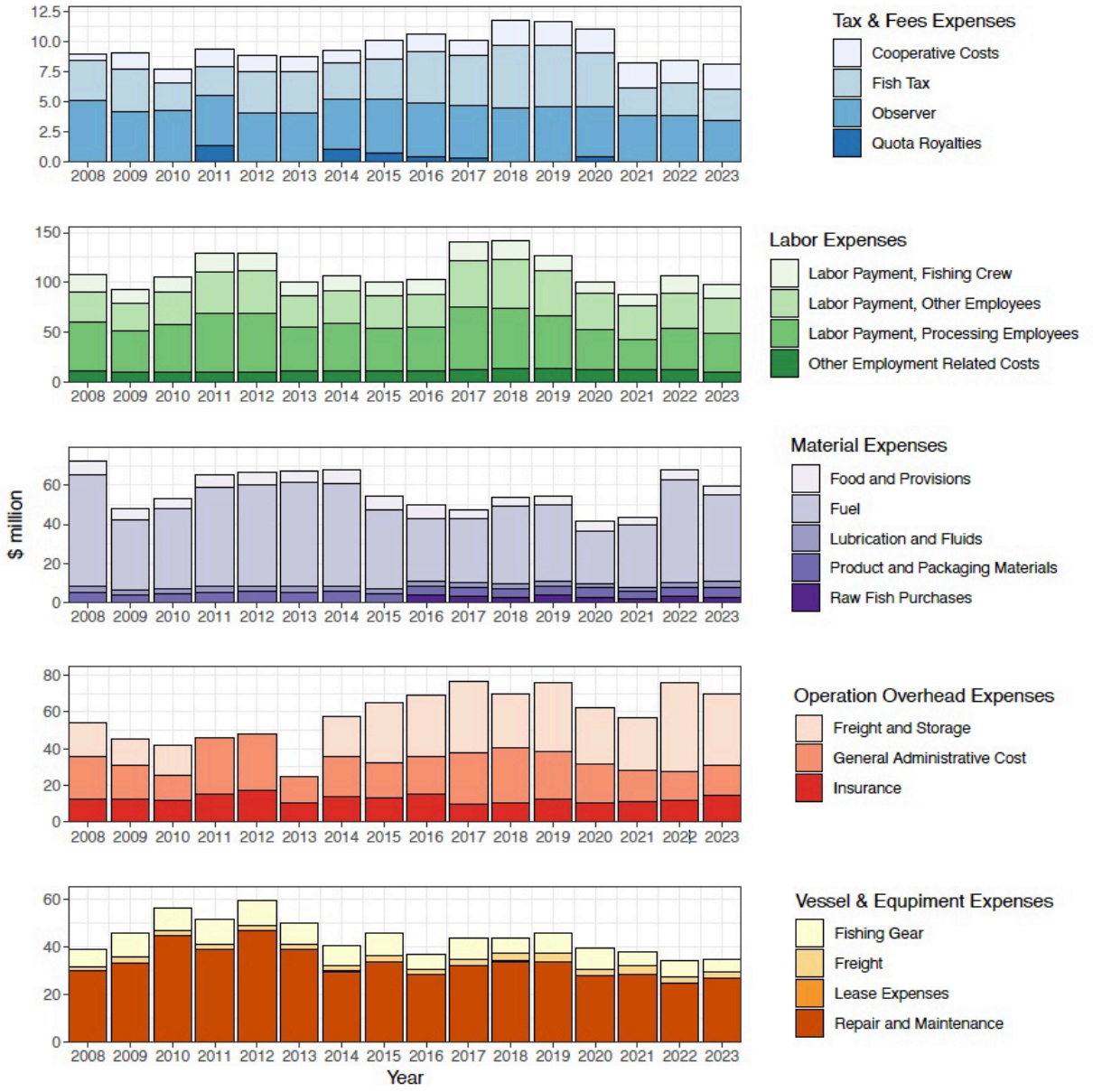
For additional information and detailed breakdowns on other cost categories, aggregate cost by vessel-day or 1,000 tons, cost per vessel, capital investments, employment, or aggregate information broken down by median vessel, please see section 9.4 in the 2024 Groundfish Economic SAFE.

Figure 2-15 AM80 Sector Aggregate Operating and Overhead Costs, By Cost Category and Year, and Costs by Category Proportional to Gross Revenue and Total Costs. All monetary values are adjusted to 2023 dollars



Note: See the 2024 Groundfish Economic SAFE (forthcoming), Table 9.9 for tabular results depicted in the above figure, and Table 9.10 for tabular results reported at the median vessel level.
Source: AM80 Economic Data Reports; source data and compilation are provided by the Alaska Fisheries Information Network (AKFIN).

Figure 2-16 AM80 Sector Aggregate Operating Costs, by Expense Category, and Item. All monetary values are adjusted to 2023 dollars.



Note: See the 2024 Groundfish Economic SAFE (forthcoming), Table 9.9 for tabular results depicted in the above figure, and Table 9.10 for tabular results reported at the median vessel level.
Source: AM80 Economic Data Reports; source data and compilation are provided by the Alaska Fisheries Information Network (AKFIN).

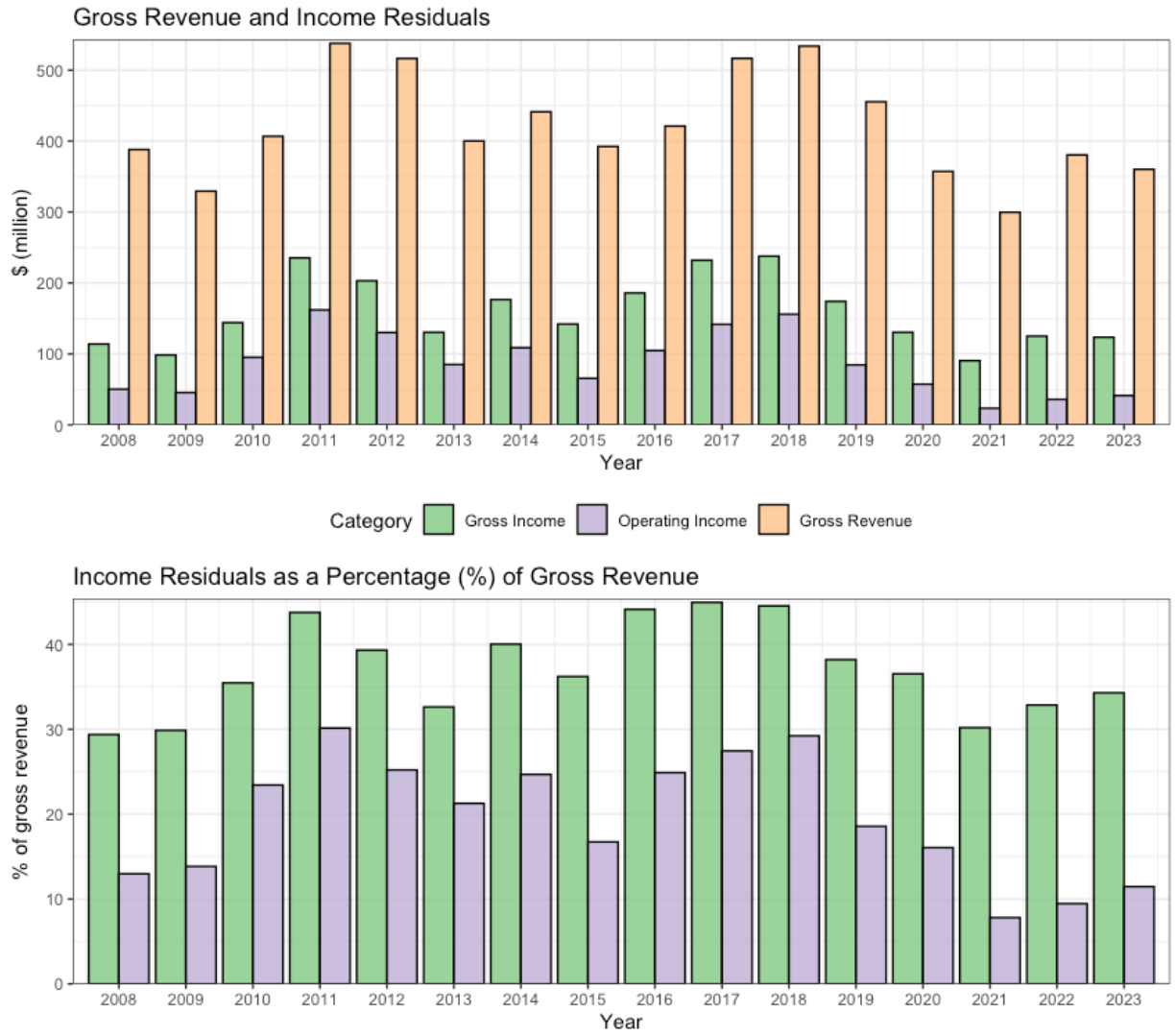
Income residuals

Figure 2-17 synthesizes operating revenue and operating cost information presented in the previous two subsections to provide an overview of economic and financial performance of the AM80 sector at the fleet level over the 2008 to 2023 period in terms of a high-level cash-flow analysis. Gross income is calculated as gross revenue less total operating costs (i.e., expenses incurred most directly in the operation of the vessel and the process of production, including on-board labor, vessel and equipment, materials, and ad-valorem fees and taxes). Operating income is calculated as gross income less overhead expenses; as

reported based on available data, operating income approximates the sector aggregate annual operating return to vessel owners from the primary production activities of vessels and associated assets in the AM80 fleet. These metrics provide a measure of profitability of vessel operations on an annual cash-flow basis, with residual percentage values (gross- and operating income as percentages of gross revenue) shown as well. It must be emphasized, however, that the results as shown do not provide a complete accounting of all relevant variable operating costs, exclude depreciation and debt payments (principle and interest) on capital assets and other financial and cash-flow accounting items relevant to some or all vessels. As such, the operating income results presented in Figure 2-17 (and in additional detail in the Economic SAFE) do not measure aggregate or average net profit within the sector and should be regarded as representing an upper bound on pre-tax annual returns to capital over time.

The results of this synthesis as reported in Figure 2-17 underlines the severity of the adverse economic conditions the AM80 sector has faced in recent years, most severely in 2021. With gross revenues across the sector in sharp decline successively in 2019 through 2021, and aggregate expenses declining to a lesser degree, **the AM80 sector saw the worst four-year period of financial performance of the 16-year period during 2019-2023, since the management program went into effect.** From a fleet aggregate gross revenue of $300 million in 2021, operating costs of $106 million, and overhead of $67 million, aggregate gross income in 2021 fell to $90 million, and operating income of $23 million (an operating margin of 7.8 percent of gross revenue), less than one-fourth the average annual value of $99 million (an average 21.9 percent operating margin) over the previous 13 years. Financial performance by these measures has marginally improved from 2021, with operating income reaching $41 million in aggregate during 2023 on gross revenue of $360 million (an 11.5 percent operating margin). Nonetheless, the most recent three years comprise the three lowest years of economic returns across the sector since the management program began in 2008.

Figure 2-17 AM80 Gross Revenue and Income Residuals. All monetary values are adjusted to 2023 dollars



Note: See the 2024 Groundfish Economic SAFE (forthcoming), Table 9.11 for tabular results depicted in the above figure, in addition to results reported at the median vessel level.
Source: AM80 Economic Data Reports; source data and compilation are provided by the Alaska Fisheries Information Network (AKFIN).

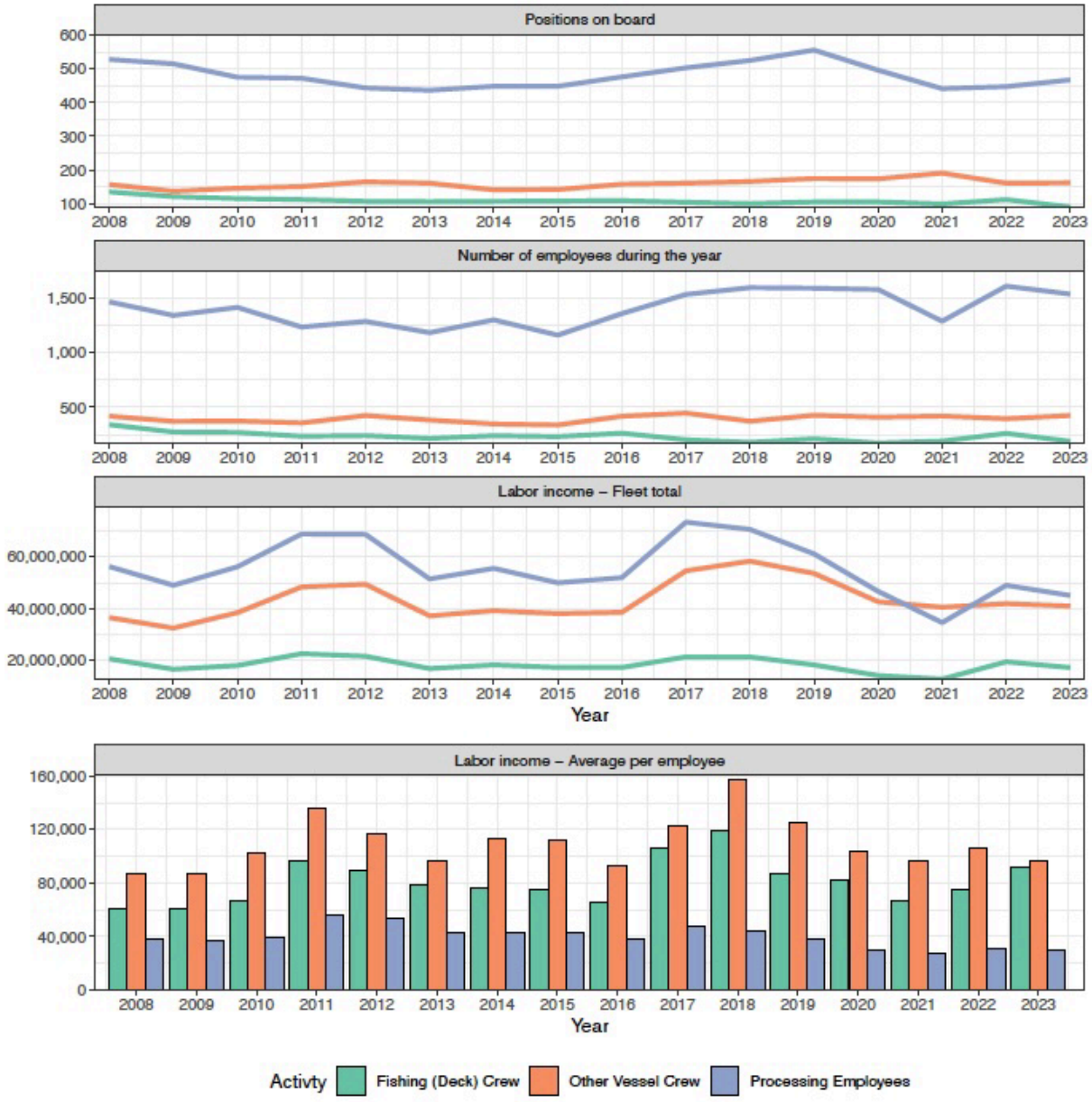
2.3.4 Employment and Earnings

Figure 2-18 displays fleet-level aggregate total values for employment and labor earnings, by labor category, in terms of the number of positions on-board vessels at a given time (positions on-board), total number of individuals employed during all or part of the year (number of employees), aggregate labor income, and average gross wages per employee. (noting that the latter is calculated for each respective labor category as fleet total labor income divided by number of persons employed; as such, the value of this metric reflects variation in employment turnover at the vessel level (which includes the transfer of individual crew or processing employees between vessels within the same company) and is therefore not equivalent to a pay per FTE metric). These are a limited set of the available metrics on employment and labor earnings in the Amendment 80 sector, noting that a more comprehensive analysis could encompass additional metrics, including daily wage rates by labor category, FTE-equivalent annual earnings estimates, and the share of gross production revenue accruing to labor earnings by segment.

Total fishing crew positions across the fleet during 2023 reached a low of 89 (compared to an average of 109 prior to 2023), and 188 distinct crew members employed during the year. Aggregate gross wages paid to deck crew reached a low of $12.8 million in 2021, increasing to $19.5 million in 2022, while average annual gross wages per deck crew member employed during 2021 declined to $67.3 thousand for 2021, increasing to $91.6 thousand as of 2023. Processing employment reached a low during 2021, with processing positions in aggregate across the fleet at 442, and the number of distinct persons employed declining to 1,288. Total gross wages paid to processing employees declined to $34.6 million in 2021, and $27 thousand per distinct processing employee (or approximately $79 thousand per processing position), both setting record lows for the period. For other vessel crew, including officers, engineers, and others involved in onboard management and record-keeping, the number of positions in total across the fleet increased to 190 in 2021, the highest level to-date likely reflecting the more complex staffing requirements for the larger class of vessels recently entering the sector, while number of distinct persons employed in such positions increased from 409 to 419 during 2021. Fleet-aggregate gross wages for this crew category declined by 5 percent to $36.6 million, and by 7% per-individual employed, to $87 thousand.

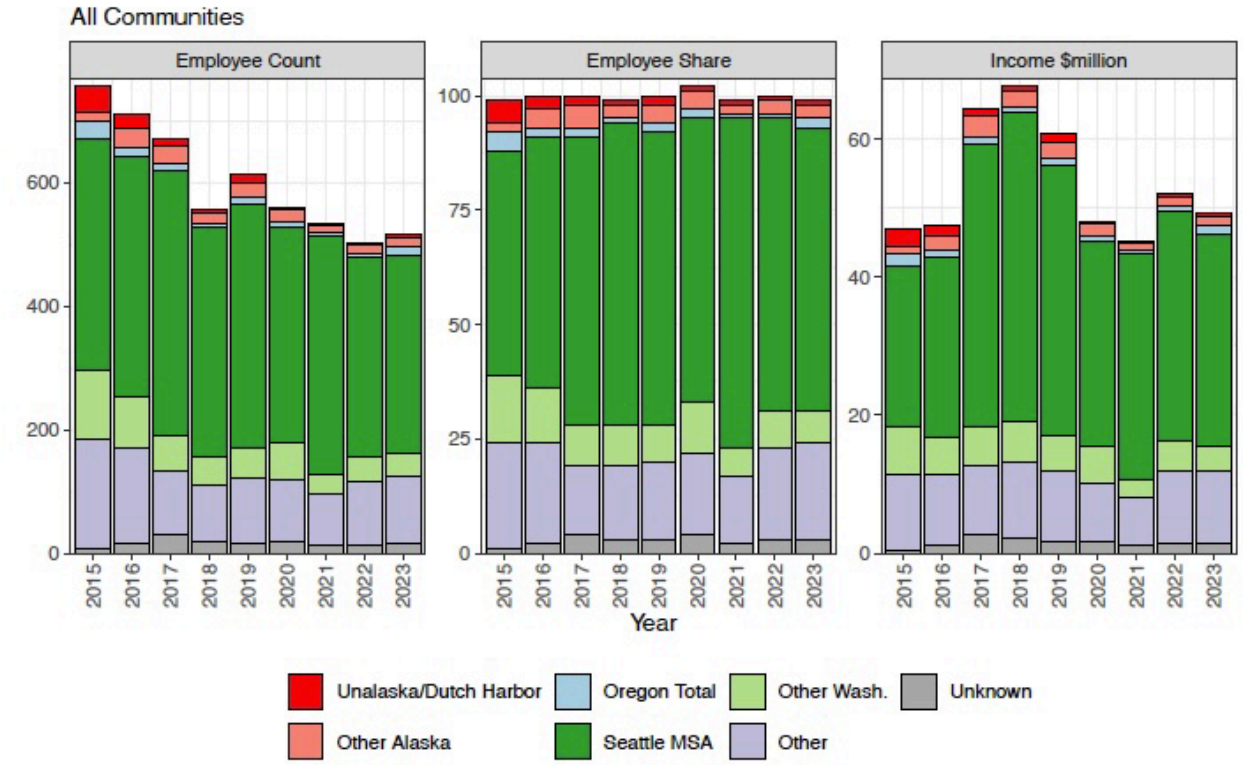
Figure 2-19 displays the spatial distribution of AM80 crew employment and wages by community of crew residence for the years 2015 to 2023, noting that these results are inclusive of licensed crew members (i.e., fishing (deck) crew, and vessel officers and other on-board crew members), not including processing employees. Over the 2015 to 2023 period, the Seattle Metropolitan Statistical Area (MSA) has consistently been the predominant location of residence for AM80 vessel crew members. During 2023, 321 of the total 517 licensed crew members (62%) identified in EDR reporting were residents of the Seattle MSA. The estimated income contribution to the Seattle MSA area from direct gross wages paid to vessel crew members during 2023 is $31 million, and $34.5 million to the state of Washington overall, which accounted for 360 (70%) of all crew members for the year. Alaska residents have accounted for between 3% and 8% of AM80 crew employment over the through 2023, with a low in 2021 of 16 individuals and an estimated $1.35 million in direct crew income paid to residents of Alaska for the year. The community of Unalaska/Dutch Harbor is the only Alaska locality that has accounted for a minimum of 1% of total crew employment in any year for which data are available, with a maximum of 27 residents reported in 2015 representing 5% of the total 571 crew members identified that year, and accounting for $3.5 million in estimated wage income paid to residents of the community during 2015; 6 residents of that community were employed in the fleet during 2023, with estimated combined gross wage earnings of $570 thousand flowing to the Unalaska/Dutch Harbor community (noting that this income estimate is highly derived and does not approach a confidential disclosure of individual income).

Figure 2-18 AM80 Fleet Employment and Average Gross Wages, by Labor Category, Fleet Total Values. All monetary values are adjusted to 2023 dollars



Note: See the 2024 Groundfish Economic SAFE (forthcoming), Table 9.13 for tabular results depicted in the above figure, in addition to results reported at the median vessel level. Note that 'Labor income – Average per employee' is calculated for each respective labor category as fleet total labor income divided by 'Number of employees during the year'. As such, the value of this metric reflects variation in employment turnover at the vessel level (which includes the transfer of individual crew or processing employees between vessels within the same company) and is therefore not equivalent to a pay per FTE metric.
Source: AM80 Economic Data Reports; source data and compilation are provided by the Alaska Fisheries Information Network (AKFIN).

Figure 2-19 AM80 Catcher/Processor Fleet - Estimated Crew Employment and Income, by Community of Residence. All monetary values are adjusted to 2023 dollars. Values are exclusive of processing employees.



Note: See the 2024 Groundfish Economic SAFE (forthcoming), Table 9.14 for tabular results depicted in the above figure.
Source: AM80 Economic Data Reports; source data and compilation are provided by the Alaska Fisheries Information Network (AKFIN).

2.4 Flatfish flexibility exchange program

The Flatfish Flexibility Exchange Program was an initiative of the AM80 fleet that was first brought to the Council's attention in February 2011 as part of the AM80 Cooperative presentation to the Council. The purpose of the Flatfish Flexibility Exchange Program is to allow cooperatives or CDQ groups to increase their harvest opportunity and/or reduce halibut PSC through flexibility in their choice to target a certain flatfish species. Decisions to utilize the flexibility program might reflect halibut PSC rates in a certain target fishery or catchability and market conditions. Within the species subject to the program, a vessel is only required to hold quota for any of the three flatfish species (yellowfin sole, rock sole, and flathead sole).

Beginning in the 2015 fishing year, AM80 cooperatives and CDQ groups could access yellowfin sole, rock sole, or flathead sole acceptable biological catch (ABC) that may be available in excess of the TAC. The ABC reserve is divided by CDQ groups and AM80 cooperatives using the same formulas as in the annual harvest specifications process, ensuring that an entity exchanging one flatfish quota for another cannot result in exceeding an ABC or the 2-million-ton OY cap. The reserve for each species is specified by the Council's evaluation of the ABC surplus for each species (i.e., the difference between the ABC and TAC). The Council considers whether the reserve needs to be reduced by a discretionary buffer amount based on social, economic, or ecological considerations. The Council then designates some, all, or none of the ABC surplus as the ABC reserve available to harvest.

NMFS annually provides the Council with a report on the flatfish exchanges made by the AM80 cooperatives and CDQ groups. That report is made during the NMFS Inseason Management Annual Report at each December Council meeting, and an annually updated PDF of all flatfish exchanges is available on the NMFS Alaska Groundfish Harvest Specifications page.[8] These reports provide the Council with information to consider when deciding whether to establish a buffer by reducing the amount of the ABC reserve available to be exchanged by eligible entities in a future year.

Table 2-5 lists the annual flatfish flexibility changes from 2015 through 2023. In 2015 and 2016, there were net exchanges of flathead sole and rock sole for yellowfin sole. These exchanges resulted in roughly 11,000 mt and 9,500 mt of additional yellowfin sole TAC in each respective year. In 2017, net exchanges resulted in roughly 2,700 mt of TAC shifting from rock sole to yellowfin sole, with a negligible net change to the initial flathead sole TAC. Net exchanges in 2018 flowed from rock sole to both yellowfin sole and flathead sole, resulting in roughly 2,600 additional tons of flathead sole TAC and 1,950 additional tons of yellowfin sole TAC. The same pattern occurred in 2019, with rock sole being exchanged for the other species, resulting in 5,650 additional tons of flathead sole and 2,450 additional tons of yellowfin sole. In 2020, exchanges from both flathead sole and rock sole TAC resulted in 7,818 mt of additional yellowfin sole TAC. There were no flatfish exchanges in 2021 and 2022. For the 2023 fishing year, only 400 mt of flathead sole was exchanged for 400 mt of additional rock sole TAC.

The bulk of exchanges are executed in September and October when TACs are more likely to be constraining or as entities adjust targets to meet business targets or to keep bycatch rates down to meet internal cooperative performance standards.

Table 2-5 Annual flatfish flexibility exchanges

Year	Amount and flatfish species exchanged
2015	11,000 mt of rock sole for yellowfin sole
2016	9,500 mt of rock sole for yellowfin sole
2017	2,700 mt of rock sole for yellowfin sole
2018	4,550 mt of rock sole for 2,600 mt of flathead sole and 1,950 mt of yellowfin sole
2019	8,100 mt of rock sole for 5,650 mt of flathead sole and 2,450 mt of yellowfin sole
2020	7,818 mt of flathead sole and rock sole for yellowfin sole
2021	No exchange
2022	No exchange
2023	400 mt of flathead sole for rock sole

Source: NMFS

2.5 Diversification of revenue on AM80 vessels

This subsection looks at the proportion and scale of gross first wholesale revenues that AM80 vessels generate from their allocated quotas (and secondary catch associated with that fishing), from acting as a mothership to CVs, from partnering with CDQ groups to harvest CDQ allocations, and from fishing in the sideboarded GOA trawl CP fishery. (Note that the operational relationship between AM80 and the CDQ sector is further described in Section 9.1).

In general, the AM80 fleet is highly focused on BSAI non-pollock groundfish. However, as noted in Table 2-6, of the 19 AM80 vessels processing AM80 species on average from 2015 through 2023, an estimated eight AM80 vessels processed 90-100 percent AM80 species. The remaining AM80 vessels

[8] See, for example, "Further Allocations" at https://www.fisheries.noaa.gov/alaska/commercial-fishing/2020-2021-alaska-groundfish-harvest-specifications.

during the 2015-2023 period were more diversified in their total revenue (see Table 2-7). During the 2006-2007 period, the average number of AM80 vessels processing 90-100 percent of AM80 species was 13, but then declined to six vessels during the 2008-2014 period. Table 2-7 shows the average annual number of AM80 vessels by different revenue sources (AM80, CDQ, mothership, and GOA).

Table 2-6 Number of AM80 vessels processing AM80 species by percent of total revenue, 2006-2023 (number of vessels)

AM80 revenue as a % of total	Annual average 2006-2007	Annual average 2008-2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	Annual average 2013-2022
<1%	0.0	0.4	0	0	0	0	0	0	0	0	0	0	0.03
.1-10%	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0.00
10-20%	0.0	0.0	0	0	0	0	0	0	0	0	0	0	0.00
20-30%	0.0	0.0	0	1	0	0	1	0	0	0	0	0	0.17
30-40%	0.5	0.8	1	1	0	0	1	0	1	0	0	0	0.44
40-50%	0.0	1.0	1	0	2	2	2	3	2	2	1	0	1.33
50-60%	0.5	1.2	0	2	1	0	0	0	1	0	2	3	0.89
60-70%	2.0	1.6	1	0	2	3	1	1	1	1	2	1	1.38
70-80%	2.0	5.4	2	4	3	2	3	5	2	1	3	1	2.78
80-90%	4.0	4.2	5	2	1	4	4	3	3	8	3	5	3.85
90-100%	13.0	5.8	8	8	9	8	7	7	10	7	8	8	8.23
Total	22	20	18	18	18	19	19	19	20	19	19	18	19.12

Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_BLEND_CA

Table 2-7 Annual average number of AM80 vessels processing AM80 by categorical percent of total revenue, 2006-2023

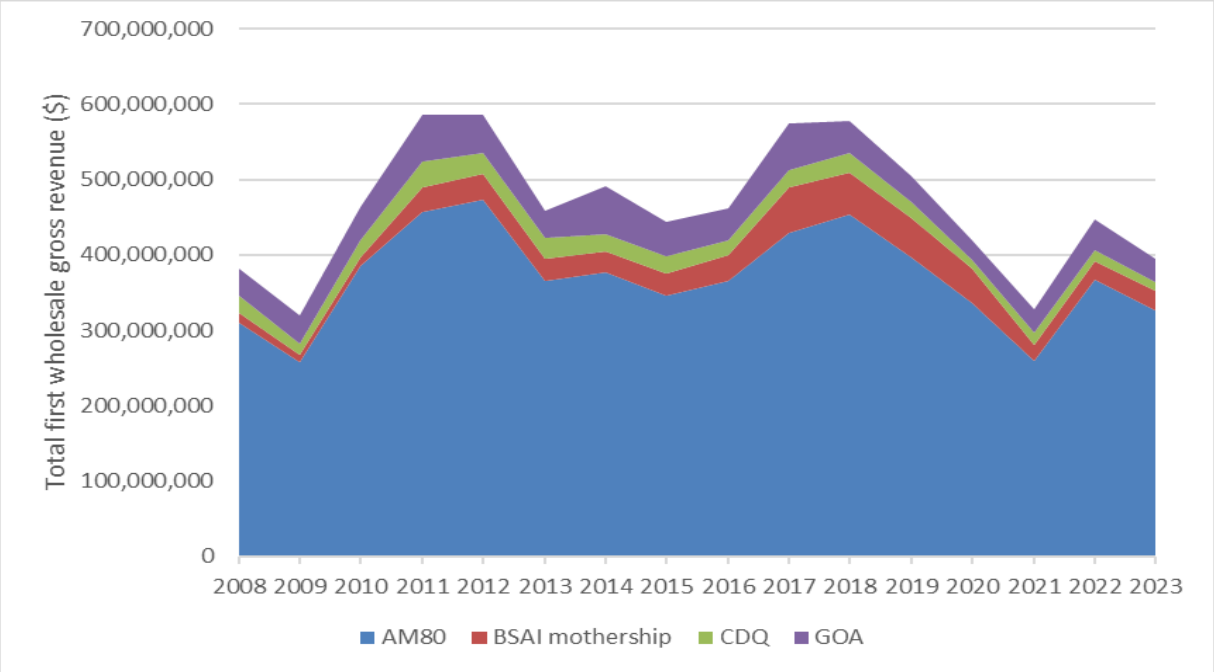
Revenue as a	2006-2008				2008-2012				2013-2018				2019-2022			
% of total	A80	CDQ	MS	GOA	A80	CDQ	MS	GOA	A80	CDQ	Mship	GOA	A80	CDQ	MS	GOA
<.1%	0.0	18.5	21.0	7.5	0.4	14.4	18.6	5.0	0.0	12.6	13.6	7.6	0.0	11.6	10.4	11.2
.1-10%	0.0	0.0	0.5	6.0	0.0	1.4	0.6	8.4	0.0	2.2	2.6	4.8	0.0	5.8	4.8	2.0
10-20%	0.0	0.5	0.5	3.5	0.0	3.2	0.4	4.0	0.0	3.2	0.8	2.6	0.0	1.4	2.0	2.6
20-30%	0.0	1.5	0.0	2.0	0.0	1.4	0.4	1.4	0.4	0.2	0.2	1.4	0.0	0.2	0.4	2.2
30-40%	0.5	1.0	0.0	2.0	0.8	0.0	0.2	1.0	0.6	0.2	0.2	0.6	0.2	0.0	0.2	0.6
40-50%	0.0	0.5	0.0	0.5	1.0	0.0	0.0	0.2	1.4	0.0	1.0	0.6	1.6	0.0	0.8	0.4
50-60%	0.5	0.0	0.0	0.0	1.2	0.0	0.2	0.0	0.6	0.0	0.0	0.4	1.2	0.0	0.4	0.0
60-70%	2.0	0.0	0.0	0.5	1.6	0.0	0.0	0.2	1.4	0.0	0.0	0.0	1.2	0.0	0.0	0.0
70-80%	2.0	0.0	0.0	0.0	5.4	0.0	0.0	0.2	2.8	0.0	0.0	0.4	2.4	0.0	0.0	0.0
80-90%	4.0	0.0	0.0	0.0	4.2	0.0	0.0	0.0	3.2	0.0	0.0	0.0	4.4	0.0	0.0	0.0
90-100%	13.0	0.0	0.0	0.0	5.8	0.0	0.0	0.0	8.0	0.0	0.0	0.0	8.0	0.0	0.0	0.0

Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_BLEND_CA

None of the currently active AM80 vessels derive any revenue from Washington, Oregon, or California groundfish fisheries.[9] One AM80 vessel is qualified as an AFA pollock CP, but did not target AFA pollock during the review period.

Figure 2-20 shows total gross first wholesale revenues for all AM80 vessels that were active during the 2008 through 2023 period. For the entire period, AM80 vessels generated 79 percent of total wholesale revenues from the catch and processing of quotas allocated to the sector and catch of unallocated species or marketable secondary species that were made on AM80 trips. On an annual basis, that proportion never reached higher than 83 percent (2023) or lower than 75 percent (2017). Revenue from mothership activity during the entire period accounted for seven percent with the high of 11 percent in 2020 and low of three percent in 2008-2010. For CDQ, the percentage of total revenue during the period was five percent with a high of six percent in 2011 and 2013 while lowest was three percent in 2020, 2022, and 2023. Finally, GOA activity contributed nine percent during the review period with a high of 13 percent in 2014 and a low of six percent in 2020.

Figure 2-20 Total gross first wholesale revenues for AM80 vessels across all activities (2023$), 2008 through 2023.



Source: AKFIN Source file: AM80_Div(9-9-24)

Since 2010, 10 different AM80 vessels have acted as a mothership, processing Pacific cod and yellowfin sole target fishery catch delivered by CVs. Some of the CV catch delivered to AM80 mothership vessels may have been catch of CDQ fish, but the analysts consider this mothership activity as opposed to the catching and processing of CDQ fish all on an AM80 platform, which is described below and captured as "CDQ" in Figure 2-20. Only two AM80 vessels participated in mothership processing from 2010 through 2014. From 2015 through 2019, the number of AM80 vessels taking at-sea deliveries from CVs increased to six, seven, eight, nine, and nine in those years sequentially. However, recent regulatory changes limited the number of AM80 vessels motherships. Amendment 120 allows only one AM80 CP to process Pacific cod as a mothership and Amendment 116 only allows eight CVs to deliver yellowfin sole to motherships. The latter regulation effectively caps AM80 vessels' activity as yellowfin sole at-sea markets to those owned by companies that are associated with these eight CVs through direct ownership or existing

[9] One AM80-qualified vessel that is no longer active in the sector had catch history in the West Coast region.

business arrangements. The vessels that have acted as motherships are owned by three of the five current AM80 companies. From 2017 through 2020, the number of AM80 CPs that took yellowfin sole target deliveries from CVs was eight or nine vessels each year. Seven or eight AM80 CPs took target Pacific cod deliveries from CVs in 2017 through 2019, but under the newly implemented regulation only one such vessel is currently able to do so.[10]

The estimated gross wholesale value generated by AM80 mothership activity increased from around $29 million to $33 million in 2015 and 2016 to $59 million in 2017 and then declined to $56 million in 2018, $51 million in 2019, $46 million in 2020, and $22 million in 2021. Following the multiyear decline, AM80 mothership revenue increased slightly to $25 million for both 2022 and 2023 fishing years. The multiyear decline in mothership revenue in 2019 is likely reflecting lower unit values for key mothership species (Figure 2-10) while the decline in revenue in more recent years is likely related to the effects of the recent regulations limiting mothership activity.

Looking at AM80 vessel activity in the CDQ fishery during the 2015 to 2023 period, eight AM80 vessels harvested CDQ fish. During this period, the number of AM80 vessels working with CDQ groups on annual basis to harvest their non-pollock groundfish – either through a royalty arrangement or joint ownership – has been between four and eight vessels. Figure 2-20 depicts that the average total annual wholesale revenue from CDQ catch on AM80 vessels has been in the range of $10 million to $26 million during the review period. In aggregate, the AM80 vessels that have partnered in CDQ harvest during the review period generated on average four percent of the sector's total wholesale revenue from that activity.

As for GOA activity, 19 of 23 active AM80 vessels participated in the GOA fisheries at one point during the review period. On an annual basis, the number of AM80 vessels operating in the GOA has ranged from seven to 14 vessels. At the sector level, GOA wholesale revenues accounted for between 6 percent and 11 percent of total AM80 revenues annually. The average annual proportion from GOA fishing was nine percent of total sector revenue. The average total GOA wholesale revenue for AM80 vessels during the review period was $39.9 million. The highest value occurred in 2016 at $62.8 million and the lowest value occurred in 2020 at $25.9 million. The PSC limitations governing AM80 vessels fishing in the GOA are described in Section 3.

2.6 Seasonal Activity

The allocation of BSAI non-pollock species to AM80 CPs has allowed companies to plan for groundfish fisheries that span most of the calendar year and has insulated companies that want or need to pursue late-year opportunities from the effects of other participants whose incidental catch or PSC might have otherwise closed the entire sector. Most AM80 vessels strive to stay working from January 20 to November. Most overall catch occurs from February through October with catches falling off November through January. Other monthly patterns include higher catches of POP in the summer months (particularly July) and a larger proportion of Pacific cod and rock sole earlier in the year (February through April or May). The focus on Pacific cod and rock sole early in the year is driven in part by fish aggregation (Pacific cod) and roe content (rock sole).

Figure 2-21 shows the AM80 sector's fishing activity for the AM80 species by week for 2015 and 2023. These two years were selected to show changes in timing of fishing activity over the review period (2015 and 2023). The AM80 fishery generally opens on January 20 and closes on December 31. Figure 2-21 reflects AM80 sector's revealed preference for catching specific species at different points during the calendar year. For example, some flatfish species are more desirable or more valuable when roe is present

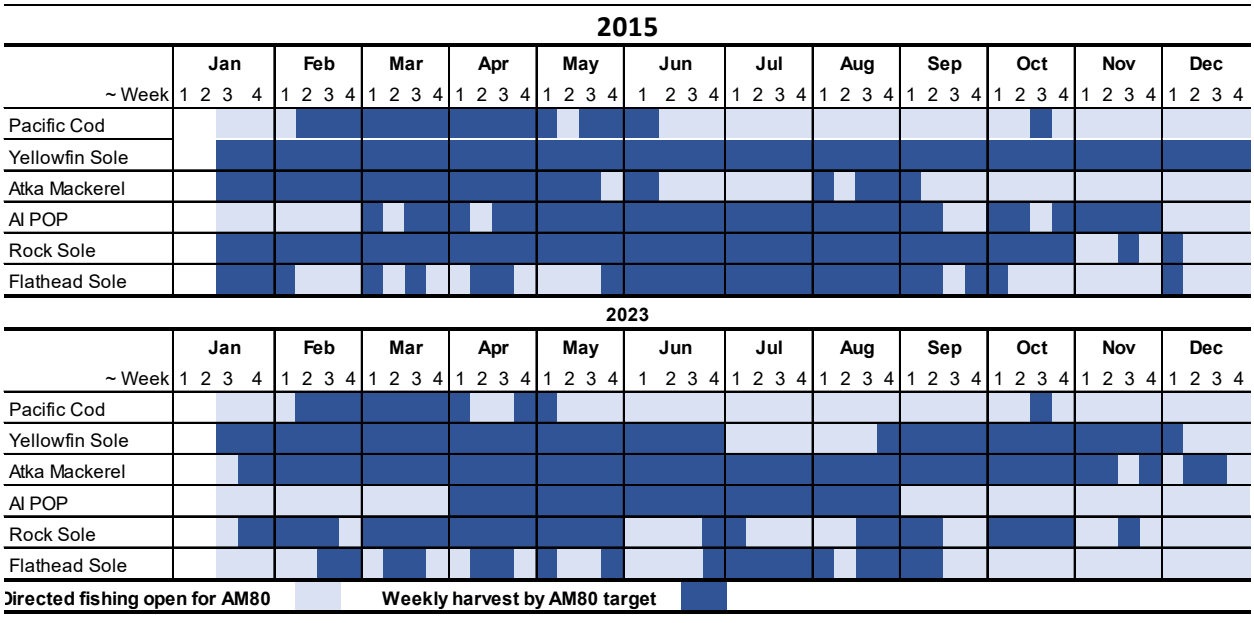
[10] CPs acting as a mothership that are not permitted to function as an at-sea Pacific cod market may still receive and process Pacific cod up to an MRA. Pacific cod cannot be discarded unless the vessel is over the MRA. It is possible that a CP that is excluded from Pacific cod mothership activity might show up in observer data as having a mothership Pacific cod target if vessels targeting other species delivered more Pacific cod than intended, but the mothership's retention limit is still expected to be applied as fish are sorted in the processing factory.

– e.g., northern rock sole. In some cases, the sector might focus on a particular flatfish species when fish aggregation and catch per unit effort (CPUE) are expected to be higher. Lower value species such as arrowtooth flounder might show up as "actively fished" during gap periods between more valuable species as vessels seek to keep their platforms productive while also retaining valuable secondary species with regulatory limits.

AM80 species are allocated to AM80 companies on the basis of qualifying historical catch and, while intra-sector transfers are possible, companies' portfolios are not necessarily balanced between the species in a uniform manner (see Figure 2-2). Figure 2-21 should not imply that any AM80 company would have unrestricted choice to make between yellowfin sole, rock sole, flathead sole, Atka mackerel, AI POP, or Pacific cod at a given point during the year. A company's species quota allocations are the key element of how it plans its fishing year, but companies must also consider the capacity and the capability of their vessels to fish in certain areas (e.g., farther west in the Aleutians), the timing of when fish will be aggregated in fishable areas, and the times when both fish quality is high and the market demands them. To the latter point, a company might start one species later in the A season one year versus another if prices are low due to holdover inventories from the previous season.

It also should be noted that for the AM80 sector, Pacific cod is—broadly speaking—an allocated, constraining non-target species that is encountered in multiple aspects of the sector's operations. AM80 vessels might have trips that are recorded as directed fishing for Pacific cod in certain circumstances. However, in many cases, they are caught as an expected and commercially valuable incidental species along with other targeted groundfish. This is in contrast to other BSAI groundfish sectors such as the hook-and-line CP sector and the trawl CV limited access sector (TLAS), both of which target Pacific cod primarily.

Figure 2-21 2015 and 2023 season for AM80 target fisheries



Source: AKFIN; source file is A80_Weekly_Species(7-8-24).

2.7 Operations and Annual Planning

A qualitative understanding of the AM80 fishing year and the diversity of company-level business plans and vessel-level is especially important because the sector works with a highly varied portfolio of allocated target species and marketable unallocated groundfish species compared to other BSAI sectors. Annual data on harvest volume and gross revenue either by Catch Accounting System (CAS) "target species" or by individual species do not reflect how species are physically comingled or, critically, the decisions that vessel operators make to derive value from a trawl tow. For example, CAS might retrospectively show that fishing occurred in the arrowtooth flounder or flathead sole target based on the relative proportion of catch, but the fishing was made profitable by the value of other retained species. Annual data also smooths over calendar-based decision factors like roe content, flesh quality, CPUE, fishing conditions (e.g., water temperature or lunar cycles), market demand, the timing of in-season reallocations from other fisheries (e.g., non-pollock TAC from AFA, PSC from TLAS), and unallocated fishing opportunities that may be opened by NMFS in-season managers at unpredictable times based on TAC that would otherwise go unharvested (e.g., BS POP or WGOA rockfish).

Halibut PSC and Pacific cod allocation constraints

Skippers make in-season decisions about targeting and location based on expected halibut PSC rates associated with a given target, area, or time of year. At the same time, a vessel operator must manage an annual allocation of important “choke species” such as Pacific cod or risk losing the opportunity to keep the vessel working later into the year in other profitable targets that have an intrinsic cod encounter rate. Section 3.1.7.2 of the AM80 Program 5-Year Review describes how the allocation of Pacific cod transitioned the species from a target to an incidental catch species and how that reality influences vessels’ annual fishing plans. After Pacific cod was allocated to AM80 cooperatives, fleet managers have to calculate the amount of Pacific cod their vessels will need in fall fisheries and adjust their targeting decisions in the earlier part of the year.

The AM80 5-Year Review noted that 55 percent to 75 percent of the fishery’s Pacific cod was taken in a CAS “target” fishery before the program’s 2008 implementation, whereas Pacific cod “targeting” now accounts for less than 10 percent of the sector’s Pacific cod catch. The Review cited as examples that effort in high Pacific cod-rate fisheries like flathead sole has declined in favor of arrowtooth and Kamchatka flounder, for which directed fishing is not opened until May 1. Among the key allocated AM80 species, yellowfin sole has a relatively low Pacific cod catch rate, as do roundfish like Atka mackerel and POP. While Pacific cod rates are low in the yellowfin sole fishery, managing Pacific cod quota is important due to the high TAC for yellowfin sole relative to other flatfish species. Rock sole, which can be a higher-value flatfish species during the early-year roe season, has among the highest Pacific cod rates. As a result, Pacific cod can drive decision-making as much as halibut, and that each company or vessel enters the fishing year with a different intra-cooperative Pacific cod allocation based on the qualifying catch history of the permits they hold.

Steller sea lion and crab PSC constraints

AM80 companies and vessel operators work within constraints other than halibut PSC and allocations of choke species like Pacific cod. Trawl vessels are excluded from certain areas by regulation – e.g., crab protection zones or Steller sea lion critical habitat – and might be excluded de facto if fishing grounds are preempted by fixed-gear vessels (including crabbers) in Federal or state-waters fisheries. Vessel operators might not be able to follow an aggregation of “clean” (low-bycatch) AM80 species if it moves into a prohibited or preempted area. Some areas are only prohibited in certain years, dependent on exogenous factors. For example, the Subarea along the southern edge of the Bristol Bay Red King Crab Savings Area is open or closed annually based on Bristol Bay red king crab stock status. Other constraints might be temporal.

Fishing opportunities when constrained by PSC and Pacific cod allocation

An AM80 vessel that is experiencing unacceptable Pacific cod bycatch or halibut PSC rates in an early-season flatfish target might switch focus to an unallocated target. Those unallocated species might include arrowtooth/Kamchatka flounder or Greenland turbot which open on May 1, or BS POP which is only opened to directed fishing as the BS pollock fishery winds down in the fall. Some flatfish species might be technically open before May but the fish are not aggregated or catchable until later in the year (e.g., flathead sole). "Fall-back" opportunities for AM80 vessels when early season fisheries are utilizing too much of a constraining species vary depending on an operation's ability to target roundfish – particularly in the AI – or its endorsement to fish in the GOA (arrowtooth flounder in the spring or the Central GOA Rockfish Program after May 1). Broadly speaking, alternatives to BS flatfish for AM80 vessels are not an option for some vessels to consider until May or June.[11] Prior to that, a company with limited options might have no better response to high PSC rates than to deck sort aggressively and testing different locations. Accessibility to non-flatfish species can also vary within a company if, for instance, the smaller vessels are not equipped with the fuel, horsepower, or packing capacity to fish safely and effectively in the Aleutians.

Balancing constraints while maintaining year-round operations

While this review does not estimate companies' operational costs or their net profitability, participants report that most AM80 companies rely on a full and varied season to remain viable. When constraints such as high Pacific cod or halibut bycatch rates emerge, vessel operators do not have the option to cease fishing completely because cost accrual on such large platforms would be unsustainable. Participants also noted that a mid-year stand down could result in crew-retention issues. Moreover, it was noted that shutting down and restarting a CP factory could cause mechanical challenges, spinning off new costs. As a result, AM80 operators do not follow a uniform progression from one target to the next over the course of the season. Annual fishing plans are designed with contingency in mind, and when all options are suboptimal, the response is often to stay active and look for areas with the right species combinations even if it is in a time/area that history would not have predicted. Participants noted that "looking" for the right fish does not necessarily require a net in the water, and that it is better to continue learning the present situation on the grounds than to leave and have to reestablish that knowledge later. Vessels have increasingly utilized shorter test-tows to gauge haul composition and the presence of limiting species, though. Vessels are likely evaluating the benefit of a test tow in light of the cost of running a factory at less than full capacity and also the risk of bringing in a haul of constraining or PSC-limiting species. Regardless of these complicating factors, AM80 vessels are unlikely to preemptively cease fishing due to an unpredicted mid-year constraint.

Operators must also manage their catch of unallocated species that NMFS accounts for under the "non-specified reserve." NMFS uses this reserve to account for unallocated species on a BSAI-wide basis, meaning that bycatch in other fisheries (e.g., AFA pollock) can affect how much of a species like BS POP is available for a directed fishing allowance by AM80 CPs at a given point in the calendar year. For example, the availability of Greenland turbot as a secondary species might determine whether arrowtooth flounder is a viable fall-back fishery if other targets are yielding high halibut or Pacific cod bycatch. If incidental catch causes the TAC for an unallocated species such as skates to be exceeded, NMFS may use the non-specified reserve from other species to cover that catch under the 2 million metric ton cap. Drawing down the reserve could, in some instances, reduce the opportunity to catch species that are typically of more value to the sector later in the year, such as BS POP.

[11] Note that market disruptions due to lower seafood prices, international trade tariffs, and residual COVID-19 pandemic affecting demand for AM80 species might be shaping companies' business plans as much or more than halibut PSC rates.

Operational timing

The annual planning process begins the preceding fall with harvest specifications. The AM80 sector has a unique consideration in the harvests specifications flexibility procedure where the cooperative(s) (and CDQ groups) can exchange TAC of yellowfin sole, rock sole, or flathead sole for TAC of another species from that group, up to the limit of the ABC and the 2 million mt cap. It is possible that flexibility exchanges could be made with expected bycatch rates in mind if the PSC limits were to become the preeminent decision-driver for the sector. In practice, flatfish specification flexibility has mostly been used in recent years to maximize the availability of species that are catchable. For example, in years when the early season rock sole roe fishery does not materialize to the point that all TAC is harvested, the cooperative might utilize specifications flexibility to exchange rock sole TAC for yellowfin sole TAC that can be prosecuted later in the year.

AM80 operators tend to spend the early months of the year in the BS, striking a balance between CPUE, profitability, and market demand while managing Pacific cod and halibut bycatch to preserve opportunities to fish later in the year. Some opportunities are only available early in the year, such as the rock sole roe fishery (and its associated Pacific cod bycatch rate). The timing of yellowfin sole targeting is more variable and can be opportunistic depending on the availability of other species and bycatch rates. In some cases, vessels might target yellowfin sole earlier in the year in the Togiak area; that activity can include bycatch of other flatfish species like Alaska plaice that is marketable at a lower value. The optimal timing of allocated species catch is also driven by market quality. Markets for flatfish and roundfish can differ, meaning that not all companies are facing the same decision-set when selecting targets at a given time of year. In some years, holdover inventories from the previous year's market might incentivize a company to delay harvest of a certain species until prices rebound, but that option might not be available if a vessel does not have viable alternative target opportunities at the time or if a company plans to deploy that vessel in other areas/targets later in the season.

May through August is typically when AM80 vessels might branch out to the GOA or to the AI depending on their area endorsements – to the CGOA Rockfish Program, or to other GOA rockfish and flatfish participation. Yellowfin sole fishing can remain productive and clean through May or June until they spawn and disaggregate. Opportunities to diversify in the case of constraining bycatch expand for some participants in June and July as AI rockfish are pursued. Summer fishing for Atka mackerel tends to offer lower CPUE, so after AI rockfish, vessels might move back into BS flatfish before returning to the AI for the Atka mackerel B season. Vessels that overuse Pacific cod or other allocations early in the year might be forced to trade within the cooperative to fish in the fall. Similarly, vessels that accrue halibut in spring or summer fisheries might jeopardize their ability to fish yellowfin sole in October and November. Because some fall fisheries for unallocated species such as BS POP are reliant on usage in other fisheries, companies might plan their business strategy and bycatch usage differently from one year to the next.

AM80 companies are not uniform in their area endorsements or their cooperative allocations of flatfish and roundfish, and thus might have different levels of exposure to a lower halibut PSC limit. Operators that have greater Atka mackerel and AI POP allocations are more able to move out of the BS if early-year halibut bycatch rates are unusually high. Flatfish-oriented operations might only have the option to remain in the BS or to move into the GOA. The ability to fish in the GOA is limited in regulation by endorsements, season-date limitations, and sideboard limits. The number of AM80 vessels that have fished in the GOA and the relative proportion of their total revenues generated in that fishery were discussed in Section 0; that section demonstrates that GOA revenues are likely not enough to replace what would be lost if an AM80 company with no BSAI alternatives to flatfish was effectively closed out early by PSC. It is possible that an AM80 vessel could move to the GOA due to poor fishing in the BS but would exhaust its GOA opportunities well before the end of the year and have no alternative to returning to the BS and search for fish.

Summary

The AM80 sector works with a highly varied portfolio of allocated target species and marketable unallocated groundfish species compared to other BSAI sectors. Skippers make in-season decisions about targeting and location based on expected halibut PSC rates associated with a given target, area, or time of year. At the same time, a vessel operator must manage an annual allocation of important "choke species" such as Pacific cod or risk losing the opportunity to keep the vessel working later into the year in other profitable targets that have an intrinsic cod encounter rate. AM80 companies and vessel operators also work within constraints that could exclude them from certain areas by regulation – e.g., crab protection zones or Steller sea lion critical habitat. Nevertheless, the allocation of BSAI non-pollock species to AM80 CPs has allowed companies to plan for groundfish fisheries that span most of the calendar year and has insulated companies that want or need to pursue late-year opportunities from the effects of other participants whose incidental catch or PSC might have otherwise closed the entire sector. For example, an AM80 vessel that is experiencing unacceptable Pacific cod bycatch or halibut PSC rates in an early-season flatfish target might switch focus to an unallocated target. However, "fall-back" opportunities for AM80 vessels when early season fisheries are utilizing too much of a constraining species vary depending on an operation's ability to target roundfish – particularly in the AI – or its endorsement to fish in the GOA (arrowtooth flounder in the spring or the Central GOA Rockfish Program after May 1). Importantly, when constraints such as high Pacific cod or halibut bycatch rates emerge, vessel operators do not have the option to cease fishing completely because cost accrual on such large platforms would be unsustainable. Therefore, annual fishing plans are designed with contingency in mind, and when all options are suboptimal, the response is often to stay active and look for areas with the right species combinations even if it is in a time/area that history would not have predicted.

3 AM80 Excess Capacity

This section reviews the question of excess capacity from the regulatory perspective. The Council's AM80 motion and implementing regulations at § 679.92(a) state that a single person may not individually or collectively hold or use more than 30 percent of the AM80 QS units initially assigned to the AM80 sector. Persons that were initially allocated more than the QS use cap limit are grandfathered in and need not sell their excess QS. Similarly, there is a use cap on the amount of AM80 CQ that limits a single vessel from harvesting more than 20 percent of the CQ of the AM80 groundfish species in a given year.

The program examines initial allocations of AM80 QS to persons as well as the QS ownership amounts reported at the beginning of the year. The review also examines the question of whether any individual vessel has reached the 20-percent CQ use cap using CAS data. However, because of disclosure rules, the review cannot report actual amounts that have been attained.

Since initial issuance, total AM80 QS has gone from being dispersed to nine companies to being dispersed among five companies. As noted in the previous AM80 program review (Northern Economics, 2014), the largest QS holder's holdings were more than twice the amount of the next largest AM80 QS holder and exceeded the 30 percent limit and was grandfathered. Since that review, that entity terminated operations and sold its vessels in 2017 leading to the sector consolidating. As of 2024, there are five entities and none of the QS holders exceed the 30 percent QS limit. Two entities are each near the 30 percent limit while the remaining three entities each hold less than 20 percent of the QS.

As indicated above, the second measure of excess capacity is the CQ vessel use cap. The regulation states that no vessel can catch more than 20 percent of the combined CQ of all six AM80 species. Because of confidentiality rules, the percentage attained by the highest ranked vessels cannot be divulged. For the 2023 fishing season no vessel has come close to reaching the CQ vessel use cap, and no vessel has come close to the CQ vessel cap during the 2008 through 2023 review period.

4 AM80 Sideboards in the Gulf of Alaska

In the development of the AM80 Program, the Council attempted to mitigate potentially adverse effects on non-AM80 fisheries that could be caused by the increased economic and operational efficiencies that the program provides to participants. Specifically, once a harvest privilege is allocated, quota shareholders may consolidate their operations through cooperative management and use their AM80 vessels in other fisheries. This would increase competition and the race for fish in those fisheries. The AM80 Program established a suite of protection measures, commonly called sideboard limits, for non-AM80 participants in other federally managed groundfish fisheries.

The Council identified the GOA as the area likely to be at risk of increased harvest pressures with implementation of the AM80 Program. The Council recognized that the GOA would likely be subject to increased fishing pressure from AM80 vessels, without sideboards limiting their harvest, because of (1) the harvest patterns of the AM80 sector, (2) the lack of other fisheries in the BSAI that can be targeted by AM80 vessels (i.e., pollock is managed under the AFA, crab is managed under the BSAI Crab Rationalization Program, and Pacific cod is allocated to specific sectors under Amendment 85), and (3) the lack of specific gear or sector allocations for many species in the GOA. Therefore, the AM80 Program includes sideboard limit protections for the GOA groundfish fisheries.

GOA groundfish sideboard limits apply to all catch by AM80 vessels in the GOA. Catch of a GOA sideboard species during a directed fishery as well as incidental catch of a GOA sideboarded species, such as Pacific cod caught during a rex sole fishery, apply against the GOA sideboard limit for that species. In addition, any catch of a GOA sideboard species or halibut PSC used within State waters during the State parallel fishery apply against the sideboard limit. State parallel fisheries occur in State waters and are opened at the same time as Federal fisheries in Federal waters. State parallel fishery harvests are considered part of the Federal TAC and federally permitted vessels move between State and Federal waters during the concurrent, or parallel, State and Federal fisheries. The State opens parallel fisheries through emergency order by adopting the groundfish seasons, bycatch limits, and allowable gear types that apply in the adjacent Federal fisheries. Accounting for catch in the State parallel fishery ensures that all catch is debited against a sideboard limit whether that harvest occurs in State or Federal waters.

The AM80 Program established three types of GOA sideboard limits.

- The GOA groundfish sideboard limit restricts the maximum amount of pollock, Pacific cod, and rockfish that AM80 vessels could harvest. The GOA groundfish sideboard limits restrict the catch of AM80 vessels to their average aggregate catch from 1998 through 2004.
- The GOA halibut PSC limit restricts the maximum amount of halibut PSC that all AM80 vessels could use based on historic halibut PSC use during 1998 through 2004 with some modification for specific conditions.
- The GOA flatfish fishery prohibition restricts the number of AM80 vessels and AM80 LLP licenses that could be used to conduct directed fishing for flatfish.

During the development of the AM80 Program, the data reviewed by the Council indicated that at least one AM80 vessel (F'/V *Golden Fleece*) had a unique harvest pattern in the GOA that could warrant specific GOA sideboard measures for AM80 vessels with similar harvest patterns. The F/V *Golden Fleece* is prohibited from directed fishing for GOA pollock, Pacific cod, and rockfish, but is exempt from the GOA halibut PSC sideboard limit applicable to all other AM80 vessels.

4.1 GOA Groundfish Sideboard Limits and Catch

All AM80 vessels, other than the F/V *Golden Fleece*, are collectively limited to catching an amount of groundfish no greater than the limits shown in Table 4-1.

NMFS manages the GOA groundfish sideboard limits in the aggregate for all AM80 vessels. Once a sideboard limit for a groundfish species is reached, or projected to be reached, NMFS closes that fishery to directed fishing by AM80 vessels. AM80 vessels can retain incidental catch of that sideboard species subject to existing maximum retainable amount (MRA) regulations while targeting other groundfish fisheries that are not closed to directed fishing. If the rate of incidental catch of a GOA groundfish sideboard limited species is expected to be high relative to the sideboard limit, NMFS can limit directed fishing for this species by AM80 vessels to accommodate this incidental catch. NMFS manages the GOA sideboard limits with the goal of keeping all directed and incidental catch of a sideboard species by AM80 vessels below the sideboard limit.

The next series of tables provide GOA groundfish sideboard activity for the AM80 vessels during the 2008 through 2023 period.

Table 4-2 provides GOA pollock sideboard limits and sideboard catch by subarea from 2008 through 2023. The sideboard limits and catch for GOA pollock in Table 4-2 were combined at the seasonal level and Central GOA level for ease of reporting. Since trawl CPs have generally been precluded from engaging in directed fishing for pollock since Inshore-Offshore allocations were implemented in 1992, AM80 vessels are prohibited from targeting GOA pollock. Any pollock sideboard catch is incidental while targeting other GOA groundfish fisheries open for directing fishing and a vessel may not keep more than the MRA allowed for pollock in those GOA groundfish fisheries. Finally, the pollock sideboard limits are managed as soft caps[12]. Sideboard limits for the Central GOA were exceeded every year but 2023 and sideboard limits for the Western GOA were exceeded each year during the same period. For West Yakutat pollock, the data was masked to prevent disclosure of confidential data due to the limited number of AM80 vessels reporting pollock catch in this GOA subarea.

Table 4-3 shows GOA Pacific cod sideboard limits and sideboard harvest by subarea from 2008 through 2023. Like pollock, the sideboard limits for Pacific cod were combined. Sideboard harvest in the Central GOA did exceed the limits seven years during the 2008 through 2023 period. In the Western GOA, sideboard limits were also exceeded seven years during the 2008 through 2023 period. The Western Yakutat sideboard harvest is confidential due to the limited number of AM80 vessels reporting catch pollock catch in that area.

Table 4-4 includes GOA POP sideboard limits and sideboard harvest by subarea from 2008 through 2023. Sideboard harvest in the Western GOA did exceed the sideboard limit twice during the 2008 through 2023 period. Historically, the AM80 vessels have been the primary participants in this fishery. As noted in Table 4-1, the AM80 sideboard limit ratio for the Western GOA is 0.994. In other words, the AM80 vessels that targeted Western GOA POP historically harvested 99.4 percent of the entire subarea TAC during the years used to establish the sideboard limit (1998 through 2004). With the exception of 2008, 2011, and 2013, AM80 vessels have continued to harvest nearly all of the Western GOA POP. The number of AM80 vessels in this fishery has ranged from a low of four in more recent years to a high of 15 in 2012. For West Yakutat POP, a small number of AM80 vessels have been the primary participants in the fishery with a sideboard limit ratio of 0.961. The number of AM80 vessels participating in the fishery

[12] AM80 sideboard limits are not managed as a hard cap thus prohibiting all fishing for those species that exceed the sideboard limit and all species that result in incidental catch of that same species. Instead, the sideboard limits are managed as soft caps meaning AM80 vessels are prohibited from targeting a species when the sector reaches the sideboard limit for that species, but they can still harvest that species up to the MRA while targeting other AM80 sideboard fisheries. As a result, some sideboard limits can be exceeded due to incidental catch.

has ranged from one to two for most years during the 2008 to 2023 period. Given the limited number of vessels in the fishery, the harvest data is masked to prevent disclosure of confidential data.

Table 4-5 provides GOA northern rockfish sideboard limits and sideboard harvest activity for Western GOA from 2008 through 2023. Except for 2013, the sideboard limit was not exceeded in any year since 2013. In 2013, AM80 vessels harvested 114 percent of the sideboard limit. With the exception of 2013, the percent of sideboard limit harvested ranged from a low of 15 percent in 2023 to a high of 84 percent in 2012. The number of AM80 vessels reporting northern rockfish in the Western GOA during the 2008 to 2023 period has ranged from a low of four in 2021 and 2022 to a high of 13 in 2011 and 2012.

Table 4-6 provides GOA dusky rockfish sideboard limits and sideboard harvest activity for Western GOA and West Yakutat from 2008 through 2023. As in other GOA groundfish sideboard activity in the West Yakutat, the limited number of AM80 vessels has ranged from one to two vessels annually which prevents the disclosure of sideboard harvest activity, so the harvest data is confidential except for 2009 when three vessels were active in the fishery. In the Western GOA, with the exception of 2014, AM80 vessels did not exceed the sideboard limit in any year during the remaining 2008 through 2023 years. In 2014, AM80 vessels harvested 105 percent of the sideboard limit. Vessels harvested between 32 percent and 105 percent of the sideboard limit during the 2008 through 2023 period with vessel participation ranging from four and 14 during this period.

As noted in Table 4-4 and Table 4-6, generally only one to two AM80 vessels targeted West Yakutat rockfish fisheries annually. These AM80 vessels have historically been the primary participants in the West Yakutat rockfish fishery. For example, combining all years from 2008 to 2023, the AM80 vessels participating in the West Yakutat POP fishery harvested over 90 percent of the sideboard limit and the TAC.

Table 4-1. Groundfish TACs (mt) and sideboard limits (mt) for AM80 vessels in the GOA, 2008-2023

Species	Season	Area	AM80 ratio	2008		2009		2010		2011		2012		2013		2014		2015		2016		2017		2018		2019		2020	
				TAC	Side-board	TAC	Side-board	TAC	Side-board	TAC	Side-board	TAC	Side-board	TAC	Side-board	TAC	Side-board	TAC	Side-board	TAC	Side-board	TAC	Side-board	TAC	Side-board	TAC	Side-board	TAC	Side-board
Pollock	A Season Jan 20-Feb 25	Shumagin (610)	0.003	3,322	10	3,234	10	5,551	17	4,786	14	5,797	17	3,921	12	4,800	14	3,632	11	3,827	11	2,232	7	1,317	4	848	3	517	2
		Chirikof (620)	0.002	6,215	12	4,365	9	8,414	17	11,895	24	14,023	28	15,016	30	25,924	52	30,503	61	43,374	87	34,549	69	27,314	55	23,236	46	18,757	38
		Kodiak (630)	0.002	3,069	6	2,503	5	4,403	9	4,475	9	5,787	12	5,481	11	8,680	17	11,316	23	12,456	25	11,014	22	9,025	18	7,593	15	5,783	12
	B Season Mar 10-May 31	Shumagin (610)	0.003	3,321	10	3,233	10	5,551	17	4,876	15	5,797	17	3,920	12	4,799	14	3,632	11	3,826	11	2,232	7	1,317	4	848	3	517	2
		Chirikof (620)	0.002	7,576	15	5,413	11	9,925	20	14,231	28	17,221	34	18,101	36	30,963	62	37,820	76	50,747	101	39,420	79	32,155	64	27,306	55	22,222	44
		Kodiak (630)	0.002	1,709	3	1,455	3	2,891	6	2,139	4	2,589	5	2,393	5	3,636	7	4,000	8	5,083	10	6,143	12	4,184	8	3,522	7	2,318	5
	C Season Aug 25-Sep 15	Shumagin (610)	0.003	5,480	16	4,391	13	7,577	23	8,729	26	9,338	28	8,903	27	13,235	40	12,185	37	24,421	73	19,569	59	13,777	41	11,590	35	9,070	27
		Chirikof (620)	0.002	2,695	5	2,160	4	4,878	10	5,619	11	7,282	15	6,944	14	12,448	25	14,628	29	15,404	31	12,341	25	10,013	20	8,423	17	6,739	13
		Kodiak (630)	0.002	4,431	9	3,550	7	5,912	12	6,812	14	8,986	18	8,568	17	13,720	27	18,639	37	19,822	40	15,886	32	13,865	28	11,664	23	9,248	18
	D Season Oct 1-Nov 1	Shumagin (610)	0.003	5,479	16	4,391	13	7,577	23	8,729	26	9,338	28	8,903	27	13,235	40	12,185	37	24,421	73	19,569	59	13,777	41	11,590	35	9,070	27
		Chirikof (620)	0.002	2,695	5	2,160	4	4,878	10	5,619	11	7,282	15	6,944	14	12,448	25	14,628	29	15,402	31	12,341	25	10,013	20	8,423	17	6,739	13
		Kodiak (630)	0.002	4,431	9	3,550	7	5,912	12	6,812	14	8,986	18	8,568	17	13,720	27	18,639	37	19,822	40	15,886	32	13,865	28	11,664	23	9,248	18
	Annual	WYK (640)	0.002	1,517	3	1,215	2	2,031	4	2,339	5	3,244	6	3,093	6	4,741	9	4,719	9	9,348	19	7,492	15	6,833	14	5,748	11	5,554	11
Pacific cod	A Season Jan 1-Jun 10	W (610)	0.02	11,669	233	9,705	194	12,458	249	13,671	273	12,614	252	13,262	265	13,753	275	16,255	325	17,011	340	15,242	305	3,394	68	3,206	64	1,246	25
		C (620/630)	0.044	17,056	750	14,185	624	22,069	971	24,217	1,066	25,623	1,127	23,113	1,017	23,895	1,051	27,594	1,214	22,190	976	19,881	875	3,653	161	3,450	152	2,284	100
	B Season Sep 1-Dec 31	W (610)	0.02	7,780	156	6,470	129	8,306	166	9,144	183	8,410	168	8,841	177	9,169	183	10,837	217	11,341	227	10,161	203	2,263	45	2,137	43	830	17
		C (620/630)	0.044	11,370	500	9,456	416	14,713	647	16,145	710	17,082	752	15,409	678	15,930	701	18,396	809	14,794	651	13,254	583	2,436	107	2,300	101	1,522	67
	Annual	WYK (640)	0.034	2,394	81	1,991	68	2,017	69	1,953	66	1,971	67	2,526	86	1,991	68	2,121	72	6,589	224	5,903	201	1,350	46	1,275	43	549	19
Pacific ocean perch	Annual	W (610)	0.994	3,686	3,664	3,713	3,691	2,895	2,878	2,798	2,781	2,102	2,089	2,005	1,993	2,399	2,385	2,302	2,288	2,737	2,721	2,679	2,663	3,312	3,292	3,227	3,208	1,437	1,428
	Annual	WYK (640)	0.961	1,100	1,057	1,108	1,065	2,004	1,926	1,937	1,861	1,692	1,626	1,613	1,550	1,931	1,856	2,014	1,935	2,847	2,736	2,786	2,677	3,371	3,240	3,296	3,167	1,470	1,413
Northern rockfish	Annual	W (610)	1	2,141	2,141	2,054	2,054	2,703	2,703	2,537	2,537	2,156	2,156	1,899	1,899	1,305	1,305	1,226	1,226	457	457	432	432	420	420	1,190	1,190	1,133	1,133
Dusky rockfish	Annual	W (610)	0.764	1,003	766	819	626	650	497	611	467	409	312	354	270	317	242	296	226	173	132	158	121	146	112	781	597	776	593
	Annual	WYK (640)	0.896	251	225	234	210	434	389	407	365	542	486	465	417	1,384	1,240	1,288	1,154	275	246	251	225	232	208	95	85	115	103

Source: NMFS

Table 4-1. (cont.)

Species	Season	Area	AM80 ratio	2021 TAC	2021 Side-board	2022 TAC	2022 Side-board	2023 TAC	2023 Side-board
Pollock*	A Season Jan 20-May 31	Shumagin (610)	0.003	799	2	1,132	3	1,685	5
		Chirikof (620)	0.002	41,737	83	52,304	105	58,039	116
		Kodiak (630)	0.002	6,297	13	8,080	16	9,121	18
	B Season Sep 1-Nov 1	Shumagin (610)	0.003	17,677	53	22,582	68	25,272	76
		Chirikof (620)	0.002	13,133	26	16,946	34	18,965	38
		Kodiak (630)	0.002	18,023	36	21,988	44	24,608	49
	Annual	WYK (640)	0.002	5,412	11	6,722	13	7,523	15
Pacific cod	A Season Jan 1-Jun 10	W (610)	0.02	3,561	71	4,433	89	3,331	67
		C (620/630)	0.044	6,567	289	9,498	418	7,131	314
	B Season Sep 1-Dec 31	W (610)	0.02	2,029	41	2,526	51	1,894	38
		C (620/630)	0.044	3,675	162	5,316	234	3,991	176
	Annual	WYK (640)	0.034	1,489	51	2,338	79	1,755	60
Pacific ocean perch	Annual	W (610)	0.994	1,643	1,633	2,602	2,586	2,529	2,514
	Annual	WYK (640)	0.961	1,705	1,639	1,409	1,354	1,370	1,317
Northern rockfish	Annual	W (610)	1	2,023	2,023	1,944	1,944	2,614	2,614
Dusky rockfish	Annual	W (610)	0.764	270	206	269	206	149	114
	Annual	WYK (640)	0.896	468	419	427	383	90	81

* Amendmend 109 effective Jan 1 2021, decreased the number of seasons for pollock from four to two and established equal seasonal allowance of 50 percent.

Source: NMFS

Table 4-2. GOA pollock sideboard activity for AM80 vessels, 2008-2023

GOA subarea		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
CG	Total catch (mt)	127	576	395	944	460	458	431	275	26	212	6	27	57	72	44	102
	Sideboard limit (all seasons combined)	66	50	94	115	144	144	243	300	364	295	241	204	162	158	199	221
	Harvest as a percent of sideboard limit	194%	1145%	418%	820%	319%	318%	177%	92%	7%	72%	3%	13%	35%	45%	22%	46%
	Vessel count	9	12	8	5	5	5	4	4	4	4	4	5	5	4	6	3
WG	Total catch (mt)	395	1,026	171	261	326	242	611	288	334	421	355	213	182	252	364	351
	Sideboard limit (all seasons combined)	53	46	79	81	91	77	108	95	169	131	91	75	58	55	71	81
	Harvest as a percent of sideboard limit	747%	2243%	217%	321%	359%	314%	564%	303%	197%	321%	392%	286%	316%	454%	512%	434%
	Vessel count	10	13	13	14	15	10	8	8	9	7	6	5	5	4	4	5
WY	Total catch (mt)	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Sideboard limit (all seasons combined)	3	2	4	5	6	6	9	9	19	15	14	11	11	11	13	15
	Harvest as a percent of sideboard limit	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Vessel count	1	3	2	2	1	1	2	2	2	2	2	2	1	1	1	1

Source: AKFIN File source is A80_Species(12-11-23) for GOA Sideboards

* Denotes confidential data

Table 4-3. GOA Pacific cod sideboard activity for AM80 vessels, 2008-2023

GOA subarea		2,008	2,009	2,010	2,011	2,012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
CG	Total catch (mt)	286	708	292	368	321	417	1,112	552	241	323	66	229	130	479	455	352
	Sideboard limit (all seasons combined)	1,251	1,040	1,618	1,776	1,879	1,695	1,752	2,024	1,627	1,458	268	253	167	451	652	489
	Harvest as a percent of sideboard limit	23%	68%	18%	21%	17%	25%	63%	27%	15%	22%	25%	91%	78%	106%	70%	72%
	Vessel count	8	11	7	5	5	5	4	4	4	4	4	5	5	4	6	3
WG	Total catch (mt)	463	466	454	459	565	276	213	212	91	69	56	152	40	117	111	56
	Sideboard limit (all seasons combined)	389	324	415	456	420	442	458	542	567	508	113	107	42	112	139	105
	Harvest as a percent of sideboard limit	119%	144%	109%	101%	134%	62%	47%	39%	16%	14%	49%	142%	97%	104%	80%	53%
	Vessel count	11	14	13	14	13	9	8	7	10	7	6	5	5	4	4	5
WY	Total catch (mt)	0	*	*	*	0	0	*	*	*	*	*	0	*	*	*	0
	Sideboard limit (all seasons combined)	81	68	69	66	67	86	68	72	224	201	46	43	19	51	79	60
	Harvest as a percent of sideboard limit	0%	*	*	*	0%	0%	*	*	*	*	*	0%	*	*	*	0%
	Vessel count	0	3	2	1	0	0	2	2	2	1	1	0	1	1	1	0

Source: AKFIN File source is A80_Species(12-11-23) for GOA Sideboards

* Denotes confidential data

Table 4-4. GOA POP sideboard activity for AM80 vessels, 2008-2023

GOA subarea		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
WG	Total catch (mt)	2,111	3,046	3,116	1,810	2,421	444	2,091	2,037	2,577	2,608	3,167	3,114	1,324	1,608	2,498	2,388
	Sideboard limit (mt)	3,664	3,691	2,878	2,781	2,089	1,993	2,385	2,288	2,721	2,663	3,292	3,208	1,428	1,633	2,586	2,514
	Percent of sideboard limit	58%	83%	108%	65%	116%	22%	88%	89%	95%	98%	96%	97%	93%	98%	97%	95%
	Vessel count	10	14	13	14	15	10	8	8	10	7	7	5	5	4	4	5
WY	Total catch (mt)	*	1,128	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Sideboard limit (mt)	1,057	1,065	1,926	1,861	1,626	1,550	1,856	1,935	2,736	2,677	3,240	3,167	1,413	1,639	1,354	1,317
	Percent of sideboard limit	*	106%	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Vessel count	1	3	2	2	1	1	2	2	2	2	2	2	1	1	1	1

Source: AKFIN File source is A80_Species(12-11-23)

* Denotes confidential data

Table 4-5. GOA northern rockfish sideboard activity for AM80 vessels, 2008-2023

GOA subarea		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
WG	Total catch (mt)	1,349	1,356	2,035	1,738	1,808	2,170	841	974	105	210	292	816	769	707	474	388
	Sideboard limit (mt)	2,141	2,054	2,703	2,537	2,156	1,899	1,305	1,226	457	432	420	1,190	1,133	2,023	1,944	2,614
	Harvest as a percent of sideboard limit	63%	66%	75%	69%	84%	114%	64%	79%	23%	49%	70%	69%	68%	35%	24%	15%
	Vessel count	10	12	11	13	13	10	8	7	10	7	5	5	5	4	4	5

Source: AKFIN File source is A80_Species(12-11-23)

Table 4-6. GOA dusky rockfish sideboard activity for AM80 vessels, 2008-2023

GOA subarea		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
WG	Total catch (mt)	344	461	522	359	427	208	129	180	78	80	44	189	229	143	101	71
	Sideboard limit (mt)	766	626	497	467	312	270	242	226	132	121	112	597	593	206	206	114
	Harvest as a percent of sideboard limit	45%	74%	105%	77%	137%	77%	53%	79%	59%	66%	39%	32%	39%	69%	49%	62%
	Vessel count	9	12	11	13	14	9	8	6	10	6	5	5	5	4	4	5
WY	Total catch (mt)	*	177	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Sideboard limit (mt)	225	210	389	365	486	417	1,240	1,154	246	225	208	85	103	419	383	81
	Harvest as a percent of sideboard limit	*	84%	*	*	*	*	*	*	*	*	*	*	*	*	*	*
	Vessel count	1	3	2	2	1	1	2	2	2	2	2	2	1	1	1	1

Source: AKFIN File source is A80_Species(12-11-23)

* Denotes confidential data

4.2 GOA Halibut PSC Sideboard Limits and GOA PSC

The AM80 Program also established halibut PSC sideboard limits in the GOA for AM80 vessels except the F/V *Golden Fleece*. NMFS manages halibut PSC limits in the GOA by setting a limit on halibut PSC use for trawl gear through the annual harvest specification process. NMFS subdivides this amount of halibut PSC by the number of seasons (currently five), and into two species complexes, the shallow-water and the deep-water fishery species complexes. NMFS would establish AM80 halibut PSC sideboard limits that are apportioned among seasons and fishery complexes through the annual specification process.

A shallow-water halibut PSC sideboard limit would limit the use of halibut PSC in the shallow-water fishery complex, which includes pollock, Pacific cod, shallow-water flatfish, flathead sole, Atka mackerel, and "other species." A deep-water halibut PSC sideboard limit would limit the use of halibut PSC in the deep-water fishery complex which includes all species not in the shallow-water complex: all rockfish species, rex sole, deep-water flatfish, sablefish, and arrowtooth flounder.

The halibut PSC sideboard limits are based on the historic use of halibut PSC of all AM80 vessels, except the F/V *Golden Fleece* in each season, and by fishery complex during the period from 1998 through 2004. The halibut PSC sideboard limits are slightly lower than historic halibut PSC use by AM80 vessels in the GOA from 1998 through 2004 to accommodate two factors: allocation of halibut PSC CQ under the Central GOA Rockfish Program; and the exemption of the F/V *Golden Fleece*. Table 4-7 lists the halibut PSC sideboard limits by fishery complex and season as a percentage of the GOA trawl halibut PSC limit.

NMFS coordinates catch accounting between the Central GOA Rockfish Program and the AM80 sector to avoid unduly constraining participants in either LAPP. NMFS coordinates management of the two LAPPs by reducing the third season deep-water halibut PSC sideboard limit under the AM80 Program by the amount of halibut PSC that is available for allocation as halibut PSC cooperative quota under the Central GOA Rockfish Program. Deep-water halibut PSC from the third season is specifically assigned to support PSC cooperative quota allocations to the catcher/processor sector under the Central GOA Rockfish Program. Additionally, use of halibut PSC cooperative quota in the Central GOA Rockfish Program is not debited from the AM80 halibut PSC sideboard limit.

Table 4-7 also provides halibut PSC sideboard limit by season. Table 4-8 provides annual halibut PSC along with king crab, *C. bairdi*, Chinook, non-Chinook PSC combined across seasons and complex during the 2008 through 2023 period, while Table 4-9 provides PSC rates for this same period. In general, the AM80 sector manages the GOA halibut sideboards as a voluntary cooperative with computed individual vessel amounts based on qualifying years. The benefit of an internal managed voluntary cooperative management is that it allows for transfers of PSC amongst cooperative vessels and the cooperative can limit GOA fishing for individual vessels when that vessel exceeds their halibut PSC limit. On a few occasions, the voluntary cooperative has asked their vessels to stand down so as not to exceed the halibut PSC sideboard limit.

PSC rates for halibut, measured as metric tons of halibut PSC per metric ton of groundfish, have declined during the review period. PSC rates for *C. bairdi* crab have also declined during the review period. PSC rates for Chinook and non-Chinook salmon were variable across the review period.

Table 4-7. Halibut PSC sideboard limits (mt) for AM80 vessels in the GOA, 2008-2023

Season	Season dates	Target fishery	AM80 ratio	2008-2012		2013		2014		2015		2016-2022		2023	
				Annual PSC limit (mt)	Sideboard limit	Annual PSC limit (mt)	Sideboard limit	Annual PSC limit (mt)	Sideboard limit	Annual PSC limit (mt)	Sideboard limit	Annual PSC limit (mt)	Sideboard limit	Annual PSC limit (mt)	Sideboard limit
1	January 20-April 1	Shallow-water	0.0048	2,000	10	1,973	9	1,848	9	1,759	8	1,706	8	1,705	8
		Deep-water	0.0115	2,000	23	1,973	23	1,848	21	1,759	20	1,706	20	1,705	20
2	April 1-July 1	Shallow-water	0.0189	2,000	38	1,973	37	1,848	35	1,759	33	1,706	32	1,705	32
		Deep-water	0.1072	2,000	214	1,973	212	1,848	198	1,759	189	1,706	183	1,705	183
3	July 1-August 1	Shallow-water	0.0146	2,000	29	1,973	29	1,848	27	1,759	26	1,706	25	1,705	25
		Deep-water	0.0521	2,000	104	1,973	103	1,848	96	1,759	92	1,706	89	1,705	89
4	August 1-October 1	Shallow-water	0.0074	2,000	15	1,973	15	1,848	14	1,759	13	1,706	13	1,705	13
		Deep-water	0.0014	2,000	3	1,973	3	1,848	3	1,759	2	1,706	2	1,705	2
5	October 1-December 31	Shallow-water	0.0227	2,000	45	1,973	45	1,848	42	1,759	40	1,706	39	1,705	39
		Deep-water	0.0371	2,000	74	1,973	73	1,848	69	1,759	65	1,706	63	1,705	63

Source: NMFS

Table 4-8. PSC morality (mt) for AM80 vessels in the GOA, 2008-2023

PSC Species	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Halibut mortality (mt)	430	447	485	491	363	347	468	322	239	384	191	294	159	163	223	94
King crab (#'s)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C. bairdi crab (#'s)	52,435	139,590	20,112	53,284	12,102	137,553	39,392	43,990	18,044	69,606	15,892	71,487	40,761	9,632	5,387	3,737
Chinook salmon (#'s)	2,963	2,410	4,443	2,698	1,510	3,631	2,745	602	207	674	52	108	273	1,261	519	587
Non-Chinook salmon (#'s)	634	291	221	770	218	566	621	164	213	1,109	38	335	395	855	241	772

Source: AKFIN

Table 4-9. PSC rates for AM80 vessels in the GOA, 2008-2023

PSC Species	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Halibut mortality (mt halibut/mt groundfish)	0.018	0.015	0.017	0.016	0.016	0.014	0.012	0.014	0.014	0.013	0.011	0.013	0.010	0.009	0.012	0.007
King crab (# of crab/mt of groundfish)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
C. bairdi crab (# of crab/mt of groundfish)	2.239	4.684	0.703	1.767	0.538	5.612	1.039	1.906	1.071	2.435	0.941	3.183	2.540	0.531	0.280	0.288
Chinook salmon (# of salmon/mt of groundfish)	0.127	0.081	0.155	0.089	0.067	0.148	0.072	0.026	0.012	0.024	0.003	0.005	0.017	0.069	0.027	0.045
Non-Chinook salmon (# of salmon/mt of groundfish)	0.027	0.010	0.008	0.026	0.010	0.023	0.016	0.007	0.013	0.039	0.002	0.015	0.025	0.047	0.013	0.060

Source: AKFIN

4.3 GOA Flatfish Fisheries Prohibition

The AM80 Program limits the number of AM80 vessels and AM80 LLP licenses that could be used for directed fishing in GOA flatfish fisheries. During the development of the AM80 Program, the Council and NMFS reviewed historic harvest patterns during the 1998 through 2004 qualifying years. The analysis for AM80 Program clearly indicated that a specific group of AM80 vessels traditionally had been used in GOA flatfish fisheries. Specifically, certain AM80 vessels were clearly active in the GOA flatfish fisheries, with more than 10 weeks of directed fishing in the GOA from 1998 through 2004 which showed substantially more dependence on the flatfish fisheries than other AM80 vessels with more sporadic participation.

The AM80 Program is intended to reduce fishing pressure in the GOA by AM80 vessels on non-AM80 sector harvesters with substantial flatfish participation by authorizing only those AM80 vessels: (1) With more than 10 weeks conducting directed fishing for GOA flatfish fisheries during 1998 through 2004; and (2) that are designated on an AM80 LLP license that was originally assigned to one of the AM80 vessels meeting that 10 week minimum requirement to be used to directed fish for flatfish in the GOA. Table 39 from 72 FR 52668 published on September 14, 2007, identifies eleven AM80 vessels that meet the criteria. Table 4-10 provides total GOA groundfish catch and vessel count for those AM80 vessels authorized to target GOA flatfish while targeting GOA flatfish from 2008 through 2023. The number of authorized AM80 vessels participating in the GOA flatfish fisheries has ranged from three to six vessels annually. Total catch of all groundfish in the flatfish targets has ranged from a low of 7,021 mt in 2023 to a high of 30,955 mt in 2014.

Table 4-10. GOA groundfish catch (including incidentals) while targeting GOA flatfish for AM80 vessels authorized to target GOA flatfish

	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Total catch GOA flatfish	14,465	17,523	16,901	21,010	13,828	15,956	30,955	14,882	9,083	20,367	7,629	12,231	9,857	10,046	11,224	7,021
Total Amenment 80 vessel count	6	6	6	6	5	5	6	5	5	4	4	4	5	4	6	3

Source: AKFIN File source is A80_Species(12-11-23)

4.4 America's Finest Temporary Sideboard Limitations

On December 4, 2018, the President signed the Frank LoBiondo Coast Guard Authorization Act of 2018 (Coast Guard Act) into law (Pub. L. 115-282). Sections 835 and 836 of the Coast Guard Act contain provisions that apply to vessels owned, and LLP Permits held by Fishermen's Finest. Section 836 contains provisions that limit the amount of groundfish that may be harvested in the GOA by the vessels specified in section 836(a)(2), and the amount of BS, AI, and GOA groundfish that may be processed from deliveries of vessels delivering to the vessels specified in section 836(a)(2). NMFS implemented this limit as described in this Act. Section 836(b) clarifies that these sideboard limits will apply only until the earlier of — the end of the 6-year period beginning on the date of enactment of this Act (December 4, 2024), or the date on which the Secretary of Commerce issues a final rule, based on recommendations developed by the Council consistent with the Magnuson-Stevens Act, that limits processing deliveries of that groundfish species from other vessels in any Bering Sea, Aleutian Islands, and GOA groundfish fisheries that are not subject to conservation and management measures under section 206 of the American Fisheries Act (See section 836(b)).

Since there has not been any final rule, based on recommendations of the Council, for any species that are subject to these sideboard limits, these sideboard limits remain in place until December 4, 2024, or until subsequent action is taken by the Council, and a final rule is issued that limits processing deliveries of that groundfish species from other vessels in any BS, AI, and GOA groundfish fisheries that are not subject to conservation and management measures under section 206 of the American Fisheries Act.

4.5 Total GOA Groundfish Harvest and Value

Table 4-11 provides annual total catch, wholesale value, and the number of AM80 vessels by groundfish species from 2008 through 2023. As noted in the table, the flatfish fisheries are the largest of the AM80 groundfish fisheries followed by the rockfish fisheries. All other groundfish catch, in general, are caught incidental to the flatfish and rockfish fisheries.

Table 4-11. Annual retained catch (mt) and wholesale value ($) of that retained catch, discards (mt), percent of discards, total catch (mt), and vessel count by GOA groundfish species from 2008 through 2023

Species		2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Atka mackerel	Total catch (mt)	1,781	2,155	1,859	1,141	912	715	646	560	345	507	750	826	604	611	579	459
	Wholesale value ($)	$721,229	$1,412,799	$1,006,895	$1,232,431	$788,790	$669,231	$1,097,115	$639,582	$436,043	$943,056	$1,296,367	$1,223,437	$595,553	$851,547	$647,169	616,414
	Vessel count	9	14	16	13	11	12	9	8	10	6	6	7	6	5	6	5
Flatfish	Total catch (mt)	13,159	15,055	14,426	17,557	11,332	13,247	25,453	12,697	8,065	16,424	5,973	9,104	8,271	9,701	10,541	6,044
	Wholesale value ($)	$8,584,275	$7,952,888	$7,714,043	$12,916,553	$10,055,289	$9,241,192	$22,158,740	$10,562,850	$8,830,555	$20,696,546	$6,115,216	$8,138,095	$5,769,084	$6,394,145	$9,222,847	6,460,609
	Vessel count	13	18	17	17	17	12	9	9	13	10	9	11	9	7	8	7
Other species	Total catch (mt)	388	653	678	648	623	599	868	631	443	812	355	631	341	156	115	107
	Wholesale value ($)	$298,578	$300,667	$247,562	$385,926	$575,445	$407,524	$208,847	$247,975	$76,776	$122,969	$82,514	$92,473	$37,851	$35,229	$13,297	8,992
	Vessel count	13	18	17	17	17	3	6	4	7	6	6	5	4	3	3	2
Pacific cod	Total catch (mt)	1,017	1,584	1,110	1,153	1,149	1,541	2,307	1,370	423	621	386	615	643	879	838	408
	Wholesale value ($)	$1,904,886	$1,874,783	$1,398,955	$1,904,558	$1,771,508	$834,733	$1,349,048	$1,248,143	$595,712	$923,299	$555,986	$576,770	$304,883	$502,788	$1,145,213	451,045
	Vessel count	12	18	17	16	14	12	9	9	12	9	8	8	7	6	8	6
Pollock	Total catch (mt)	634	1,960	924	1,561	1,276	2,128	1,619	790	596	1,097	853	679	467	793	648	497
	Wholesale value ($)	$299,675	$856,972	$427,983	$624,339	$498,225	$564,154	$576,856	$345,328	$277,498	$276,655	$273,790	$196,228	$167,379	$240,373	$224,101	191,223
	Vessel count	13	18	17	17	17	13	10	10	12	10	9	9	9	7	8	7
Rockfish	Total catch (mt)	6,080	8,020	9,307	7,646	6,971	6,014	6,701	6,689	6,578	8,283	7,914	9,486	4,992	5,261	5,665	4,887
	Wholesale value ($)	$5,121,975	$6,440,459	$10,741,505	$13,895,912	$9,679,216	$4,952,581	$7,997,170	$7,039,823	$6,956,033	$9,062,019	$9,723,021	$7,938,680	$3,720,072	$4,172,607	$6,003,015	4,792,815
	Vessel count	13	17	17	17	17	13	10	10	13	10	9	11	8	7	8	7
Sablefish	Total catch (mt)	363	377	299	441	241	266	317	338	355	839	658	1,115	732	752	824	566
	Wholesale value ($)	$2,189,188	$2,412,596	$2,265,649	$3,084,527	$1,236,116	$1,521,363	$2,371,447	$2,295,107	$2,640,607	$3,961,695	$2,579,849	$2,109,174	$1,336,555	$1,710,493	$2,189,250	1,295,619
	Vessel count	13	16	16	15	16	7	9	9	13	10	9	9	8	7	8	7
Total	Total catch (mt)	23,423	29,804	28,603	30,147	22,504	24,511	37,911	23,075	16,806	28,583	16,889	22,456	16,050	18,153	19,211	12,967
	Wholesale value ($)	$19,119,806	$21,251,164	$23,802,593	$34,044,246	$24,604,589	$18,190,777	$35,759,222	$22,378,809	$19,813,225	$35,986,240	$20,626,742	$20,274,857	$11,931,376	$13,907,181	$19,444,893	13,816,717
	Vessel count	13	18	17	17	17	13	10	10	13	10	9	11	9	7	8	7

Source: AKFIN File source is A80_All_Species(8-21-24)

4.6 AM80 Vessel Replacement and Sideboard Issues

As noted by the NMFS during the October 2024 Council meeting, the AM80 and Rockfish programs both have "sideboard limits" that restrict vessels and holders of LLP licenses from using the increased flexibility provided by the catch share programs to expand their level of participation in specific GOA fisheries. Sideboard limits include limits on halibut prohibited species catch in the GOA. These programs explicitly apply the sideboards to vessels, regardless of the fisheries they are participating in, and do not provide any regulatory mechanisms to remove sideboards from specific vessels. NMFS has received inquiries from companies asking to use the AM80 vessel replacement provision as a way to remove sideboards from an AM80 vessel or Rockfish Program vessel.

In 2012, with Amendment 97, the Council and NMFS created provisions to allow owners of AM80 vessels to replace their vessel for any reason at any time and apply GOA sideboard measures from the original AM80 vessel to the AM80 replacement vessel. Under Amendment 97, the Council contemplated that vessel replacement would be driven by condition of the original vessel and operational considerations such as efficiency, technology, etc. It was understood that once a vessel is replaced, it would likely no longer participate in Alaska fisheries because of the condition of the vessel. Applying sideboards to the replacement vessel, in addition to the original vessel, ensures that the replacement vessel does not expand its participation in fisheries beyond the original vessel's participation. Removing sideboards from the original vessel was not identified as a reason to replace an AM80 vessel.

The original AM80 analysis did not consider the possibility of AM80 permits being attached to catcher vessels, which has happened since AM80 and Amendment 97 were implemented in 2008 and 2012. As noted in the summary of Amendment 97 regulations below (section 4.6.1), replaced AM80 vessels are assigned a catch limit of zero metric tons in all BSAI and GOA groundfish fisheries. Catch limits of zero metric tons will effectively prohibit these vessels from conducting directed fishing for groundfish in the BSAI and GOA, unless an AM80 permit is reattached to the vessel. As a result, AM80 CVs like AM80 CPs cannot be replacement vessels for AFA, Crab, and GOA Rockfish Program.

Since there is no regulatory mechanism to remove sideboards from an original qualifying vessel under either the AM80 Program or the Rockfish Program, if a vessel with sideboards from either program becomes an AM80 replacement vessel, that vessel then has the applicable sideboards from both the original and the replacement vessel. In other words, any AM80 replacement vessel would maintain its original sideboards and assume the sideboards from the vessel it replaced. Also, the act of replacing a vessel does not remove the sideboards from the vessel being replaced because there is no regulatory mechanism to transfer sideboards from an AM80 vessel to an AM80 replacement vessel. Allowing an AM80 vessel or Rockfish Program qualifying vessel to remove their sideboards through vessel replacement would be contrary to the stated program goal. It would allow vessels that were granted advantages of quota share and cooperative membership to move into other fisheries and out-compete participants that do not have the benefits of a catch share program.

Section 4.6.1 is a summary of Amendment 97 along with more details on the sideboard provisions of the amendment. Also provided below is a description of vessel replacement and sideboard issues that NMFS has received inquiries from and NMFS response to those vessel replacement and GOA sideboard issues.

4.6.1 Amendment 97 Summary

Amendment 97 final rule establishes regulations that permit the owner of an AM80 vessel to replace that vessel with up to one other vessel for any reason and at any time. The vessel replacement process provides AM80 vessel owners with the flexibility to incorporate a broad range of processing opportunities that were not available when AM80 was implemented in 2008. Amendment 97 is intended to facilitate improved retention and utilization of catch by the AM80 sector through vessel upgrades and new vessel

construction. The amendment was also intended to address the regulatory deficiencies that were identified by the court in Arctic Sole Seafoods v. Gutierrez, 622 F. Supp. 2d 1050 (W.D. Wash. 2008).

Specifically, Amendment 97: (1) Allows AM80 vessels to be replaced for any reason at any time, up to a one-for-one vessel replacement; (2) prohibits American Fisheries Act (AFA) vessels from being used as AM80 replacement vessels; (3) establishes a maximum vessel length for AM80 replacement vessels and modifies the maximum length over-all (MLOA) on LLP licenses assigned to AM80 replacement vessels; (4) establishes a process for reassigning an AM80 Quota Share (QS) permit to either an AM80 replacement vessel or an AM80 LLP license; (5) imposes sideboard limitations on replaced vessels; (6) applies Gulf of Alaska (GOA) sideboard measures to an AM80 replacement vessel if GOA sideboard measures applied to the AM80 vessel being replaced, with exceptions for the F/V Golden Fleece; (7) establishes specific regulatory restrictions and requirements that apply to any vessel that replaces the F/V Golden Fleece; (8) allows an AM80 replacement vessel to conduct directed fishing for GOA flatfish if the AM80 vessel being replaced was authorized to conduct directed fishing for GOA flatfish; (9) requires an owner to demonstrate to NMFS an AM80 replacement vessel's compliance with U.S. Coast Guard safety requirements; and (10) establishes a process by which a vessel owner can apply to NMFS for approval to use an AM80 replacement vessel in the AM80 sector. Below is provided further information concerning vessel replacement provisions with regards to the GOA sideboard limits.

Replacement for Any Reason at Any Time, Up to One-for-One Vessel Replacement

The regulations at § 679.4(o)(1)(v) and (vii), allow an owner of an AM80 vessel to replace the vessel for any reason and at any time up to a one-for-one vessel replacement. This rule enables a vessel owner to initiate new construction of a replacement vessel while the vessel to be replaced is still active (i.e., before it is lost), providing an opportunity for a potentially seamless replacement process and thereby reducing potential costs associated with foregone harvests. Although the owner of an AM80 vessel can apply to use an existing AM80 vessel as an AM80 replacement vessel, or other vessels that otherwise meet the requirements of this final rule, the Council and NMFS anticipate that most replacement vessels will be newly constructed and larger than the vessel being replaced. Many of the existing vessels in the AM80 fleet were originally constructed for purposes other than fishing; therefore, these vessels may be less well-designed for fishing than a new, purposefully constructed fishing vessel would be. As an alternative to new vessel construction, the rule also enables the owner of an AM80 vessel to replace an aging or underperforming vessel with an existing vessel, including a vessel currently prosecuting AM80 fisheries.

Although an AM80 vessel owner is authorized to replace the vessel at any time for any reason, the rule limits the number of replacement vessels an owner may have, requiring that each AM80 vessel may be replaced by no more than one vessel at any given time. Under the AM80 program, NMFS determined that 28 vessels met the criteria for participation and therefore were eligible to participate in the AM80 sector, so under the rule in no case could more than 28 vessels participate in the AM80 fisheries at any given time.

Sideboard Limitations for Replaced Vessels

The intent of Amendment 97 is to limit effort in non-AM80 fisheries by AM80 vessels not assigned to an AM80 QS permit or an AM80 LLP/QS license, also referred to as replaced AM80 vessels. Therefore, regulations establish restrictions on the ability of replaced AM80 vessels to participate in Federal groundfish fisheries within the BSAI and GOA. NMFS will allocate a catch limit of zero metric tons in all BSAI and GOA groundfish fisheries to any replaced AM80 vessel. Catch limits of zero metric tons will effectively prohibit these vessels from conducting directed fishing for groundfish in the BSAI and GOA, unless an AM80 permit is reattached to the vessel. The Council and NMFS determined that assigning a catch limit of zero metric tons to replaced AM80 vessels was the most direct way to limit participation by replaced vessels.

These regulations are intended to prevent replaced AM80 vessels from increasing fishing effort in non-catch share fisheries. Additionally, the Council and NMFS determined that the potential for consolidation of capital among longtime participants in groundfish fisheries might disadvantage or have negative impacts on other participants in those fisheries. This type of restriction on replaced AM80 vessels is consistent with measures contained in other limited access privilege programs in the BSAI and GOA, such as the AFA (see the final rule implementing the AFA at 67 FR 79692, December 30, 2002), the BSAI Crab Rationalization Program (see the final rule implementing the BSAI Crab Rationalization Program at 70 FR 10174, March 2, 2005), and the Central GOA Rockfish Program (see the final rule implementing the Central GOA Rockfish Program at 76 FR 81248, December 27, 2011). The rule does not restrict replaced AM80 vessels from participating in the BSAI and GOA fisheries as motherships, Community Quota Entity floating processors, or stationary floating processors that receive deliveries from other vessels for processing. Similarly, this action does not restrict replaced AM80 vessels from operating in fisheries managed under the jurisdiction of other regional fishery management councils.

AM80 Sideboard Catch Limits and Replacement Vessels

Under regulations implementing Amendment 97, existing regulatory prohibitions and requirements for monitoring, enforcement, permitting, and recordkeeping and reporting that apply to all original AM80 vessels will continue to apply to all replacement vessels. With an exception for the F/V *Golden Fleece*, GOA groundfish and halibut PSC sideboard measures that apply to original AM80 vessels will continue to apply to replacement vessels. The Council and NMFS determined that the F/V *Golden Fleece* has a unique harvest pattern in the GOA that warranted specific GOA sideboard measures under AM80, including an exemption from the GOA halibut PSC sideboard limit established by regulations implementing AM80. These specific GOA sideboard measures enable the F/V *Golden Fleece* to maintain its historic fishing patterns in certain GOA groundfish fisheries. Under the regulations, any replacement vessel for the F/V *Golden Fleece* that is less than or equal to the MLOA of the LLP license that was originally assigned to the F/V *Golden Fleece* (124 feet, 37.8 m) will receive the F/V *Golden Fleece* GOA groundfish sideboard limits and the exemption from the GOA halibut PSC sideboard limit implemented under AM80. However, if the replacement vessel for the F/V *Golden Fleece* is greater than 124 feet (37.8 m) LOA, then that replacement vessel will be subject to the GOA groundfish and halibut PSC sideboard limits that apply to other AM80 vessels. Under the latter scenario, the replacement vessel will not receive the specific F/V *Golden Fleece* sideboard restrictions and exemptions and GOA groundfish and halibut PSC use of the F/V *Golden Fleece* will be added to the existing AM80 GOA sideboards. However, if the replacement vessel is another AM80 vessels, that replacement vessel is not absolved from its original AM80 sideboards.

Directed Fishing in GOA Flatfish Fisheries

Under the regulation implementing Amendment 97, any vessel that replaces an AM80 vessel that is eligible to conduct directed fishing for flatfish in the GOA will be allowed to conduct directed fishing in the GOA flatfish fisheries. There are eleven AM80 vessels currently authorized to conduct directed fishing in the GOA flatfish fisheries.

4.6.2 AM80 or Rockfish Program qualifying vessel to remove their sideboards through vessel replacement

The AM80 Program and Rockfish Program both have “sideboard limits” that restrict vessels and holders of LLP licenses from using the increased flexibility provided by the catch share programs to expand their level of participation in specific GOA fisheries. These sideboards are intended to protect historic fishery participants from the increased flexibility provided to participants in the AM80 and Rockfish programs.

These programs explicitly apply the sideboards to individual vessels and do not provide any regulatory mechanisms to remove sideboards from specific vessels. NMFS tracks the vessel sideboards by a vessel's unique NMFS vessel identification number and the U.S. Coast Guard Documentation number.

The Rockfish Program, implemented in 2007 and revised and reimplemented in 2012, is a catch share program for eligible participants in the rockfish fisheries in the GOA. The intent of the Rockfish Program was to retain the conservation, management, safety, and economic gains created by the Rockfish Pilot Program. This program also established sideboard limits for other GOA fisheries that apply to both physical vessels and LLP licenses eligible to participate in the Rockfish Program (see 50 CFR 679.82(e)).

The regulations for the AM80 Program and the Rockfish Program are very clear that the sideboard limits apply to the physical vessel and do not allow the owner of a vessel to relinquish their sideboard limits or other requirements for any reason. Applying these requirements to the vessel, and not just the LLP license, achieves the goals of the AM80 Program and the Rockfish Program to prohibit vessels that were granted advantages of quota share and cooperative membership under these catch share programs to move into other fisheries and potentially out-compete historic participants.

In 2012, with Amendment 97, the Council and NMFS created provisions to allow owners of AM80 vessels to replace their vessel for any reason at any time and apply GOA sideboard measures from the AM80 vessel to the AM80 replacement vessel. As noted above, the Council contemplated that vessel replacement would be driven by condition of the original vessel and operational considerations such as efficiency, technology, etc. Removing sideboards was not identified as a reason to replace an AM80 vessel.

Since there is no regulatory mechanism to remove sideboards from an original qualifying vessel under either the AM80 Program or the Rockfish Program, if a vessel with sideboards from either program becomes an AM80 replacement vessel, that vessel then has the applicable sideboards from both the original and the replacement vessel. Additionally, the act of replacing an AM80 vessel does not remove the sideboards from the original vessel. In other words, an AM80 vessel would keep its sideboards in the event it is replaced, and an AM80 replacement vessel would maintain its original sideboards and also assume the sideboards from the vessel it replaced. A vessel subject to both original and assumed sideboards, would be held to the most restrictive sideboard at any time. Nothing in the AM80 replacement vessel regulations removes sideboards from an AM80 vessel or vessel sideboards from the Rockfish Program.

Where the Council and NMFS have intended to provide relief from vessel sideboard regulations to replacement vessels, it has provided specific regulatory provisions for doing so. For example, the American Fisheries Act (AFA) regulations do explicitly allow an AFA replacement catcher vessel for an AFA catcher vessel to have the same sideboard exemptions, if any, as the replaced AFA catcher vessel; except that if the AFA replacement vessel was already designated on an AFA permit as exempt from sideboard limits, the AFA replacement vessel will maintain its exemption even if the replaced vessel was not exempt from sideboard limits (see 50 CFR 679.4(l)(7)(ii)). The regulations for the AM80 and Rockfish programs do not include this explicit provision that removes sideboards from the AM80 replacement vessel.

In summary, allowing an AM80 vessel or Rockfish Program qualifying vessel to remove their sideboards through vessel replacement would be contrary to the stated program goals. It would allow vessels that were granted advantages of quota share and cooperative membership to move into other fisheries and potentially out-compete historic participants.

4.6.3 Using an AM80 vessel to replace the F/V *Golden Fleece*

Under Amendment 97, the North Pacific Fishery Management Council and NMFS created provisions to allow owners of AM80 vessels to replace their vessel for any reason at any time and apply GOA sideboard measures to an AM80 replacement vessel and established specific regulatory restrictions and requirements that apply to any vessel that replaces the F/V *Golden Fleece*. However, § 679.4(o)(4)(i) specifically states that "All Federal fishery regulations applicable to the replaced vessel apply to the replacement vessel, except as described at § 679.92(d)(2)(ii) if applicable."

The regulations at § 679.92(d)(2)(ii) address replacing the F/V *Golden Fleece* with vessels longer than 124 feet (37.8 m) LOA, then that replacement vessel will be subject to the GOA groundfish and halibut PSC sideboard limits that apply to other AM80 vessels. In this case, the replacement vessel will not receive the specific F/V *Golden Fleece* sideboard restrictions and exemptions and GOA groundfish and halibut PSC use of the F/V *Golden Fleece* will be added to the existing AM80 GOA sideboards.

The regulations at § 679.92(d)(2)(i), which describe replacing the F/V *Golden Fleece* with a vessel of 124 feet or less, are not exempt from the replacement restrictions from Amendment 97 under § 679.4(o)(4)(i). Under the regulations, any replacement vessel for the F/V *Golden Fleece* that is less than or equal to the MLOA of the LLP license that was originally assigned to the F/V *Golden Fleece* (124 feet, 37.8 m) will receive the F/V *Golden Fleece* GOA groundfish sideboard limits and the exemption from the GOA halibut PSC sideboard limit implemented under AM80. However, if the F/V *Golden Fleece* is replaced by an AM80 vessel of any size, the vessel specific sideboards and monitoring requirements that apply to that AM80 vessel, as identified by the corresponding US Coast Guard Documentation Number, will continue to apply to that AM80 vessel when it fishes in the Gulf of Alaska, regardless of whether it is named as a replacement vessel for the F/V *Golden Fleece* or fishing under the F/V *Golden Fleece's* LLP license. The AM80 Program explicitly applied sideboards to specific AM80 vessels, and the vessel replacement provisions or LLP license transfer provisions do not allow a vessel to remove its sideboards or monitoring requirements. In other words, the original AM80 vessel must retain its sideboard limitations when it becomes a replacement vessel for the F/V *Golden Fleece* and thus maintain the intent of the vessel-specific sideboards in the AM80 Program.

In summary, the AM80 Program regulations do not allow an AM80 vessel to fish as the F/V *Golden Fleece* replacement vessel without the AM80 sideboards that apply to the AM80 vessel, including the vessel's halibut PSC sideboard limit and monitoring requirements, remaining in place.

5 Bycatch of Halibut and Crab in the AM80 Program

This section of the AM80 Program review summarizes PSC of halibut and crab in the AM80 fisheries from 2008 through 2023. Total PSC and PSC rates as a percentage of target catches are provided. This section also describes existing efforts and projects in development within the AM80 cooperative to minimize halibut PSC catch and mortality.

Prohibited species in the BSAI Management Area include Pacific salmon (Chinook and non-Chinook), Pacific halibut, Pacific herring, red king crab (in Zone 1), golden king crab, blue king crab, *Chionoecetes opilio* (in the *C. opilio* bycatch limitation zone or COBLZ), other *C. opilio*, and *Chionoecetes bairdi* (in Zone 1 and 2) caught by a vessel issued a federal fisheries permit under 50 CFR § 679.4(b) while fishing for groundfish in the BSAI. Prohibited species must be returned to the sea as soon as possible after they are caught unless retention is authorized by other applicable laws.

Prior to passage of AM80 to the BSAI groundfish FMP in 2008, PSC limits for prohibited species other than Chinook and non-Chinook salmon were apportioned first to the trawl and non-trawl sectors, and then to each target fishery category. Crab, halibut, or herring PSC caught by AM80 sector while fishing for groundfish accrue against the PSC allowances annually specified for the target fishery categories that included the AM80 species. After implementation of AM80, the PSC apportionment to the trawl sector was further divided between the AM80 sector (non-pollock trawl catcher/processors) and the BSAI trawl limited access sector (all non-AM80 trawl fishery participants, including AFA catcher/processors, AFA catcher vessels, and non-AFA trawl catcher vessels) before being allocated to individual trawl fishery categories.[13] Crab and halibut trawl PSC limits assigned to the AM80 sector are then further allocated to AM80 cooperatives as cooperative quota. Crab and halibut PSC cooperative quota assigned to AM80 cooperatives is not allocated to specific fishery categories. Halibut and crab PSC limits from 2008 through 2023 are included in Table 5-1.

Specific to halibut PSC limit, the AM80 sector was allocated 2,525 mt in 2008, with the amount reduced 50 mt each year through 2012. In the years 2012 through 2015, AM80 halibut PSC allocation was set at 2,325 mt. The AM80 trawl PSC limit is specifically allocated among the AM80 cooperative(s) and the AM80 limited access sector; however, the AM80 sector is currently comprised of a single cooperative, the Alaska Seafood Cooperative (AKSC), and there is currently no limited access participation. All fishing vessels in the sector must stop fishing for the remainder of the year when the annual PSC limit is reached.

Starting in 2016, the BSAI PSC limit for the AM80 sector is set in the FMP and in regulation as an amount of halibut mortality equivalent to 1,745 mt (Amendment 111). Halibut PSC management for the AM80 sector once again changed starting in 2024. Effective January 1, 2024, Amendment 123 to the Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands management area replaces the AM80 sector static halibut PSC level of 1,745 metric tons with a process for annually setting the halibut PSC limit for the AM80 sector based on the most recent halibut abundance index estimates (see Section 5.4 for more information).[14]

For crab PSC limits, they are specified annually based on abundance and spawning biomass and are established by regulation. Figure 5-1 and Figure 5-2 provide maps of Zones 1 and 2 red king crab and *C. bairdi* crab savings areas and the COBLZ for *C. opilio* crab. Crab PSC limits assigned to the AM80 sector are then further allocated to AM80 cooperatives as cooperative quota. Crab PSC cooperative quota assigned to AM80 cooperatives is not allocated to specific fishery categories. If a specific crab PSC limit

[13] Non-AFA trawl catcher vessels fish for Pacific cod and yellowfin sole and are not authorized to participate in directed fishing for pollock.

[14] https://www.fisheries.noaa.gov/bulletin/ib-23-61-noaa-fisheries-files-final-rule-implement-amendment-123-fishery-management

is reached, the sector would be required to move out of the applicable crab savings area when directed fishing in a fishery subject to that PSC limit.

Figure 5-1 Zone 1 and 2 area for closures (red king crab and *C. bairdi* crab)

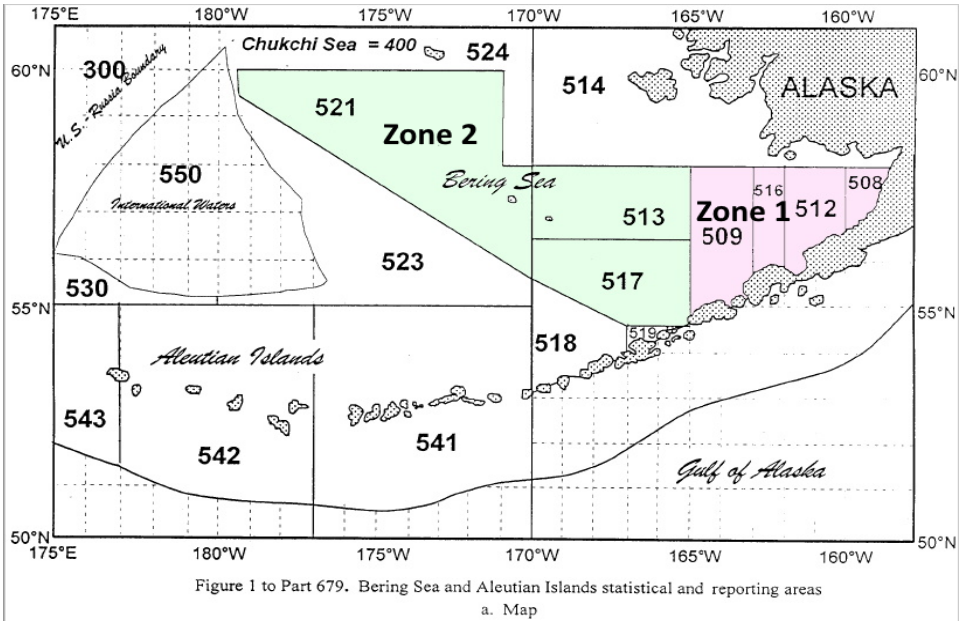


Figure 1 to Part 679. Bering Sea and Aleutian Islands statistical and reporting areas
a. Map

Figure 5-2 *C. opilio* Bycatch Limitation Zone (COBLZ)

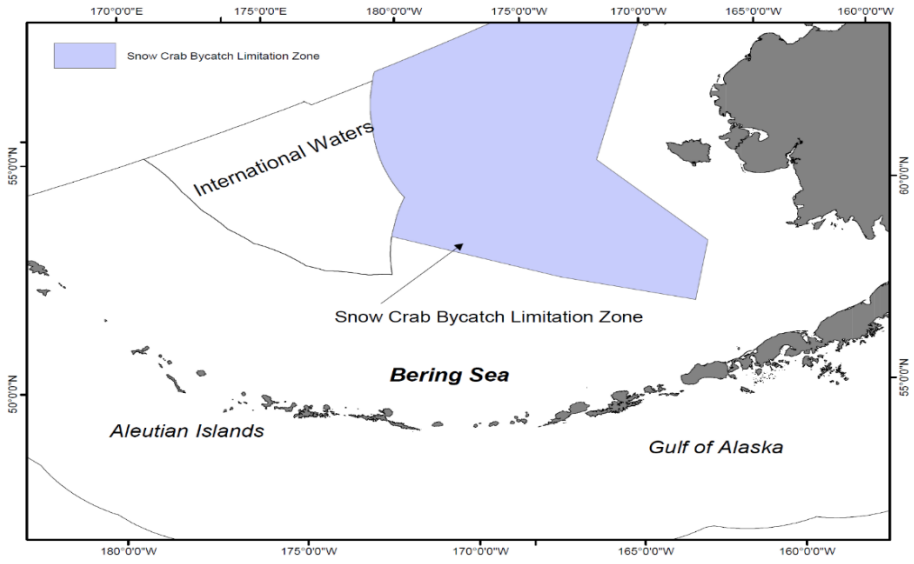


Table 5-1 Halibut and crab PSC limits for the AM80 sector, 2008 through 2023

Year	Halibut PSC limit (mt)	Red king crab (Zone 1) PSC limit (# of crab)	*C. opilio* (COBLZ) PSC limit (# of crab)	*C. bairdi* (Zones 1 & 2) PSC limit (# of crab)
2008	2,525	109,915	2,386,668	1,245,463
2009	2,475	104,427	2,267,412	1,183,194
2010	2,425	98,920	2,148,156	950,447
2011	2,375	93,432	3,875,381	897,574
2012	2,325	43,293	3,085,323	996,299
2013	2,325	43,293	4,609,135	996,299
2014	2,325	43,293	4,909,594	996,299
2015	2,325	43,293	4,833,261	996,299
2016	1,745	43,293	2,066,524	844,775
2017	1,745	43,293	3,996,480	749,657
2018	1,745	43,293	4,003,091	844,775
2019	1,745	43,293	5,230,243	996,299
2020	1,745	43,293	3,766,238	996,299
2021	1,745	43,293	3,156,567	996,299
2022	1,745	14,282	1,909,256	844,775
2023	1,745	14,282	1,909,256	844,775

Source: AKFIN; file name is A80_PSC(8-13-24)

5.1 Prohibited Species Catch and Catch Rates

Table 5-2 shows annual PSC, Table 5-3 shows annual PSC as a percentage of halibut and crab PSC limit, and Table 5-4 shows the annual PSC rate from 2008 through 2023 for the AM80 sector. Table 5-4 also includes the total groundfish catch in the AM80 fisheries (allocated and incidental) which is used as the denominator in calculating the PSC rate. Additionally, Figure 5-3 through Figure 5-8 illustrate PSC and PSC rates for each PSC species by the AM80 sector. As noted in Table 5-3, the AM80 sector did not exceed the halibut or crab PSC limits during the review period.

Annual halibut PSC and the halibut PSC rate by the AM80 fleet from 2015 through 2023 declined when compared to halibut PSC from 2008 through 2014 (see Table 5-2, Table 5-4, and Figure 5-3). Annual halibut PSC averaged 2,057 mt over the 2008 through 2014 period, while the average annual halibut PSC averaged 1,314 mt during the 2015 through 2023 period. Annual halibut PSC rate averaged 6.9 kg of halibut per mt of total groundfish during the 2008 through 2014 period but declined to 4.3 kg of halibut per mt of groundfish during the 2015 through 2023 period.

PSC and PSC rates of red king crab (Zone 1) in the AM80 BSAI fisheries trended downward during 2008 through 2014 and continued to trend downward for this review period (2015 through 2023) (Table 5-2, Table 5-4, and Figure 5-4). PSC and PSC rates for red king crab (Zone 1) declined to the lowest level since implementation of AM80 Program during the 2022 and 2023 fishing season. Overall, the average PSC rate for red king crab by the AM80 sector declined during the 2015 through 2023 period to 0.053 red king crab (Zone 1) per mt of total groundfish catch relative to an average of 0.150 red king crab per mt of total groundfish catch during 2008 through 2014.

For *C. opilio* crab, PSC and PSC rates declined during the 2008 through 2014 period and continued declining from 2015 to 2017 to its lowest level since implementation of AM80 (Table 5-2, Table 5-4, and Figure 5-5). Following the long decline in PSC and PSC rates, the sector in 2018 experienced its highest PSC and PSC rate since implementation of the AM80 Program in 2008. Following the 2018 spike, PSC and PSC rates quickly declined through the 2022 fishing season but then increased during the 2023 season. Average annual PSC rate for *C. opilio* crab by the AM80 sector during 2008 through 2014 was 1.342 crabs per mt of total groundfish catch, while the PSC rate during the 2015 through 2023 was 1.597 crab per mt of total groundfish catch.

AM80 PSC and PSC rates for *C. bairdi* crab where more variable across the 2008 through 2023 period but the trend of *C. bairdi* crab per mt of total groundfish catch by the AM80 sector has declined during

the 2008 through 2023 period (Table 5-2, Table 5-4, and Figure 5-6). The average annual PSC rate for *C. bairdi* crab during 2008 through 2014 was 1.660 crabs per mt of total groundfish catch, while the PSC rate from 2015 through 2023 declined to 1.168 crabs per mt of total groundfish catch.

Chinook and non-Chinook PSC and PSC rates during the 2008 through 2023 period remained relatively low with the exception of a spike in Chinook salmon in 2015 and 2016 and non-Chinook salmon in 2018 and 2019 (Table 5-2, Table 5-4, Figure 5-7 and Figure 5-8). The large spikes for both Chinook and non-Chinook during 2015 through 2023 resulted in an increase in the average PSC rates for both Chinook (.011 Chinook salmon per mt of total groundfish catch) and non-Chinook salmon (0.016 non-Chinook salmon per mt of total groundfish catch) relative to the average PSC rates (0.003 for Chinook salmon and 0.004 non-Chinook salmon) during 2008 through 2014.

Table 5-2 PSC for the AM80 fleet from 2008 through 2023

Year	Halibut PSC (mt)	Red king crab (Zone 1) (# of crab)	*C. opilio* (COBLZ) (# of crab)	*C. bairdi* (Zones 1 & 2) (# of crab)	Chinook salmon (# of salmon)	Non-Chinook salmon (# of salmon)
2008	1,969	78,426	601,773	527,510	10	0
2009	2,074	59,428	356,667	393,917	0	0
2010	2,254	54,479	267,673	392,412	1,625	1,536
2011	1,810	31,304	481,221	792,046	663	2,973
2012	1,944	24,164	326,698	346,236	576	1,115
2013	2,166	22,537	401,950	589,916	1,960	896
2014	2,178	26,586	329,060	463,179	1,709	3,579
2015	1,404	12,615	394,154	350,024	5,115	4,568
2016	1,412	21,442	145,705	190,356	6,862	3,169
2017	1,167	27,143	125,564	259,502	3,565	2,852
2018	1,343	9,799	1,216,259	145,621	2,280	12,465
2019	1,458	20,775	841,252	312,729	4,581	9,863
2020	1,097	32,474	671,648	556,768	2,162	2,123
2021	1,061	16,397	200,415	504,279	1,827	3,994
2022	1,556	1,903	189,090	396,004	1,230	2,517
2023	1,331	2,512	643,200	481,859	1,547	3,211

Source: AKFIN; file name is A80_PSC(8-13-24) and A80_PSC(11-19-24) for red king crab (Zone 1) PSC

Table 5-3 PSC as a percentage of halibut and crab PSC limit, 2008 through 2023

Year	Halibut PSC limit (mt)	Red king crab (Zone 1) PSC limit (# of crab)	*C. opilio* (COBLZ) PSC limit (# of crab)	*C. bairdi* (Zones 1 & 2) PSC limit (# of crab)
2008	78%	71%	25%	42%
2009	84%	57%	16%	33%
2010	93%	55%	12%	41%
2011	76%	34%	12%	88%
2012	84%	56%	11%	35%
2013	93%	52%	9%	59%
2014	94%	61%	7%	46%
2015	60%	29%	8%	35%
2016	81%	50%	7%	23%
2017	67%	63%	3%	35%
2018	77%	23%	30%	17%
2019	84%	48%	16%	31%
2020	63%	75%	18%	56%
2021	61%	38%	6%	51%
2022	89%	13%	10%	47%
2023	76%	18%	34%	57%

Source: AKFIN; file name is A80_PSC(8-13-24) and A80_PSC(11-19-24) for red king crab (Zone 1) PSC

Table 5-4 PSC rate for the AM80 sector from 2008 through 2023

Year	Halibut PSC rate (halibut PSC in kilograms/total groundfish catch (mt) in the AM80 fisheries (allocated & incidental))	Red king crab (Zone 1) PSC rate (# red king crab PSC/total groundfish catch (mt) in the AM80 fisheries (allocated & incidental))	*C. opilio* (COBLZ) crab PSC rate (# *C. opilio* crab PSC/total groundfish catch (mt) in the AM80 fisheries (allocated & incidental))	*C. bairdi* (Zones 1 & 2) crab PSC rate (# *C. bairdi* crab PSC/total groundfish catch (mt) in the AM80 fisheries (allocated & incidental))	Chinook salmon PSC rate (# of Chinook/total groundfish catch (mt) in the AM80 fisheries (allocated & incidental))	Non-Chinook salmon PSC rate (# of non-Chinook/total groundfish catch (mt) in the AM80 fisheries (allocated & incidental))	Total groundfish catch (mt) in the AM80 fisheries (allocated & and incidental)
2008	7.736	0.308	2.364	2.072	0.00	0.000	254,532
2009	9.038	0.259	1.554	1.716	0.000	0.000	229,512
2010	6.695	0.162	0.795	1.165	0.005	0.005	336,717
2011	5.576	0.096	1.482	2.440	0.002	0.009	324,637
2012	5.947	0.074	0.999	1.059	0.002	0.003	326,979
2013	6.518	0.068	1.210	1.775	0.006	0.003	332,315
2014	6.546	0.080	0.989	1.392	0.005	0.011	332,768
2015	4.584	0.041	1.287	1.143	0.017	0.015	306,363
2016	4.459	0.068	0.460	0.601	0.022	0.010	316,676
2017	3.970	0.092	0.427	0.883	0.012	0.010	294,032
2018	4.322	0.032	3.913	0.469	0.007	0.040	310,809
2019	4.709	0.067	2.716	1.010	0.015	0.032	309,706
2020	3.520	0.104	2.156	1.787	0.007	0.007	311,533
2021	3.876	0.060	0.732	1.842	0.007	0.015	273,803
2022	4.750	0.006	0.577	1.209	0.004	0.008	327,603
2023	4.347	0.008	2.101	1.574	0.005	0.010	306,140

Source: AKFIN; file name is A80_PSC(8-13-24) and A80_PSC(11-19-24) for red king crab (Zone 1) PSC

Figure 5-3 Halibut PSC (mt) and halibut PSC rate (Kg of halibut PSC per mt divided by total groundfish catch (mt) in the AM80 fisheries (allocated & incidental)) from 2008 through 2023

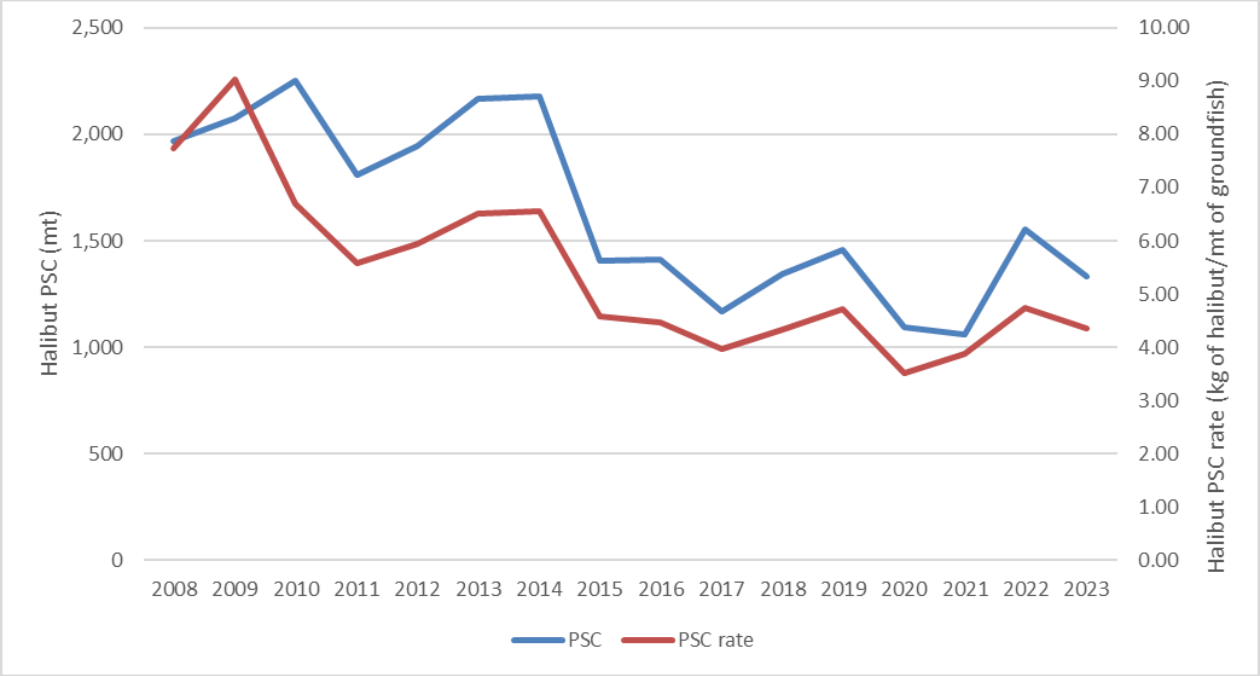


Figure 5-4 Red king crab (Zone 1) PSC (# of crab) and red king crab (Zone 1) PSC rate (# of crab PSC per mt of total AM80 Program groundfish catch (target & incidental)) from 2008 through 2023

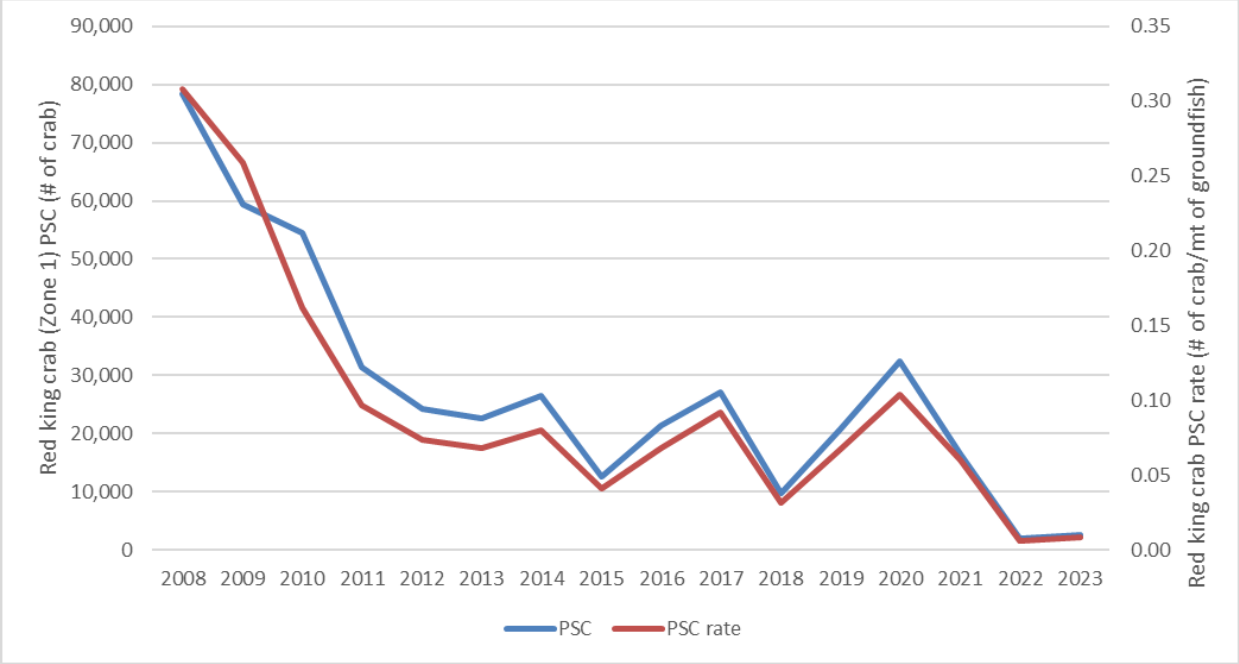


Figure 5-5 ***C. opilio*** **(COBLZ) crab PSC (# of crab) and** ***C. opilio*** **(COBLZ) crab PSC rate (# of crab PSC per total AM80 Program groundfish catch (target & incidental)) from 2008 through 2023**

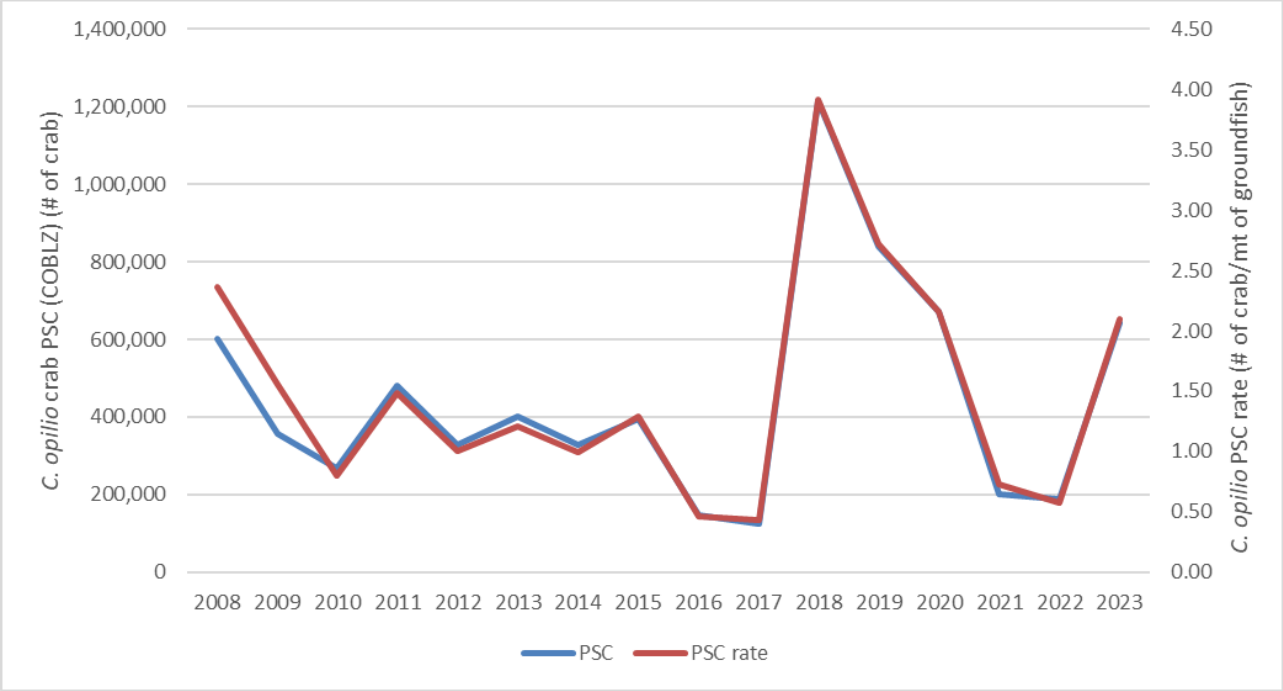


Figure 5-6 ***C. bairdi*** **(zones 1 & 2) crab PSC (# of crab) and** ***C. bairdi*** **(zones 1 & 2) crab PSC rate (# of crab PSC per total AM80 Program groundfish catch (target & incidental from 2008 through 2023**

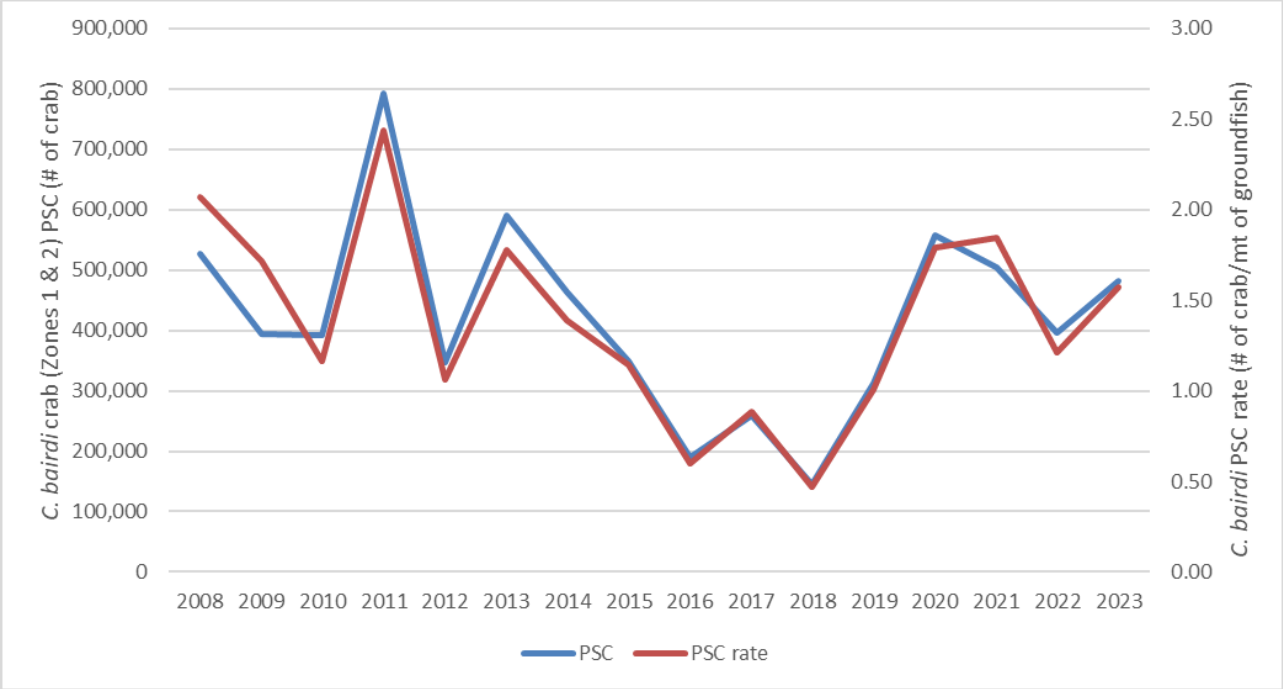


Figure 5-7 Chinook salmon PSC (# of salmon) and Chinook salmon PSC rate (# of salmon PSC per total AM80 Program groundfish catch (target & incidental)) from 2008 through 2023

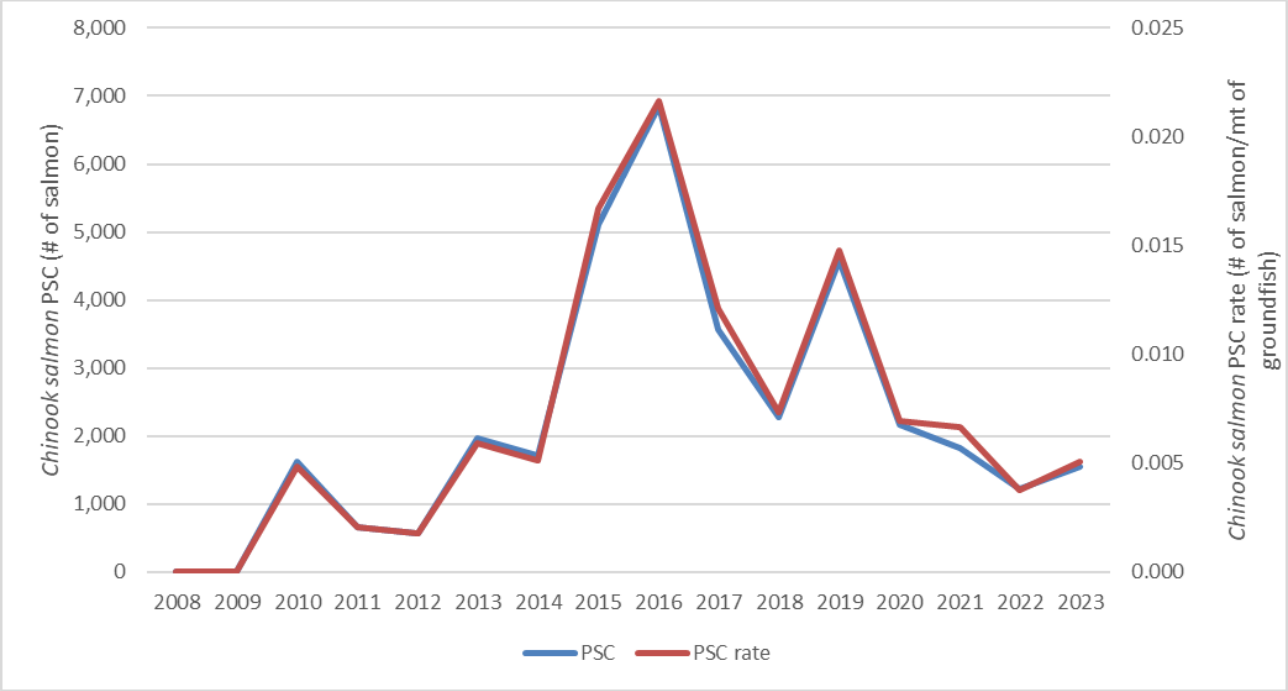
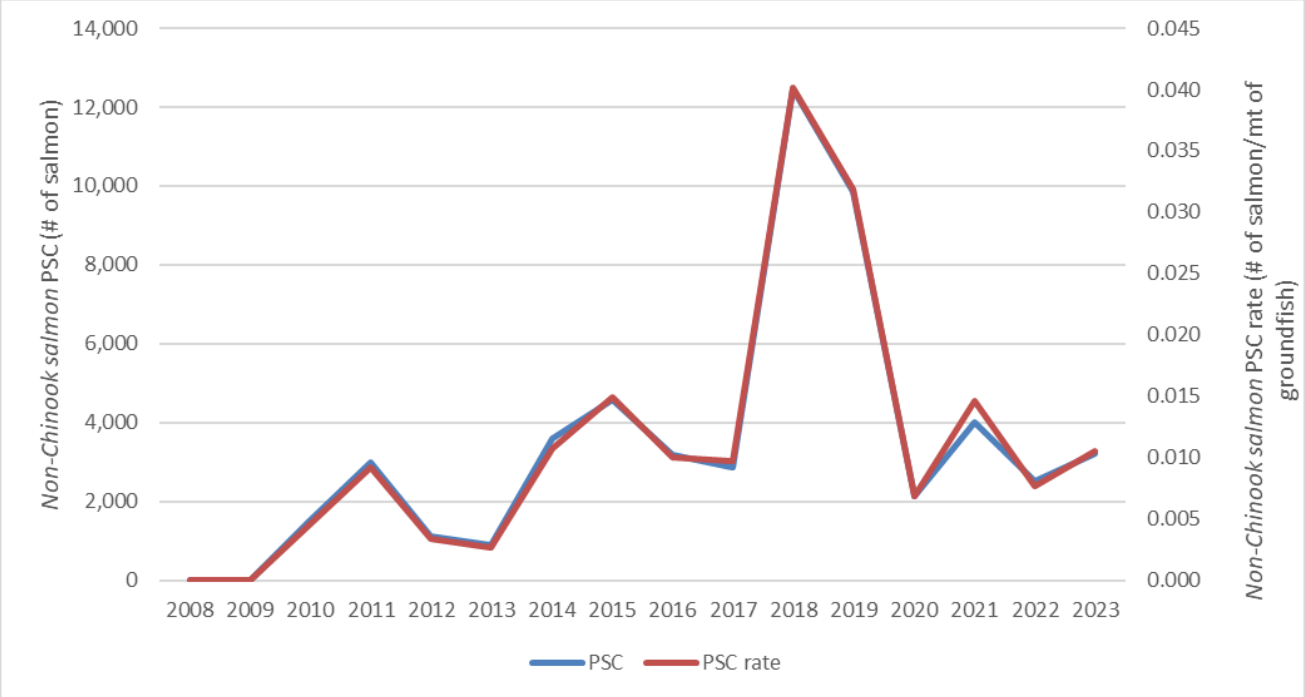


Figure 5-8 Non-Chinook salmon PSC (# of salmon) and non-Chinook salmon PSC rate (# of salmon PSC per total AM80 Program groundfish catch (target & incidental)) from 2008 through 2023



5.2 Summary of halibut bycatch mortality reduction strategies

This section describes existing efforts and projects in development within the AM80 cooperative to minimize halibut PSC catch and mortality. The information from this section is drawn from the September 2021 Draft Environmental Impact Statement (DEIS) for the Bering Sea and Aleutian Islands Halibut Abundance-Based Management (ABM) of AM80 Prohibited Species Catch (PSC) Limit.

Vessels that currently participate in the AM80 sector have been engaged in halibut avoidance to some degree since the years before AM80 implementation when limited access BSAI flatfish fisheries were often closed due to halibut bycatch limits. The implementation of AM80 in 2008 created a binding constraint on the qualifying vessels. Since 2011, all AM80 vessels have participated in one or two voluntary AM80 cooperatives (as opposed to the AM80 limited access fishery), resulting in additional capabilities to take organized steps to minimize halibut bycatch. All AM80 vessels have participated under a single cooperative since 2017 (the AKSC). According to AKSC's most recent report to the Council, the sector increased its focus on voluntary halibut bycatch avoidance in 2014 as the Council was considering hard cap PSC limit reductions for AM80 and other BSAI groundfish sectors. Those reductions were implemented under Amendment 111 in 2016. Upon taking action to reduce PSC limits in 2015, the Council requested a proactive plan to maintain low bycatch rates. The AM80 sector responded with a Halibut Avoidance Plan (HAP) that was agreed to by the two cooperatives that covered all AM80 vessels at the time: AKSC and the Alaska Groundfish Cooperative.

The HAP defined operational practices and accountability measures to avoid halibut and reduce halibut mortality. The Plan imposed rate-based halibut PSC standards for the calendar year and, separately, for the last quarter of the year. The latter measure is meant to prevent overuse of halibut PSC if the annual rate does not appear to be a constraint in that year. Acceptable rates are established based on target species due to the different intrinsic halibut bycatch rates among the AM80 species groups. Intra-cooperative accountability measures for failure to meet the standards include monetary fines, increased monitoring, and possible reduction in vessel-level halibut PSC allocations within the cooperative for the following year. The AKSC Cooperative Reports to the Council on the 2019 and 2021 fishery notes that all vessels complied with the Plan's standards in those years.

The three principal halibut avoidance measures used by the sector are choice of fishing time and location, use of halibut excluders, and deck sorting of halibut. Active communication among vessel captains on the fishing grounds, facilitated through the cooperative and a third-party data manager, is central to the effectiveness of halibut bycatch minimization under changing fishery conditions. Captains are informed of avoidance measures and operational decisions that are yielding good results at that particular time. Performance reports are shared internally, characterizing the areas being fished by cooperative members in terms of:

- halibut mortality rates
- target species
- excluder effectiveness
- deck sorting
- halibut movement
- fishing depths, and
- bottom temperatures.

The fleet does not presume seasonal halibut movement to be constant from one year to the next, underlining the importance of continuous data collection and real-time communication. An AM80 skipper's primary decision-drivers are the catch and bycatch rates in the particular area where they are fishing. Participants also noted that actively looking for clean fishing can be more productive and less risky than leaving the grounds and returning to make their next decisions based on older information.

The 2021 AKSC Cooperative Report states that operators incur direct costs to avoid bycatch and/or reduce mortality rates. For example, participants cite that halibut excluders not only reduce target catch per effort but also increase fuel consumption. Fuel costs and efficiency loss are also incurred when vessels transit to move away from time/area combinations that are resulting in high encounter rates. Transit time also increases total fishing time and reduces productivity for the vessel and its crew, who are compensated based on harvest. Another category of cost is shorter tows that yield fewer groundfish. Shorter tows include test tows to ascertain halibut rates in that area and reduced tow time to increase the viability of the halibut that is caught when a vessel is practicing deck sorting. Costs related to deck sorting and the amount of deck sorting occurring are described below.

The 2021 AKSC Cooperative Report states that AM80 vessels continue to experiment with halibut excluder designs to improve effectiveness and reduce target loss. The cooperative stated that excluder effectiveness varies across fisheries and vessels, vessel and net characteristics, and operating practices. Metrics for effectiveness are not well measured. For example, fishery participants and managers can only speculate about whether excluders might be less effective when encountering a higher proportion of small size halibut. In February 2021, the AM80 cooperative brought an Exempted Fishing Permit (EFP) proposal to the Council, seeking to better study the efficacy and efficiency of the most up-to-date excluder designs. The Council recommended that the EFP application be approved by NMFS.[15] The permit was later extended in February 2022 to test a halibut excluder device in the AM80 flatfish fishery between August 1, 2021, and December 31, 2023.[16]

5.3 Status of Halibut Deck Sorting (HDS) in the AM80 Program.

5.3.1 Development and Overview of HDS Program

Halibut bycatch in the AM80 Program, has the potential to impact industry's ability to fully harvest their quota. Industry worked with NMFS from 2009-2019 to explore options for reducing halibut discard mortality rates through a series of EFPs on trawl CPs and motherships while harvesting under the AM80 Program. The experiments conducted through EFPs tested procedures to decrease halibut mortality by sorting, sampling, and discarding halibut from the deck of the vessel, rather than discarding halibut from the factory. The goal was to reduce the discard mortality while also ensuring observer data continued to provide reliable estimates of halibut PSC. Participation in these EFPs was widespread across fisheries, years, times of year, and fishing fleets within the BSAI. The data collected during EFP fishing showed that the practice of deck sorting can reduce halibut mortality. The EFPs, as well as the EFP applications and reports, are available on the NMFS Alaska Region website (https://www.fisheries.noaa.gov/alaska/resources-fishing/exempted-fishing-permits-alaska).

After multiple years of testing catch handling and monitoring procedures, NMFS prepared a draft Regulatory Impact Review and consulted with the Council as a step toward modifying regulations to allow halibut deck sorting. In 2019, the final rule for halibut deck sorting was published and became effective (84 FR 55044, October 15, 2019), implementing catch handling and monitoring requirements for halibut PSC on the decks of AM80 Program vessels.

Starting in 2020, the AM80 fleet has been able to opt into the deck sorting program (HDS) and, once opted in, can voluntarily deck sort halibut on a haul-by-haul basis for harvest activity in both the BSAI and GOA. In order for a vessel to take part in the HDS program vessels must meet the federal requirements outlined in §679.120. These requirements include but are not limited to, arranging for annual NMFS inspections of the halibut deck sorting observer station, developing a deck safety plan that

[15] The EFP application can be seen at: https://meetings.npfmc.org/CommentReview/DownloadFile?p=924c31f1-0bdf-4625-a44d-c7f643b16024.pdf&fileName=D2%20Halibut%20Excluder%20EFP%20Application.pdf.
[16] https://media.fisheries.noaa.gov/2022-11/extended-halibut-excluder-permit.pdf

is reviewed and approved by NMFS, and installing and maintaining a camera and video recording system with a view of the area where deck sorting occurs. NMFS staff have the ability to request or pull deck sorting video at any time. The video review is in place to ensure compliance with federal regulations and the reviewer looks for proper handling of halibut, time duration of deck sorting (not to exceed thirty-five minutes), and verifying that a single discard point for halibut is being used. Prior to embarking on a trip in which halibut deck sorting may take place, the vessel may be required to contact the Observer Program, at least 24 hours in advance of leaving port, to request a precruise meeting as noted in regulations at §679.102(c). Additionally, a deck sorting safety meeting must be conducted by the vessel.

All AM80 Program vessels must also carry 2 observers onboard and must comply with all other monitoring requirements associated with AM80 fishing (for example, flow scales, cameras on the flow scales, etc.). The deck sorting regulations do not mandate when or where vessels must deck sort, since the program is not mandatory, however vessels may only conduct halibut deck sorting when they are using trawl gear in the non-pollock groundfish fisheries in the GOA or BSAI. Like other catch share programs that have a cooperative structure, the cooperative(s) of the AM80 Program are responsible for when, where, and which vessels are halibut deck sorting, including opting out of halibut deck sorting when marine mammals are observed.

Deck sorting activity is only allowed when an observer is present on deck. For a haul that will be sorted on deck, the catch is required to stay inside the codend on the deck and may not be removed from the codend for the purpose of deck sorting until the observer is present. Halibut removed from the catch are required to be handled carefully to minimize injury prior to discard and provided to the observer at the deck sampling station for data collection through a single pathway. The single pathway from catch to discard will ensure the observer has access to all halibut removed from the catch during deck sorting activity. All halibut sorted on deck are required to be discarded at a single point of discard after the observer worktable. These catch handling practices are designed to ensure that observers can collect unbiased samples.

In 2020 and 2021, the first two years the regulated program was operational, restrictions from COVID-19 pandemic limited NMFS staff's ability to board the vessels to evaluate implementation and make monitoring adjustments. However, all vessels in the deck sorting program operated within the regulations. After pandemic restrictions eased, NMFS staff were able to engage more proactively with vessels and improve locations and video monitor views.

Throughout the years of EFP testing and since the implementation of the regulated HDS program, the agency has met regularly with industry partners to address any issues that may arise. Meetings generally occur quarterly and give the industry, NOAA Office of Law Enforcement (OLE) and NMFS a chance to discuss and address issues in real time instead of once a year during the vessel inspection. The ongoing communication and coordination enables industry to reach out to specific vessel/companies and address issues more quickly.

5.3.2 Discard Mortality Rates & Halibut Deck Sorting PSC Accounting

Discard Mortality Rates (DMRs) are estimates of the proportion of incidentally caught halibut that do not survive after being returned to the sea. When deck sorting occurs, the observer collects data on the length and viability on a subset of halibut sorted on deck. The lengths of all the measured halibut are converted to a weight using the IPHC's length weight table. Viability is qualitative assessment of the health ("excellent"; "poor"; or "dead") of the fish and the IPHC has developed an estimated mortality rate associated with each viability condition. (E = excellent; 20 percent mortality; P = poor; 55 percent mortality; D = dead; 90 percent mortality). For each deck sorted haul, a weighted average DMR, based on the weight of halibut at each viability level is calculated. That average DMR is applied to the total weight of deck sorted halibut in the haul to calculate the total halibut PSC weight on deck sorted hauls. Observers also monitor catch in the factory and account for halibut in the factory on hauls with and without

decksorting. A standard DMR of 90 percent is applied to the halibut recovered in the factory. The halibut mortality from the deck sorted hauls plus the mortality of halibut from the factory is summed and posted in the NMFS Catch Accounting System.

In reports presented to the Council in February 2016 and October 2017, the AKSC reported that killer whales had been sighted by some vessels participating in the halibut deck sorting EFP and that the presence of whales could mean the whales were feeding on the halibut discarded from the deck. It is the vessel's responsibility at all times to look for whales predating on deck sorted halibut and to cease deck sorting when that is occurring. If the observer sees whale predation of the deck sorted halibut for that haul, then the viabilities for that haul are noted as 'Unknown.' Observers recorded 66 instances of marine mammals feeding on discards by AM80 vessels in 2022, which was a significant decrease from the 204 instances reported the previous year. In 2023, there were 33 reported instances of marine mammals feeding on discards by AM80 vessels.

5.3.3 Use of HDS in AM80 fleet

Since the start of the regulated HDS program in 2020, there have been between 19 and 17 AM80 vessels (Table 5-5) and all of them have opted into HDS. Generally, vessels used halibut deck sorting during the winter and early spring months when halibut bycatch has the potential to occur more often. Overall, between 53 percent and 36 percent of the hauls had deck sorting (Table 5-5). In conservations with the AM80 industry representatives[17], there are two main reasons for why deck sorting has declined relative to the period during the exempted fishing permit (EFP) years.

First, in recent years, halibut bycatch in AM80 fisheries have encountered predominantly smaller halibut relative to the years during the EFP. The vitality of small halibut can be relatively low by the time the crew sort the halibut from the catch and move halibut to the deck sorting chute where the observer is stationed. The AM80 crews are instructed to look at the relative savings they are getting from deck sorting and if are not actually achieving reductions in halibut mortality, which is the goal of the program, crew are too refrain from deck sorting. This follows the advice from NMFS' Observer Program: deck sorting should only be done when there are significant savings in halibut mortality rates, hence when it's worth the extra work for observers and the crew.

Second, with increased interactions with killer whales in the deep-water flatfish fishery in recent years (e.g. turbot and arrowtooth flounder fisheries), the Alaska Seafood Cooperative has told its vessels not to do deck sorting if whales are present and it appears the whales are eating the halibut. This follows the directive we have form NMFS Alaska Region office to prevent killer whale entanglements. The reasoning is that deck sorting might attract killer whales to the stern of the vessel hence increase the chances of entanglements.

Finally, the percent of hauls with HDS included Table 5-5 is based on the total number of AM80 hauls which includes all AM80 target fisheries. However, HDS is most impactful for AM80 yellowfin sole, rock sole, and flathead sole targets and is utilized for these fisheries primarily. Since the percent of hauls with HDS includes all AM80 targets, the resulting percentage masks the use of HDS for these flatfish fisheries amongst all target fisheries.

[17] John Gauvin, Glenn Merrill, Chris Woodley

Table 5-5 The number of participating AM80 vessels that participated, total AM80 number of hauls, estimated weight (in metric tons) of groundfish, halibut PSC (both with and without a DMR applied) for all AM80 hauls and those where HDS occurred

Year	Number AM80 vessels	Total number AM80 hauls	Number hauls with deck sorted halibut	Percent of AM80 hauls with HDS	Weight of AM80 Groundfish catch (mt)	Weight of AM80 Groundfish catch (mt) on HDS hauls	Weight of AM80 Halibut PSC (mt) - no DMR	Weight of Halibut PSC on HDS hauls (mt) - no DMR	Mortality of AM80 Halibut PSC (mt)	Mortality of Halibut PSC (mt) on hauls with HDS
2020	19	14,434	7,700	53%	311,533	139,923	2,031	1,175	1,097	454
2021	19	13,144	5,608	43%	276,392	101,393	1,745	860	1,061	318
2022	18	13,197	5,051	38%	333,080	116,345	2,297	905	1,556	386
2023*	17	12,499	4,528	36%	310,788	100,110	2,044	970	1,330	417

Source: NMFS Alaska Region Catch Accounting System.
* Data as of 12/8/2023.

Note that the mortality of halibut that occurred in the factory from deck sorted hauls are not included in the HDS values but are part of the AM80 Halibut PSC totals.

5.4 Summary of ABM Management

Although not include as part of this AM80 Program Review since the review only includes fishing activity through 2023, a short summary of the change in management of halibut PSC for the AM80 sector is included for reference. Effective January 1, 2024, Amendment 123 to the Fishery Management Plan for Groundfish of the Bering Sea and Aleutian Islands management area replaces the AM80 sector static halibut PSC level of 1,745 mt with a process for annually setting the halibut PSC limit for the AM80 sector based on the most recent halibut abundance index estimates.[18] The Final Rule, published on November 22, 2023, establishes abundance-based management of AM80 trawl sector PSC limit for Pacific halibut. This action was recommended by the Council at its December 2021 meeting as a necessary action to minimize halibut PSC to the extent practicable without compromising the ability to attain optimum yield in the BSAI groundfish fisheries.

Amendment 123 requires the AM80 sector to reduce halibut mortality at times of low halibut abundance. Achievement of these objectives will conserve the halibut resource by improving bycatch management and could result in additional harvest opportunities in the directed commercial, subsistence, and recreational halibut fisheries. The implementation of Amendment 123 changes the annual process to determine the halibut PSC limit for the AM80 sector to a PSC limit based on two indices of halibut abundance. The two surveys are the International Pacific Halibut Commission (IPHC) setline survey index in Area 4ABCDE and the NMFS Alaska Fisheries Science Center (AFSC) Eastern Bering Sea (EBS) shelf trawl survey index.

The core concept of Amendment 123 is linking PSC limits in the AM80 commercial groundfish trawl fleet in the BSAI to estimated halibut abundance. The current PSC limit is set as a fixed amount at 1,745 mt, which becomes an increasingly larger proportion of total halibut removals in the BSAI when halibut abundance declines. The new PSC halibut limits would range from 1,745 mt when abundance is “high” for the index derived from IPHC setline survey, referred to as the IPHC index, to 35 percent below the 1,745 mt limit when abundance is “very low” for the IPHC index. At other states the PSC limit would vary across a range of intermediate values depending on if the IPHC index was medium or low and if the NMFS EBS index is below 150,000 mt (low) or is greater than or equal to 150,000 mt (high). The value at the intercept of those survey indices in Table 58 to Part 679 will be the PSC limit for the AM80 sector the following calendar year.

For the 2024 fishing season, the halibut PSC limit for the AM80 sector is 1,396 mt.

[18] https://www.fisheries.noaa.gov/bulletin/ib-23-61-noaa-fisheries-files-final-rule-implement-amendment-123-fishery-management

6 Fishery Interactions with Marine Mammals

The Marine Mammal Protection Act (MMPA) and the Endangered Species Act (ESA) are the relevant statues for managing human impacts to marine mammals, including take incidental to commercial fishing operations. This section focuses primarily on fishing interactions with killer whales, due to an abnormally high number of killer whale incidental takes in BSAI groundfish trawl fisheries in 2023 as reported in statements by NOAA Fisheries referenced in this section.

The MMPA was enacted in 1972 with the ideal of ensuring that marine mammal populations continue to be functioning elements of the ecosystems. One of the incentives for enacting the MMPA was to reduce take of marine mammals incidental to commercial fishing operations. While marine mammals may be lawfully taken incidentally in the course of commercial fishing operations, the 1994 MMPA Amendments established a requirement for commercial fishing operations to reduce incidental mortalities and serious injuries (M/SI) of marine mammals to insignificant levels approaching a zero rate, commonly referred to as the Zero Mortality Rate Goal (ZMRG). ZMRG is considered to be met for a marine mammal stock when the M/SI level from commercial fisheries is 10% or below the Potential Biological Removal level (PBR) of that marine mammal stock (69 FR 43338, July 20, 2004).

Likewise, the Endangered Species Act (ESA) was enacted to provide a program for the conservation of endangered species and threatened species and to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved. In practice, the ESA outlines a program to protect species that are at risk of extinction (endangered) and those that are likely to become at risk of extinction in the near future (threatened) and pursue their recovery. When a species is proposed for listing as endangered or threatened under the ESA, NMFS identifies specific areas that are essential to its conservation, known as critical habitat. Critical habitat contains physical or biological features essential to conservation of the species and may require special management considerations or protection.

6.1 Killer Whale Background and Stock Assessments

The killer whale (*Orcinus orca*), also known as orca, is the ocean's top predator and is the most widely distributed of all cetaceans (whales and dolphins), found in every ocean in the world. Taken as a whole, the species has the most varied diet of all cetaceans, but different populations are usually specialized in their foraging behavior and diet. The three main types of killer whale populations in the North Pacific are Resident, Transient, and Offshore. While the habitat of all three ecotypes overlaps to some extent, they are not known to interbreed. Resident killer whales usually eat fish – primarily salmon; Offshore killer whales eat fish including sharks; Transient killer whales' diets are more varied and can include squid and other marine mammals such as seals, sea lions, porpoises, dolphins, and other whale species.

Under the MMPA, a "stock" is the fundamental unit of legally-mandated conservation and is defined as "a group of marine mammals of the same species or smaller taxa in a common spatial arrangement, which interbreed when mature." Stocks are identified in a manner consistent with the management goals of the MMPA which include 1) preventing stocks from diminishing such that they cease to be a significant functioning element in the ecosystem of which they are a part or below their optimum sustainable population level keeping the carrying capacity of the habitat in mind; and 2) maintaining the health and stability of the marine ecosystem. Marine mammal Stock Assessment Reports (SARs) are published annually under the authority of the MMPA. All stocks are reviewed at least every three years or as new information becomes available. Stocks that are designated as "strategic" are reviewed annually. Individual SARs provide information on each stock's geographic distribution, population estimates, population trends, and estimates of the PBR levels for each stock. The PBR level is the maximum number of animals that can be removed from a stock – not including natural deaths – while allowing that stock to reach or maintain its optimum sustainable population. The SARs identify all sources of human-caused mortality, including mortality and serious incidental to commercial fishery operations, by fishery, and whether the stock has met ZMRG.

All killer whale populations are protected under the MMPA. Only two populations receive additional special protections under federal law: the AT1 Transient stock is designated as "depleted" under the MMPA[19]; and the Eastern North Pacific Southern Resident is designated as "depleted" under the MMPA due to the ESA listing status of the corresponding Distinct Population Segment (DPS). Neither of those populations are known to occur in the BS or AI management subareas. The Southern Resident stock has been seen rarely in Southeast Alaska, but no farther North and the AT1 Transient stock occurs in the Gulf of Alaska, but its range is thought to be contained to Prince William Sound and the Kenai Fjords region.[20]

The three MMPA killer whale stocks that are known to occur in the BS and AI are: (1) Eastern North Pacific Alaska Resident; (2) Eastern North Pacific GOA, AI, and BS Transient; and (3) Eastern North Pacific Offshore.[21] None of these stocks correspond with ESA-listed DPSs or are designated under the MMPA as depleted or strategic.

Two of the three stocks listed above as present in the BS and AI management areas where the AM80 sector fishes are reported in the Alaska Marine Mammal SAR (Young et al. 2023). The Offshore stock is included in the SAR for the Pacific Region (Carretta et al. 2023). Key points from those SARs are summarized in the bulleted paragraphs below; the reader is referred to the SARs for additional detail and history.

- **Eastern North Pacific Alaska Resident** stock (Young et al. 2023, pp.136-145) – Resident-ecotype killer whales in Alaska are currently considered to be part of a single population that includes killer whales from Southeast Alaska to the Aleutian Islands and Bering Sea; however, recent genetic analyses suggest substructure within the region. The SAR provides estimates for Southeast Alaska, Prince William Sounds/Kenai Fjords/Kodiak, and Western Alaska (west of Kodiak). The only available population estimate for this stock in Western Alaska is 999 individual whales based on individuals identified from 2001 to 2010. Studies of individuals in this stock that occurred from 2005-2012 and 2005-2019 placed the population estimate in other parts of the state of Alaska at either 872 (former) or 921 (latter). The total estimate using the study through 2019 for Eastern North Pacific Alaska Residents is 1,920 individual whales. Lack of data from the BS and AI regions means that a current population trend for the entire stock is unavailable, though stocks east of Kodiak have been seen to be increasing with the exception of a pod that has not recovered after being exposed to crude oil during the Exxon Valdez oil spill.

  The most recent SAR for this stock (2022) considers information for each human-caused mortality, serious injury, and non-serious injury reported for NMFS-managed Alaska marine mammals from 2016 to 2020. The minimum estimated mean annual level of human-caused mortality and serious injury for Eastern North Pacific Alaska Resident stock of killer whales between 2016 and 2020 is 1.3 killer whales: 1.1 in commercial fisheries and 0.2 in unknown (commercial, recreational, or subsistence) fisheries. Potential threats most likely to result in direct human-caused mortality or serious injury of this stock include oil spills, vessel strikes, and interactions with fisheries. The minimum estimate of the total annual level of human-caused mortality and serious injury (1.3 killer whales) is less than the stock's PBR (19). Based on currently available data, a minimum estimate of the mean annual mortality and serious injury rate due to U.S. commercial fisheries (1.1 killer whales) is less than 10% of the PBR (10% of PBR = 1.9) and, therefore, is considered to be insignificant and approaching a zero mortality and serious injury rate.

[19] 69 FR 31321, June 2004.
[20] See Young et al. 2023, p.161.
[21] The Alaska Groundfish Fisheries Programmatic Supplemental Environmental Impact Statement (PSEIS) (NMFS 2004) provides descriptions of the range, habitat, and diet for marine mammals found in waters off Alaska. The 2015 PSEIS Supplemental Information Report (SIR) provides updates on changes to marine mammal stock or species-related management and status, as well as new information regarding impacts on marine mammal stocks and new methods to assess impacts (NMFS 2015).

Between 2016 and 2020, mortality and serious injury of killer whales in this stock occurred in two US commercial fisheries that are monitored by observers for incidental mortality and serious injury: BSAI flatfish trawl and BSAI Pacific cod hook-and-line. A mean annual mortality and serious injury rate of 0.4 killer whales in the BSAI flatfish trawl fishery and 0.3 in the BSAI Pacific cod hook-and-line fishery between 2016 and 2020 is assigned to the Alaska Resident stock.
The SAR notes that fisheries observers report large groups of killer whales follow vessels for days, actively consuming processing waste. Killer whales that are close to a boat are at risk of propeller strike and entanglement in the trawl net and lines – all interactions that constitute fishing-related mortality/serious injury (Young et al. 2023, p.140).

- **Eastern North Pacific GOA, AI, and BS Transient** stock (Young et al. 2023, pp.153-160) – Transient-ecotype killer whales from the Aleutian Islands and Bering Sea are currently considered to be part of a single population that includes Gulf of Alaska transients; however, recent genetic analyses suggest substructure within the region. The SAR provides a total count of 587 individual whales in this stock (451 BSAI; 136 GOA). That number is a direct count of individually identifiable animals that does not necessarily represent the number of live animals; however, whales are not presumed dead if not resighted because long periods between sightings is common for transient animals. The SAR estimates abundance based on the number of uniquely identified individuals, which is likely conservative because the catalog of individuals includes data only from 2001-2012, researchers continue to identify new whales, there has been no comprehensive surveys in recent years and the entire range has not been surveyed. In terms of current population trend, the SAR reports that populations in the GOA are likely stable but that a reliable trend for the BS and AI areas is not available with current data.

  The PBR for this stock is 5.9 animals. The most recent SAR for this stock (2020) reports information on human-caused mortality, serious injury, and non-serious injury between 2014 and 2018. The minimum estimated mean annual level of human-caused mortality and serious injury for Gulf of Alaska, Aleutian Islands, and Bering Sea Transient killer whales between 2014 and 2018 is 0.8 killer whales in U.S. commercial fisheries. Potential threats most likely to result in direct human-caused mortality or serious injury of this stock include oil spills, vessel strikes, and interactions with fisheries.

  Between 2014 and 2018, mortality and serious injury of killer whales in this stock occurred in two US commercial fisheries that are monitored by observers for incidental mortality and serious injury: BSAI flatfish trawl and BSAI Greenland turbot hook-and-line. The estimated mean annual mortality and serious injury rate of 0.6 killer whales between 2014 and 2018 is assigned to both the Gulf of Alaska, Aleutian Islands, and Bering Sea Transient stock and the North Pacific Alaska Resident stock. Of that 0.6 estimate, 0.4 is assigned to the BSAI flatfish trawl fishery (0.2 to the BSAI Greenland turbot hook-and-line fishery). The SAR for this stock repeated the same notes as for the Alaska Resident stock concerning risks associated with killer whales consuming fish processing waste from BSAI groundfish trawl vessels (Young et al. 2023, p.158). While transient killer whales predominantly feed on marine mammals, they are also known to associate with vessels and feed on discarded catch. Based on currently available data, a minimum estimate of the mean annual mortality and serious injury rate due to all U.S. commercial fisheries (0.8 whales) is greater than 10% of the PBR (10% of PBR = 0.6). A minimum estimate of the total annual level of human-caused mortality and serious injury (0.8 whales) is less than the PBR (5.9). Therefore, the Gulf of Alaska, Aleutian Islands, and Bering Sea Transient stock of killer whales is not classified as a strategic stock.

- **Offshore** stock (Carretta et al. 2023, pp.114-117) – Eastern North Pacific Offshore killer whales are known from southern California waters north to the Aleutian Islands and are considered to represent a single network of socially connected individuals. The population of the eastern North Pacific stock of offshore killer whales was estimated with photo-ID mark-recapture to be 300 whales using data from 1988-2012. The most recent assessment of the current population trend was "stable" based on publication in 2014. The PBR for offshore killer whales is 2.8. Offshore killer whales do not have recent documented sources of mortality and serious injury from anthropogenic sources in Alaska or U.S. west coast waters, but mortalities are likely to be undetected and evaluated, given the remote (offshore) range of this ecotype. Offshore killer whales are likely vulnerable to the same anthropogenic threats (fishery interactions, vessel strikes, sonar) as other killer whale stocks. The fishery mortality and serious injury for offshore killer whales is considered to be insignificant and approaching zero mortality and serious injury rate.

6.2 Effects of AM80 Fishery on Marine Mammals

The Alaska Groundfish Harvest Specifications EIS provides information on the effects of the groundfish fisheries on marine mammals (NMFS 2007), and has been updated with Supplemental Information Reports (SIRs) (NMFS 2021). Direct and indirect interactions between marine mammals and groundfish fishing vessels may occur due to overlap in the size and species of groundfish harvested in the fisheries that are also important marine mammal prey, and due to temporal and spatial overlap in marine mammal occurrence and commercial fishing activities.

The MMPA mandates that all commercial fisheries be classified by the level of incidental marine mammal death and serious injury in that fishery. NOAA Fisheries annually updates a List of Fisheries (LOF) that puts each fishery into one of three categories:

I. Frequent incidental death or serious injury of marine mammals
II. Occasional incidental death or serious injury of marine mammals
III. Remote likelihood of/no known incidental death or serious injury of marine mammals

The LOF is published in the **Federal Register**. The most recent Final LOF was published in February 2024 (89 FR 12257)[22]. A fishery is typically categorized on the LOF according to its highest level of death/injury (e.g., a fishery in Category III for one stock and Category II for another will be listed under Category II) and the marine mammal stock driving the category classification is noted. In classifying fisheries, NMFS compares the numbers of marine mammals that are incidentally killed or seriously injured by commercial fishing operations to a stock's PBR level. Using these numbers, NMFS takes a two-tiered approach. Tier 1 considers the total impact of all commercial fisheries on each marine mammal stock; Tier 2 considers individual fisheries' impact on each stock.

Tier 1: Annual mortality and serious injury across all fisheries that interact with a stock:
- If the total is 10 percent or less of the PBR level of this stock, all fisheries interacting with this stock are considered Category III in relation to that marine mammal stock.
- Otherwise, these fisheries are subject to the Tier 2 analysis.

Tier 2: annual mortality and serious injury of a stock in a given fishery are evaluated to classify each contributing fishery accordingly:
- Category I: 50 percent or more of the PBR level.
- Category II: between 1 and 50 percent of the PBR level.
- Category III: 1 percent or less of the PBR level.

Any vessel owner or vessel operator working in a Category I, II, or III fishery must report all incidental deaths or injuries of marine mammals during commercial fishing to NMFS within 48 hours after returning

[22] https://www.federalregister.gov/public-inspection/2024-03013/list-of-fisheries-for-2024

to port. Further requirements exist for Category I and II fisheries, including: registration in the Marine Mammal Authorization Program (this occurs automatically with fishing permitting), accommodating observers onboard their vessels when requested (per 50 CFR 229.7), and compliance with any applicable take reduction plans that NMFS may have developed for any Category I or II fishery that interacts with an MMPA "strategic" stock.

The AM80 sector is largely represented in the NOAA LOF as "AK Bering Sea, Aleutian Islands Flatfish Trawl."[23] The current classification as well as the fishery's classification history is available on an NOAA MMPA webpage for the fishery. **The AK Bering Sea, Aleutian Islands Flatfish Trawl fishery is listed as Category II in the 2024 LOF**.[24] Thirteen marine mammal species/stocks are noted as having been killed or injured in the fishery at some time.[25] Of those 13, three are identified as "driving the classification of the fishery" - Eastern North Pacific Alaska Resident Killer Whale; Eastern North Pacific GOA, AI, BS Transient Killer Whale; and Western US Steller Sea Lion. The fishery's LOF webpage lists the *Basis for Current Classification* as, "The total annual mortality and serious injury of Steller sea lions (Western U.S. stock) and killer whales (AK resident stock) is more than 1% and less than 50% of each stock's PBR level."

In the fall of 2023, NMFS Alaska Region reported that 10 killer whales had been incidentally taken by BSAI groundfish trawl vessels. This news was widely reported because it is a large departure from the lower mean annual estimates presented in the SARs. NMFS first issued a release on September 21, 2023, stating that the incidences occurred between May 6 and September 9 and ranged in geographic location by more than 600 nautical miles, indicating that the encounters were spread over distinct events.[26] NMFS specified that nine of the incidental catches were on CPs using non-pelagic trawl gear (i.e., AM80) and one was on a CP using pelagic trawl gear (i.e., AFA pollock fishery). NMFS also noted that an eleventh whale was entangled in survey gear during the Alaska Fisheries Science Center's longline survey for sablefish and groundfish on June 7, 2023 (Central Bering Sea slope). NMFS stated its intent to expedite the review of data collected by fisheries observers and make determinations on whether the whales were dead before being caught, and whether the whales' stock could be identified.

On December 1, 2023, NMFS issued a release of its findings on the 11 incidentally caught killer whales.[27] Of the nine killer whales incidentally caught by AM80 sector vessels, it was determined that six were killed by fishing gear, two were dead when captured in the gear, and one was caught in fishing gear and released alive but seriously injured. Of the two killer whales that were dead when captured, one was determined to be dead as a result of a strike from an unknown vessel (not the fishing vessel) and the other was considered natural mortality because it could not be confirmed that the death was human-caused. The six whales killed and one seriously injured will be assigned to the BSAI flatfish trawl fishery in future SARs and future MMPA LOF analyses. The one killer whale caught with pelagic trawl gear targeting pollock was determined to be dead prior to being caught, not killed by fishing gear, and thus considered unknown mortality and will not be assigned to the fishery. The one killer whale caught in longline survey gear was determined to have died from entanglement in the survey gear. That was the first observed killer whale mortality in the 30-year history of that survey.

NMFS's December 2023 statement acknowledged that the number of incidental killer whale catches in fishing/survey gear is higher than in previous years, but the amount is below the annual level (PBR) that

[23] "AK BSAI flatfish trawl" was split from a broader category of "AK BSAI groundfish trawl" in 2004, and lists of marine mammals killed or injured was updated to correspond to the more discrete fisheries listed for the first time in 2004.
[24] The fishery was first elevated from Category III to Category II in 2005 based on documented interactions with Steller sealions and Eastern North Pacific resident and transient killer whales.
[25] Alphabetically: Bearded seal, (Beringia); Gray whale (Eastern North Pacific); Harbor porpoise (Bering Sea); Harbor seal (Bristol Bay); Humpback whale (Western North Pacific); Killer whale (Eastern North Pacific Alaska resident); Killer whale (Eastern North Pacific GOA, AI, BS transient); Northern fur seals (Eastern Pacific); Ribbon seal; Ringed seal (Arctic); Spotted seal (Bering); Steller sea lion (Western U.S.); Walrus (AK).
[26] https://www.fisheries.noaa.gov/agency-statement/response-recent-reports-killer-whale-incidental-catches-alaska.
[27] https://www.fisheries.noaa.gov/feature-story/cause-death-determined-11-killer-whales-incidentally-caught-fishing-gear-alaska-2023.

would pose a risk to the long-term health for any of the three killer whale stocks that are found in the region where the incidental takes occurred. Three stocks of killer whales have overlapping geographic ranges in the areas where these interactions occurred: Eastern North Pacific Alaska Resident killer whale stock, Gulf of Alaska, Aleutian Islands, and Bering Sea Transient stock, and Eastern North Pacific Offshore stock. Observers were able to collect biological samples from eight of the 11 whales and determined that they were all females from the Eastern North Pacific Alaska Resident killer whale stock. Scientists were not able to determine the stock for the remaining three whales. There were no tissue samples obtained and photos were either not collected or were not useful for stock identification. Under the MMPA, the PBR estimate determines the maximum number of animals, not including natural mortalities that may be removed from a marine mammal stock per year while allowing the stock to reach or maintain its optimum sustainable population. For the Eastern North Pacific Alaska Resident killer whale stock, that number is 19 whales per year. For the Gulf of Alaska, Aleutian Islands, and Bering Sea Transient stock, it is 5.9 whales per year. For the Eastern North Pacific Offshore stock, it is 2.8 whales per year.

During the October 2024 Council meeting, representatives of the AM80 sector provided an update on research and development of the use of underwater web fences to prevent killer whales from getting entangled in the nets. The gear modification covers the net entrance, is positioned ahead of the footrope, and allows target catch to pass while minimizing snagging on debris. As part of cooperative agreement, all AM80 vessels fishing in BS deep water flatfish in 2024 were required to use the gear modification. The gear modification resulted in similar catch rates to previous years with minimal issues reported. Between May and September of this year, there was one killer whale take, reflecting an approximately 89% reduction from 2023. Adaptations to the trawl net design will continue into 2025, with further testing planned.

7 Maintain a Healthy Marine Ecosystem

This section discusses gear changes and experimental research into bycatch reductions that have been facilitated by the reduction and elimination of the race for fish following implementation of AM80. In general, fishing activities can lead to crab mortality in ways that are not directly observed. This includes both post-release mortality of discarded crab (which is estimated through a discard mortality rate) and crab that are never captured by fishing gear but die due to gear interactions or sustained damages that cause mortality. The potential for unobserved mortality of crabs that interact with gear but are not captured has long been a concern for the management of groundfish fisheries in the BS (Witherell and Pautzke, 1997; Witherell and Woodby, 2005).

One of the more important regulatory changes to reduce unobserved mortality of crabs that interact the AM80 trawl gear has been requirements that trawl sweeps be elevated off the bottom in the BSAI (in 2011) and in the GOA beginning in 2014 (NPFMC, 2013a). These issues are discussed because they are indirectly a result of AM80. Development of the regulations and their quick acceptance by the fleet was undoubtedly made much easier because the race-for-fish had been eliminated. With an assured percent of the TACs of their primary targets, AM80 vessel operators no longer had to worry that reduced catch rates would erode their share of the overall harvest.

The purpose of the elevating devices on trawl sweeps is to reduce unobserved crab mortality in the BS and Central GOA from the potential adverse effects of non-pelagic trawl gear used for flatfish fishing. The requirements combine a gear and performance standard to raise the elevated section of sweep at least 2.5 inches, measured next to the elevating device. To achieve this performance standard, elevating devices are necessary along the entire length of the elevated section of the sweep.

Overall, trawl sweep modification has been tested to be effective in the BS flatfish trawl fishery in reducing trawl sweep impact effects on C. bairdi, C. opilio, and red king crabs by reducing the unobserved mortality of these species. Published studies on the impacts of trawl gear on crab have generally focused on non-pelagic gear, including studies in the BS and in the shrimp fishery off the east coast of Canada. Studies have utilized bottom and wing recapture nets to collect impacted crab that would not have ended up in the trawl net, cameras to visualize crab that were avoiding the trawl net, and even submersible camera-equipped vehicle dives to compare damage to crabs before and after trawling in an area.

Rose (1999) cites an earlier study (Donaldson 1990) as a "preliminary estimate" of the rate of unobserved crab injuries, wherein RKC were tethered to the seafloor, a trawl net was towed over the area, and divers attempted to recover the crab. Of 169 crab, 21 percent were captured in the net, 46 percent were recovered by the divers, and 33 percent could not be located. While only two of the 78 recovered crabs were injured, Rose noted the ambiguity posed by the fate of the unrecovered crabs relative to the sample size. An unpublished video study (Rose 1995) found that sweep diameter was the main factor in whether crab could escape over the sweep (note that sweeps were not elevated during this period). The study was not able to determine the frequency, nature, or severity of injuries to crabs that went under the sweep. The Rose (1999) study in Bristol Bay used a recapture net to assess injury rates to crab that pass under different types of footrope. Eight experimental tows yielded injury rates of between 5 percent and 10 percent of the recaptured crab.

Subsequent work by Rose et al. (2013) provided estimates of the unobserved mortality rates of crabs swept over by trawl gear common to bottom trawl fisheries in the BS. This study again recaptured crab after encountering trawl sweeps and footropes, but also used a reflex-assessment method[28], calibrated on mortalities of crabs held onboard the vessel, to predict the delayed mortality of recaptured crab impacted by, but not captured in, the trawl. This study also evaluated crab caught in a control net where they did not encounter the trawl gear to adjust observed mortality rates for the effects of capture and handling.

[28] Reflex Action Mortality Predictor (RAMP); see Davis and Ottmar (2006) and Stoner et al. (2008).

This research demonstrated that mortality rates were higher for RKC than either snow or tanner crab and depended substantially on which part of the trawl system crabs encountered. Additionally, reduction of crab mortality rates by altering specific gear designs showed that gear modifications can mitigate unobserved mortality (Hammond et al. 2013). Raised sweeps essentially eliminated the 5% snow crab mortality rates measured using on-bottom sweeps, while not reducing flatfish herding (Rose et al 2010).

Further follow-up research (Hammond et al. 2013) used the same methods to estimate unobserved mortality rates, but also used recapture nets covering the full area behind the footrope, allowing assessment of the proportion of crabs captured to those passing under the net. It also included footrope designs better matching current fishery practice. While the final report graphically provided mortality rates and proportion-captured for snow and Tanner crabs, it did not combine these values to estimate a multiplier to estimate unobserved crab mortalities from observed crab bycatch. The primary author calculated such multipliers for snow crab from the original data and has provided them and a description of the calculations as a comment to the October 2022 SSC meeting. Multipliers for different footropes ranged from 0.5 to 3.9 unobserved snow crab mortalities per observed crab in the catch and multipliers were higher for males than for females.

The remote-video study of shrimp trawl interactions with snow crab off Saint Mary's Bay in southeastern Canada only assessed areas swept by the trawl footrope (Dawe et al. 2007). The study did not collect a large sample of direct post-trawl observations but ultimately did not report any dead crab in the trawl corridor or crab with carapace damage. The study did not find a reduced density of snow crab in the trawled bays after trawling occurred. However, the study concluded that intensive trawling could increase crab leg-loss by about 10 percent.

A trawl-mounted video study in the same part of Canada looked at how snow crab physically reacted to shrimp bottom trawls (Nguyen et al. 2014). This study was also limited to the footrope portion of the trawl and concluded that about 54 percent of observable crab interacted with the footgear (e.g., elevating discs, spacers, or chains). The majority of video-observed crabs actively responded to the approaching trawl and tried to escape. The study was unable to estimate the severity or likelihood of mortality after passing under footgear. This study, and references to herding in Rose et al. (2013), highlights the relevance of crab shell condition to susceptibility to unobserved trawl mortality. In a time/area where crab are likely to be in a soft-shell condition and less mobile, unobserved mortality rates could be higher than the ranges estimated in the studies available.

Additionally, the trawl sweep modification has proven effective on the BS shelf at reducing effects on sea whips (a long-lived species of primary concern), and did not substantially reduce catches of target flatfish. Tests for reduced impacts on basket-stars, sponges, and polychaete siphons were positive in direction, but non-significant.

The trawl sweep modifications were estimated to result in additional equipment costs as vessels comply with the addition of disks to the trawl sweeps. On some vessels the requirement would likely result in modification to operations and/or the cost of additional deck equipment. For all vessels, the additional cost of purchasing the modified gear was estimated at the time of Council action to be between $3,000 to $3,400, annually 25 to 75 percent increase over the cost of sweeps without elevating devices. There may, however, be some potential for offsetting these costs, or even overall savings, if the use of the elevating devices saves fuel, or reduces wear on the sweep rope or cable.

8 Retention and Utilization of Harvested Resources

One of the major drivers behind the AM80 Program was the relatively low levels of groundfish retention of the fleet. As part of their initiative to improve retention and improve utilization, the Council, in June 2003, approved Amendment 79 to the BSAI Groundfish FMP that would implement groundfish retention standard (GRS). Approved by the Secretary of Commerce in 2005 and scheduled to be implemented on January 20, 2008, the GRS required AM80 vessels to significantly improve their retention and utilization of groundfish resources in the BSAI.

Under GRS, all AM80 CPs 125' in length overall (LOA) or longer were required to meet increasing retention standards while fishing and processing groundfish in the BSAI. The GRS was phased in starting at 65 percent in 2008 and peaking at 85 percent in 2011 and subsequent years. In addition to the increasing GRS, Amendment 79 mandated flow-scales on all AM80 vessels participating in BSAI fisheries and required that two observers be onboard all trips. While the Council recognized that vessels less than 125' had generally higher levels of discards, the Council also recognized that the compliance costs for smaller vessels (two observers and flow scales) could potentially drive vessels out of the fishery. Therefore, vessels less than 125' were exempted from the GRS.

Implementation of AM80 superseded Amendment 79 but the GRS and it's phased in retention percentage still applied under AM80 Program, but it applied to all AM80 vessels regardless of length that operate in the BSAI. For vessels that choose to join cooperatives, the GRS was measured jointly over the entire co-op, while vessels choosing to operate in the AM80 limited access fishery were, as before, individually accountable to meet the standards.

On December 15, 2010, NMFS issued an emergency order exempting the AM80 fleet from the requirements of the GRS as implemented under AM80. In the Emergency Rule NMFS indicated they believed that the methodology used to calculate the GRS percentage had the effect of requiring retention well above that intended by the Council or as implemented by NMFS. In addition, NMFS indicated that the monitoring and enforcement of the GRS was much more complex and costly than anticipated.

In December 2012, NMFS published a Final Regulatory Impact Review/Final Environmental Assessment/Initial Regulatory Flexibility Analysis to "Remove the Groundfish Retention Standard for the Non-AFA Trawl Catcher Processors in the Bering Sea and Aleutian Islands." On February 25, 2013, NMFS publish a Final Rule to change the regulations regarding the GRS.

The new regulation removed the requirement to meet the GRS, and instead require cooperatives to internally monitor their retention percentages and submit annual retention reports in their report to NMFS. This internal monitoring system is known as the Retention Compliance Standard (RCS). In addition, third-party audits of cooperatives' retention percentages would be required, which are provided by SeaState. As with the GRS, retention percentages will continue to be measured as: Round Weight Equivalent (RWE) of Retained Product ÷ Total Groundfish Catch. The RWE of Retained Product is a two-part calculation using the Production Reports submitted daily by processors. These product amounts would be expanded to RWE using standard product recovery rates published in the regulations and available online at http://alaskafisheries.noaa.gov/rr/tables/tabl3.pdf. Total Groundfish Catch would continue to be measured using flow scales and observer estimates. If vessels choose to participate in the AM80 limited access fishery, NMFS will estimate each vessel's retention percentage independently.

Table 8-1 provides the annual RCS and SeaState retention rates from 2015 through 2023 for the Alaska Seafood Cooperative.

Table 8-1 Annual RCS and SeaState retention rates for Alaska Seafood Cooperative from 2015 through 2023

Year	SeaState Retention Rate	RCS Rate
2015	85.00%	93.80%
2016	84.30%	93.80%
2017	84.80%	93.80%
2018	84.00%	93.00%
2019	85.00%	94.00%
2020	84.20%	93.00%
2021	81.90%	91.00%
2022	82.80%	92.00%
2023	82.70%	92.00%

Source: Alaska Seafood Cooperative Reports to the North Pacific Fishery Management Council 2015-2023

9 Social and Community Engagement

A wide range of coastal communities are engaged in and dependent upon the BSAI species associated with the AM80 Program. These include communities that participate in these fisheries primarily through the auspices of the CDQ Program as well as communities that participate in the fishery but are not part of the CDQ Program. These two sets of fishing communities were affected in different ways by the implementation of the AM80 Program and are discussed separately in this section.

This social and community section is organized into three subsections, including: an overview of CDQ program (9.1), an overview of patterns of community engagement (9.2), and an overview of Alaska community fishery tax information (9.3).

9.1 Community Development Quota Program

The following sections of the review provide regional and community level information for the 65 coastal Western Alaska communities that are eligible to participate in the CDQ program. The CDQ program was implemented in 1992, and its purpose is to provide 65 coastal Western Alaska communities the opportunity to: a) participate and invest in federally managed BSAI fisheries; b) to support economic development in these communities; c) and alleviate poverty as well as provide economic and social benefits. To meet this purpose, the CDQ program is allocated a portion of federally managed species throughout the BSAI region (including pollock, Pacific cod, Atka mackerel, flatfish, and rockfish as well as prohibited species catch allowances for salmon, halibut, and crab).

The annual CDQ allocations of federally managed fisheries in the BSAI region provide revenue streams to CDQ entities commonly known as CDQ groups. The CDQ groups are non-profit organizations that receive the programmatic allocations of federally managed fisheries in the BSAI management region. In this way, it is through the CDQ groups that these 65 communities are considered here as indirect participants in the AM80 fisheries. The CDQ groups independently determine strategies for harvesting their programmatic allocations, the types of investment strategies to make, and the range of social and economic benefits that would benefit their constituent communities. The CDQ groups have used their revenues to support sustainable fishery-based economic development in the region and promote infrastructure development, employment, training programs, and other benefits for their regions and communities.

The CDQ groups depicted in Figure 9-1 include the following:

Aleutian Pribilof Island Community Development Association (APICDA). This CDQ group represents six Bering Sea coastal communities within the Aleutians East Borough (three communities) and Aleutians West Census Area (three communities). In 2020, the population of the communities was 2,186 persons.

Bristol Bay Economic Development Corporation (BBEDC). This CDQ group represents 17 coastal communities in the Bristol Bay region. In 2020, the population of these communities was 5,178 persons.

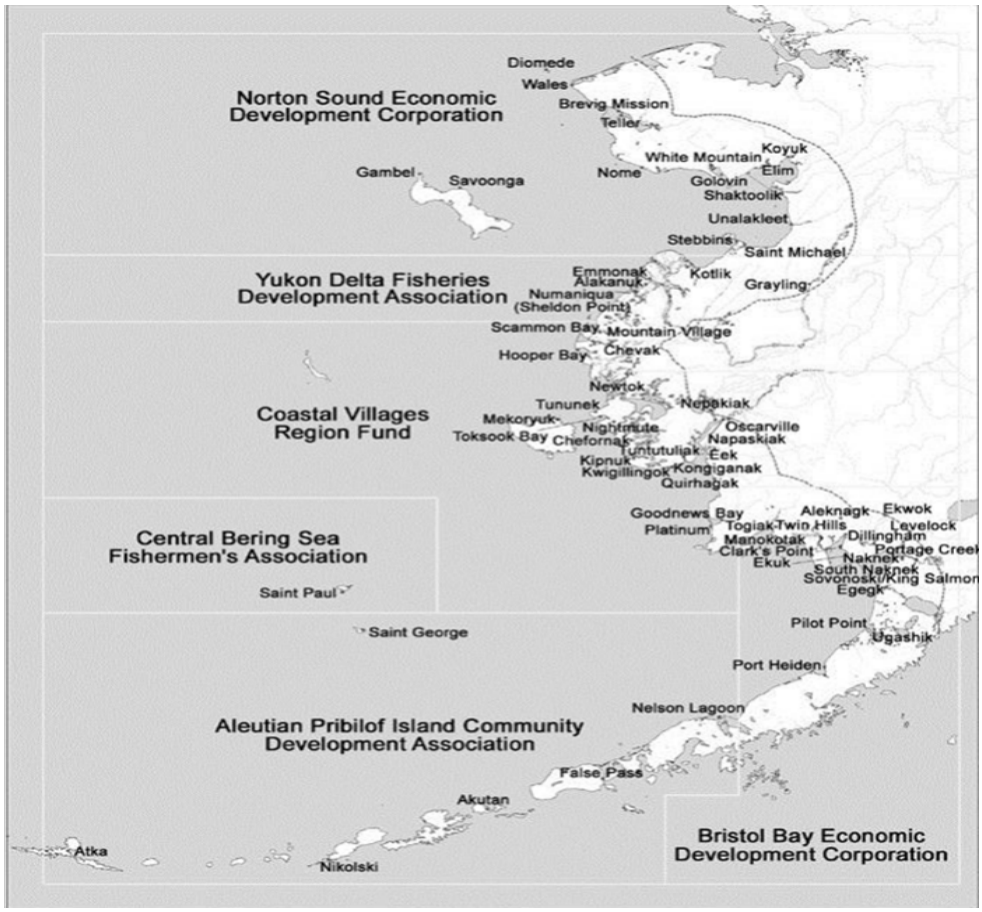
Central Bering Sea Fishermen's Association (CBSFA). This CDQ group represents the community of St. Paul, the only community on the island of St. Paul. In 2020, the population of the community was 413 persons.

Coastal Villages Region Fund (CVRF). This CDQ group represents 17 coastal communities in the Bethel Census area plus 3 communities in the Southwest portion of Kusilvak Census Area. In 2020, the population of these communities was 9,691 persons.

Norton Sound Economic Development Corporation (NSEDC). This CDQ group represents 15 communities along the Bering Sea Coast of the Nome Census area. In 2020, the population of these communities was 9,207 persons.

Yukon Delta Fisheries Development Association (YDFDA). This CDQ group represents six communities at the mouth of the Yukon River plus the community of Grayling. In 2020, the population of these communities was 3,284 persons.

Figure 9-1 Western Alaska Community Development Quota Program, eligible communities and CDQ groups



Source: NOAA Fisheries, available at: https://media.fisheries.noaa.gov/dam-migration/cdq-program-summary-1018.pdf

Under the CDQ Program, a portion of the federal TAC for commercially important BSAI species — including pollock, crab, halibut, and various groundfish — is allocated to participants in the CDQ Program. In 1992, CDQ groups received their initial allocations of pollock based on population, quality of proposed economic development plans, and dependence on fisheries. Since 1992, the CDQ Program has expanded several times and now includes allocations of pollock, halibut, sablefish, crab, all of the remaining groundfish species (Pacific cod, Atka mackerel, flatfish, and rockfish), and prohibited species catch (i.e., as bycatch allowances for salmon, halibut, and crab). The percentage of each annual BSAI catch limit allocated to the CDQ Program varies by species and management area. Currently, the CDQ Program is allocated approximately 10.7 percent of the groundfish directed fisheries. The percentage of other catch limits allocated to the CDQ Program (as CDQ reserves) is determined by: the BSAI Crab Rationalization Program (10 percent of crab species, except for Norton Sound red king crab, which is 7.5 percent); the BSAI Fishery Management Plan for all other groundfish and prohibited species (7.5 percent, except 20 percent for fixed-gear sablefish); and 50 CFR part 679 for halibut (20 percent to 100 percent, depending on IFQ management area).

Annual CDQ allocations provide a revenue stream for CDQ groups through various channels, including the direct catch and sale of some species and the leasing of quota to various harvesting partners. CDQ groups receive royalty payments on each allocation harvested by a partnering firm. In addition to direct and indirect participation in fishing, CDQ group earnings are also derived from investments distributions in subsidiary companies and vessels. Since the implementation of the CDQ Program, individual groups have made large capital investments in vessels, infrastructure, processing capacity, and specialized gear.

Local programs purchase limited access privileges in a fishery and acquire equity position in existing fishery businesses including halibut, sablefish, and crab. CDQ groups have invested in peripheral projects that directly or indirectly support commercial fishing for halibut, salmon, and other nearshore species. These projects include seafood branding and marketing, quality control training, safety and survival training, construction and staffing of equipment maintenance and repair facilities, and assistance with bulk fuel procurement and distribution.

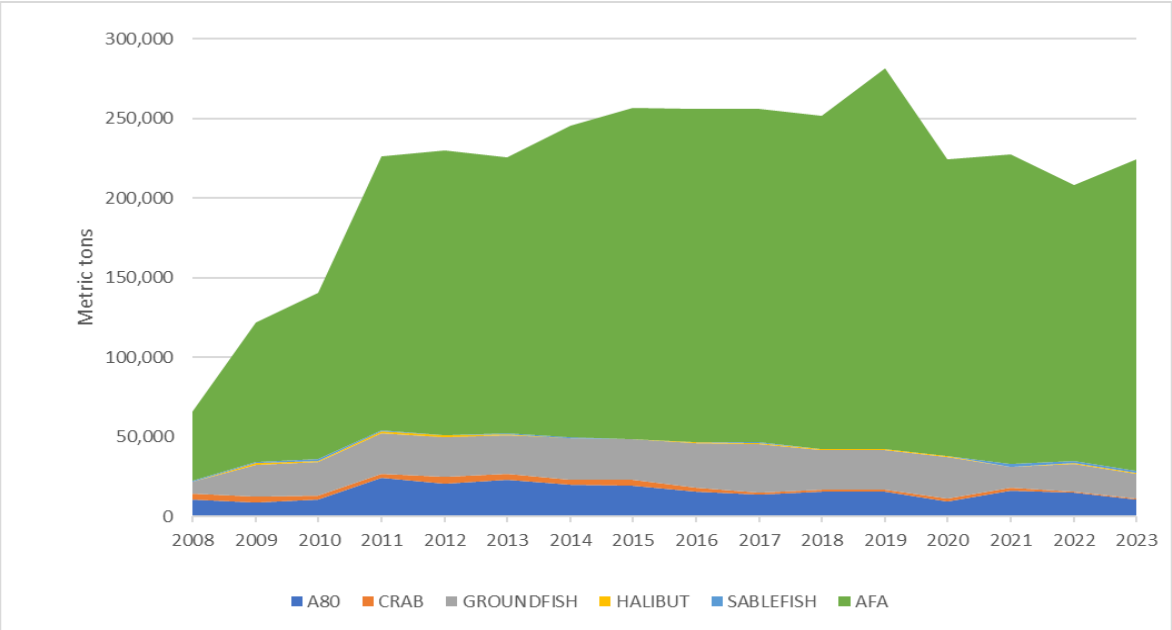
Investments by individual CDQ groups include ownership interest in the at-sea processing sector and in catcher vessels and are made with the expectation of financial gain or expanding equity in the fishing fleet. Investments in subsidiaries, such as limited liability corporations, allow CDQ groups to wholly or partially own vessels directly related to fisheries, including in the AM80 sector. These vessels provide revenue through the direct catch and sale of target species and, in some cases, vessel ownership increases a subsidiary's holdings of quota in fisheries, such as BS pollock. In addition, investments in harvesting and processing capacity provide revenue through profit sharing, contractual agreements to harvest other CDQ groups' quota, and chartering commercial fishing vessels to government agencies conducting stock assessment surveys. Vessel ownership varies by CDQ group, target species, and affiliation with subsidiary corporations.

CDQ revenue also supports permit brokerages and revolving loan programs that build and sustain fisheries development within their regions. Such programs are intended to retain limited entry salmon permits within CDQ communities, provide the financing necessary for resident fishermen to purchase new boats and gear, and supporting market development for locally-harvested seafood products.

CDQ catch and revenue is dominated by pollock harvest in the AFA fishery (Figure 9-2 and Figure 9-3). Halibut PSC caught when directed fishing CDQ pollock accrues to the CDQ halibut prohibited species quota (PSQ). CDQ non-pollock, non-IFQ groundfish catch is dominated by Pacific cod, yellowfin sole, and to a lesser extent Atka mackerel and rock sole. Non-pollock, non-IFQ CDQ groundfish catch is driven early in the year by Pacific cod in the hook-and-line CP sector and rock sole on AM80 platforms. Later in the year this category of CDQ harvest shifts more toward yellowfin sole on AM80 platforms. Figure 9-4 and Figure 9-5 detail the CDQ harvest and revenue generated on AM80 vessels. Note that the revenues reported in Figure 9-3 are AKFIN's estimates of ex-vessel revenue; ex-vessel revenue is not the natural metric for at-sea operations but is necessary to incorporate revenue data from crab fishing which is an important piece of the CDQ portfolio. Looking at first wholesale gross revenue estimates for CDQ catch on AM80 vessels (Figure 9-5) range from a low of $13 million in 2009 and 2023 to a high of $28 million in 2017. In recent years, both CDQ harvest and revenue generated on AM80 vessels has diminished considerably likely due to numerous challenges facing the AM80 industry and the general Alaska seafood industry. These challenges include:

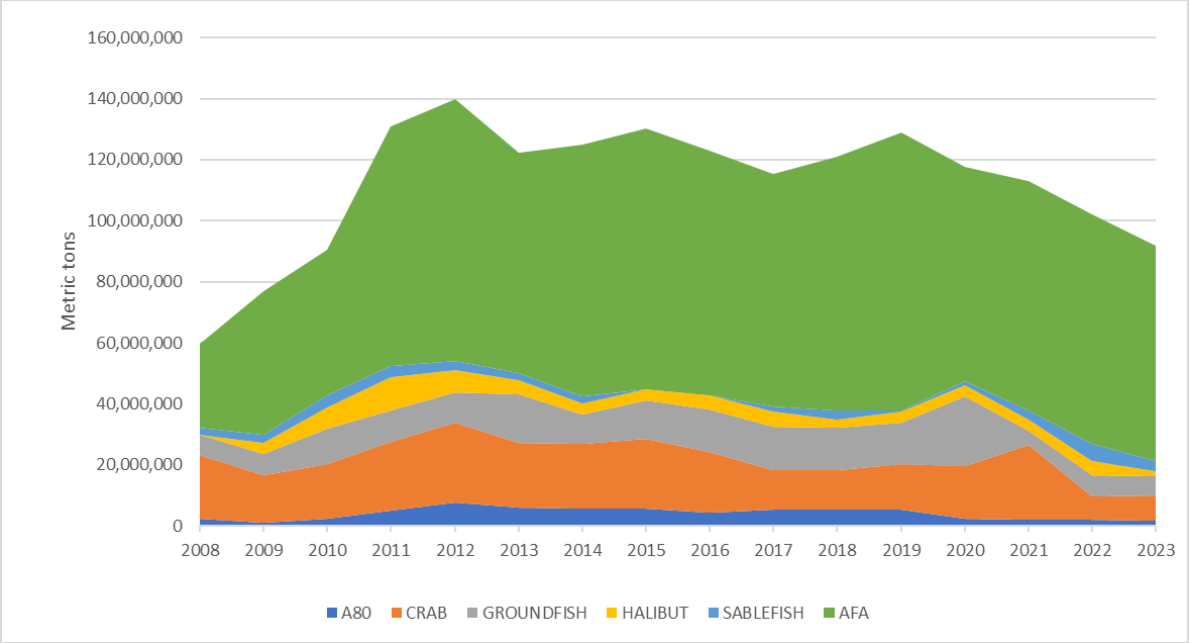
- Residual COVID-19 pandemic impacts that lead to logistical hurdles, increased costs in recruiting workers, maintaining health standards, and supply and market disruptions
- National and international market forces that have resulted in high inventories and low priced seafood throughout the global supply chain
- Tariff and trade issues over the past several years

Figure 9-2 Distribution of CDQ estimated catch (mt) by fishery or fishery group, 2008-2023



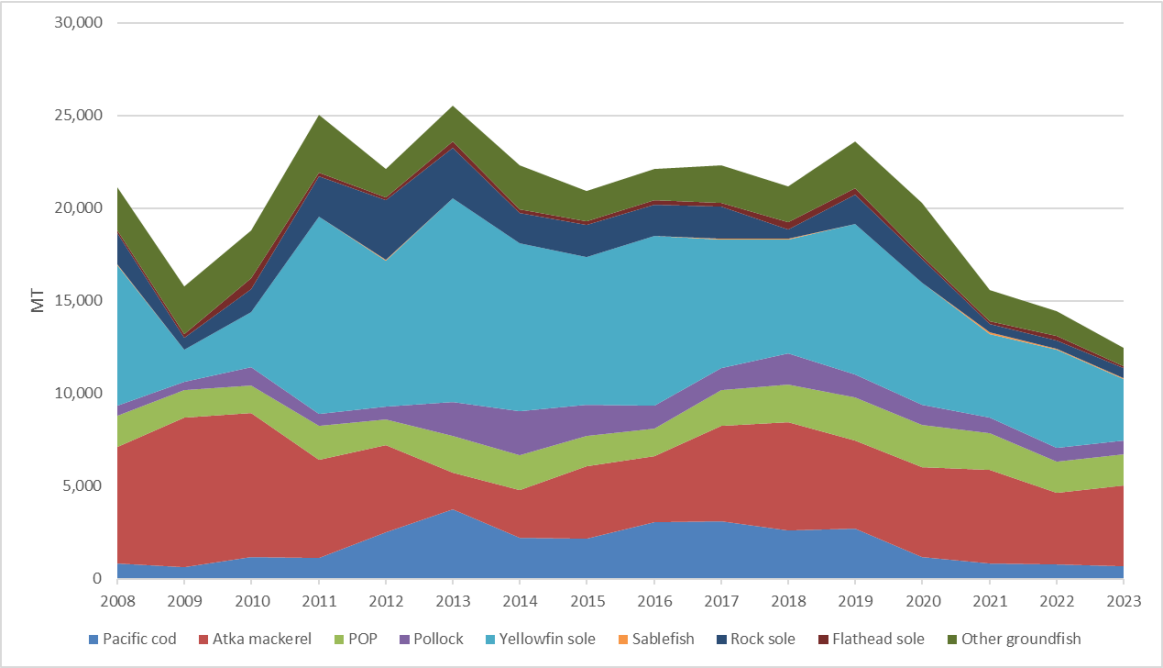
Source: AKFIN; CDQ_Div(10-4-24)

Figure 9-3 Distribution of CDQ estimated ex-vessel revenue by fishery or fishery group, 2008-2023



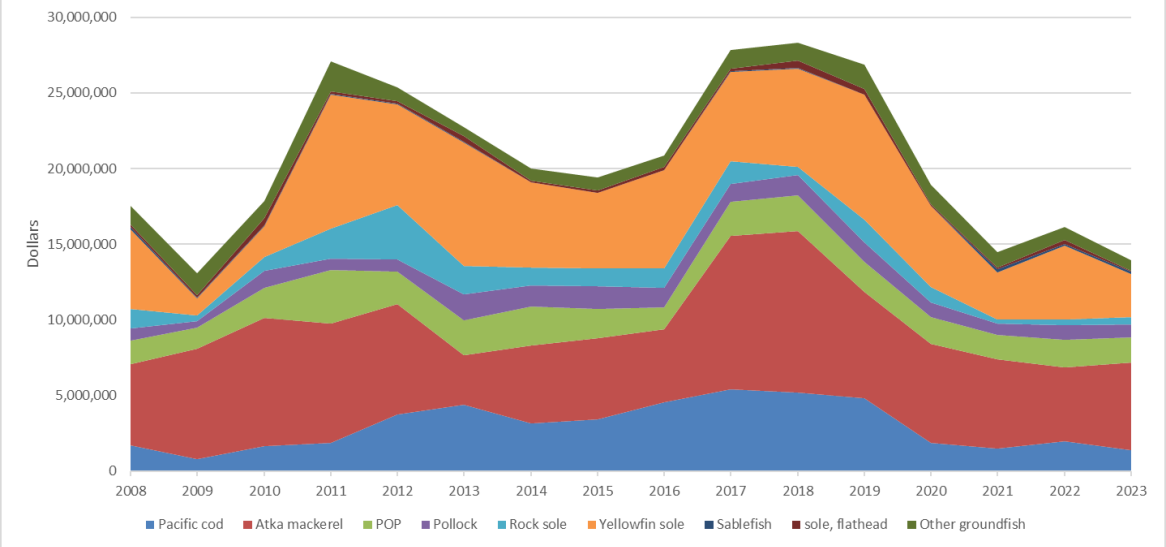
Source: AKFIN; CDQ_Div(10-4-24)

Figure 9-4 CDQ harvest (mt) on AM80 vessels, 2008 through 2023



Source: AKFIN; A80_All_Species(8-21-24)

Figure 9-5 First wholesale gross value of CDQ harvest on AM80 vessels, 2015 through 2023



Source: AKFIN; A80_All_Species(8-21-24)

Although none of the communities within the CDQ group regions have direct participation in the BSAI groundfish AM80 sector fishery through local vessel ownership address, some CDQ communities in the BSAI groundfish fishery do have engagement in the AM80 fishery by being a product transfer location for processed product offload from CPs. When these offloads occur, a Product Transfer Report is completed and the transfer is subject to the state Fisheries Resource Landing Tax, with the resulting tax

revenues shared by the state with the community. A more complete description of this sharing process and estimated fish tax payments made by AM80 vessels is provided in Section 9.3.

Beyond the revenue benefits directly resulting from tax revenues, AM80 CP port calls may foster other economic activities involving local support service providers, such as crew transfers, fuel purchases, cold storage facility use, stevedoring, and logistics support, among others. There are, however, no publicly available, systematically collected data on the amounts and locations of these types of expenditures but level of shared state Fishery Resource Landing Tax revenue may be taken as one rough proxy for the potential of this activity across the port communities involved.

Another rough proxy, and one specific to the AM80 fishery, would be the number of AM80 vessel port calls, which are shown in Table 9-5. Clearly shown is the predominance of Unalaska/Dutch Harbor as a port of call, with the community accounting for 75 percent of all AM80 port calls over the years 2015-2023, with marked secondary clusters seen in Adak (nine percent) and Togiak (four percent) among the remaining listed ports. Unalaska/Dutch Harbor has easily the most developed support service sector capacity in the BSAI region with multiple marine fueling options, substantial cold storage capacity, multiple provisioning options, administrative support, and multiple electrical, electronics, hydraulics, welding, and mechanical services providers among others; Adak has few support capabilities aside from its deep water port, a fueling station capable of accommodating large vessels, and the ability to support larger-scale aircraft operations at its airport than any other civilian community west of Cold Bay.

In addition to participating in the BSAI groundfish fisheries through use of CDQ quota ownership direct or indirect ways, CDQ groups have also invested in capital assets in the CV and/or CP sectors as another avenue to meet the economic and social goals of the CDQ program. As noted in the *Appendix 1: Social Impact Assessment, Final EIS BSAI Halibut ABM AM80 PSC limit*, April 2022, among vessels actively participating in the AM80 BSAI groundfish fishery in at least one 2015-2023, only the NSEDC have invested in capital assets in AM80 sector. During the review period, the NSEDC owned, in part, four AM80 vessels.

APICDA, CBSFA, CVRF, BBEDC, and YDFDA leased CDQ quota to entities in which it has no ownership or management interest, including leasing the harvest of some or all of their BSAI multispecies groundfish CDQ quota holdings to entities participating in the AM80 sector fishery. However, according to CBSFA management, it has in several past years specifically avoided leasing its CDQ to the AM80 sector over concerns with bycatch rates and have left quota in the water as a result, considering the decline in bycatch more valuable to the local fishery than the potential value that would be returned from lease fees. In addition, NSEDC does not lease CDQ quota directly to entities participating in the AM80 sector fishery, instead using an AFA CP operated by a firm that has been a long-term industry partner with NSEDC. NSEDC-owned quota is, however, sometimes harvested in at least modest amounts by AM80 vessels when quota swaps between BSAI groundfish fishery participants occur as they attempt to fill out their harvest plans over the course of a season. NSEDC manages the coordinated leasing of both its own and CBSFA's BSAI groundfish CDQ.

9.2 Patterns of Community Engagement and Dependence on AM80 Fisheries

In this section, a series of tables based on existing quantitative fishery information from 2006 through 2023 were developed to identify patterns of engagement (or participation) in the AM80 fisheries. The distribution and relative magnitude of community engagement in the AM80 fisheries for vessels was measured by an AM80 permitted vessel's ownership address information, which is listed in the Alaska Commercial Fisheries Entry Commission (CFEC) vessel registration files.

Some caution should be used in how this information is interpreted is warranted because it is not unusual for vessels to have complex ownership structures that involve more than one entity in more than one community or region. Additionally, the community identified by ownership address may not directly

indicate where a vessel spends most of its time, purchases services, or hires its crew from. However, what community ownership address information does provide is an approximate indicator of the distribution and magnitude of ownership ties to a particular community and region. In this way, it is a proxy for some economic activity in the community that is associated with the fishery/sector. The listed ownership address was also used in this section as a way to connect vessels to communities rather than other indicators, such as vessel homeport information, because other SIAs conducted for FMP amendment analysis for the Council have indicated the problematic nature of the existing vessel homeport data (AECOM 2010).

The portion of the review focusing on communities linked to the AM80 fisheries also includes a series of tables based on existing quantitative fishery information to identify patterns of economic dependence on the AM80 fisheries for communities by ownership address and those Alaska communities where shorebased processing occurs. "Dependence" is a complex concept with economic and social dimensions, and it can be measured in multiple ways. This portion of the section addresses the economic dimension of communities' dependence on AM80 fisheries. For communities affiliated with the fishery by vessel ownership address, economic dependence is characterized by comparing the gross first wholesale revenues earned from the AM80 fisheries to the total revenues generated by the same vessels in all other fisheries (species, gear, and areas). The same general procedure is used for the shorebased processing component.

9.2.1 AM80 Vessels

Table 9-1 provides a count, by community of ownership address and year (2006-2023), of BSAI AM80 groundfish trawl CPs for the Seattle MSA, all other Washington communities, and "all other states" (all states other than Alaska, Washington, and Oregon) combined, along with annual average counts and percentages and the total number of unique vessels. There were five unique vessels from other states, but none with Alaska or Oregon ownership addresses were active during the 2006-2023 period. As shown, the largest component of fleet ownership during any given year is, by far, the Seattle MSA, which included all vessels with Washington ownership addresses during the 2006 through 2023 period (annually averaging over 75 percent of all participating vessels), followed by "all other States" combined (annually averaging slightly under 25 percent of all participating vessels). Within the Seattle MSA, three different cities appear as ownership addresses in the 2006-2023 data to include Renton, Kirkland, and Seattle itself.

Table 9-2 provides BSAI AM80 groundfish first wholesale gross revenue information by year (2006-2023), along with annual averages in terms of dollars and percentages by community of vessel's historic ownership address. During the 2015 through 2023 period, the reported annual average first wholesale gross revenue from AM80 groundfish fishing with vessel historic ownership address for Seattle MSA, Bellingham and Sequim WA, and Rockland ME all combined was $366 million. Compared to the previous review period (2008-2014), the total average annual first wholesale gross revenue for this review period (2015-2023) was down $20 million.

Table 9-3 provides information on BSAI AM80 groundfish dependency on BSAI groundfish compared to all other areas, species, and gear types fished by those same vessels by community of vessel's historic ownership address. The AM80 vessels with the combined Seattle MSA, Billingham and Sequim WA. and Rockland ME. ownership address reported 82 percent of their total first wholesale gross revenue was from the AM80 groundfish fisheries. Compared to the previous review period (2008-2014), the reported percent of total first wholesale gross revenue from AM80 groundfish fisheries was down 1.5 percent.

Table 9-4 provides information on "community CP fleet" dependency on BSAI AM80 groundfish first wholesale gross revenue compared to all other areas, gear types, and species fished by the "community CP fleet" (with the "community CP fleet" defined as all commercial CPs with ownership addresses in the communities with at least one vessel active in the BSAI AM80 sector at any time 2006-2023). For the combined Seattle MSA, Billingham and Sequim WA. And Rockland ME. ownership address the reported

annual average first wholesale gross revenue from AM80 groundfish during the 2015 through 2023 period was $366 million which accounts for 23 percent of the $1,621 million in total annual average first wholesale gross revenue for these areas, gear types, and species. Compared to the previous review period (2008-2014), the average annual total revenue for the 2015-2023 review period was down $20 million.

Finally, Table 9-5 provides AM80 vessel port call data from 2008 through 2023. Port calls in Unalaska/Dutch Harbor community accounted for 75 percent of all AM80 port calls over the years 2015-2023.

Table 9-1 BSAI AM80 trawl catcher/processors by community of vessel historic ownership address, 2006-2023 (number of vessels)

Geography	Annual average 2006-2007 (number)	Annual average 2008-2014 (number)	2015	2016	2017	2018	2019	2020	2021	2022	2023	Annual average 2015-2023 (number)	Annual average 2015-2023 (percent)	Total unique CPs 2015-2023 (number)
Bellingham	1	0	0	0	0	0	0	0	0	0	0	0	0.00%	0
Seattle MSA	18.0	16.0	15	16	14	14	15	14	14	13	12	14.1	75.60%	18
Sequim	0.0	0.3	0	0	0	0	0	0	0	0	0	0.0	0.00%	0
Washington Total	19.0	16.3	15	16	14	14	15	14	14	13	12	14.1	75.60%	18
Other States Total	3.0	3.0	3	3	5	5	5	5	5	5	5	4.6	24.40%	5
Grand Total	**22.0**	**19.3**	**18**	**19**	**19**	**19**	**20**	**19**	**19**	**18**	**17**	**18.7**	**100.00%**	**23**

*Seattle MSA includes all communities in King, Pierce, and Snohomish counties (Kirkland, Renton, and Seattle are represented as active in the 2006-2023 data).

Note: Due to CP ownerhship movement between communities over the years shown, total unique CPs per community or state may not sum to state or grand totals.

Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_BLEND_CA; Source file A80_SIA(10-15-24)

Table 9-2 BSAI AM80 trawl catcher/processors first wholesale gross revenues by community of vessel historic ownership address, 2006-2023 (millions of 2023 real dollars)

Geography	Annual Average 2006-2007 ($ millions)	Annual Average 2008-2014 ($ millions)	2015	2016	2017	2018	2019	2020	2021	2022	2023	Annual Average 2015-2023 ($ millions)	Annual Average 2015-2023 (percent)
Grand Total*	**$348.07**	**$386.24**	**$346.68**	**$366.37**	**$429.67**	**$453.56**	**$396.86**	**$336.59**	**$261.95**	**$372.36**	**$331.13**	**$366.13**	**100.00%**

Source: NMFS Alaska Region Catch Accounting System, data compiled by AKFIN in Comprehensive_BLEND_CA

*Includes Seattle MSA, Bellinghham and Sequim WA and Rockland ME

Table 9-3 BSAI AM80 trawl catcher processors first wholesale gross revenue as a percent of vessel total by community of vessel historic ownership address, 2006-2023 (millions of 2023 real dollars)

Community	2006-2007 Annual Average	2008-2014 Annual Average	2015-2023 Annual Average
Total	84.13%	83.31%	81.81%

Source: ADFG/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

*Includes Seattle MSA, Bellinghham and Sequim WA and Rockland ME

Table 9-4 BSAI AM80 trawl catcher processors first wholesale gross revenue as a percent of total community first wholesale gross revenue, 2006-2023 (millions of 2023 real dollars)

Community	Annual Average Number of A80 Catcher Processors	Annual Average Number of All Commercial Fishing Vessels in those Same Communities	Annual Average A80 Cather Processor (dollars)	Annual Average Total Revenues from All Areas, Gears, and Species Fisheries for the Community Fleet	Participant Wholesale Value as a Percentage of Total Community Wholesale Revenue Annual Average
2006-2007 Total*	22.0	392.7	**$348.07**	**$2,022.92**	17.21%
2008-2014 Total**	19.3	366.2	**$386.24**	**$1,924.02**	20.07%
2015-2023 Total***	18.7	306.2	**$366.13**	**$1,621.27**	22.58%

Source: ADFG/CFEC Fish Tickets, data compiled by AKFIN in Comprehensive_FT

*Includes Seattle MSA, Bellinghham WA and Rockland ME

**Includes Seattle MSA and Sequim WA and Rockland ME

***Includes Seattle MSA WA and Rockland ME

Table 9-5 AM80 port calls, 2008-2023

Geography	Annual average 2008-2014 (number)	2015	2016	2017	2018	2019	2020	2021	2022	2023	Annual average 2015-2023 (number)	Annual average 2015-2023 (percent)	Total unique CPs 2015-2023
Adak	30.1	25	34	58	50	44	41	53	48	51	44.9	9.20%	10
Dutch Harbor	453.1	402	407	377	355	358	357	324	388	321	365.4	74.87%	23
Kodiak	18.7	39	35	49	38	37	23	25	25	14	31.7	6.49%	8
Sand Point	16.6	17	3	0	1	0	2	0	1	0	2.7	0.55%	6
St Paul	10.6	9	0	1	7	3	0	0	2	2	2.7	0.55%	9
Togiak	2.3	36	36	20	45	38	9	0	0	11	21.7	4.44%	20
Other	59.1	23	28	26	28	28	19	13	5	2	19.1	3.92%	14
Grand Total	**591.6**	**551**	**543**	**531**	**524**	**508**	**451**	**415**	**469**	**401**	**488.1**	**100.00%**	23

Source: NMFS AFSC Observer Program, data compiled by AKFIN

9.3 Alaska Community Fishery Tax Information

This section develops estimates of fish tax payments made by AM80 vessels. Taxes generated by the fishing industry, particularly the fish processing sector, are important revenue sources for communities, boroughs, and the State. There are two main sources of fishery taxes in Alaska: shared taxes administered through the State of Alaska, and municipal fisheries taxes independently established and collected at select municipalities. This section focuses on the estimated shared fish taxes payments by the AM80 vessels at the community and borough level.

Under Alaska Statue (AS) 43.77, CPs and motherships are required to pay a Fishery Resource Landing Tax (FRT), at a rate that is the equivalent of rates paid by catcher vessels and shore-based processors under the Fisheries Business Tax (FBT) (see 43.75). The rate for both taxes is nominally three percent, but there may be some variations of rates for developing fisheries. The FRT is applied to the ex-vessel value equivalent of the processed products that are offloaded in state waters by all CPs and motherships. Both the FRT and the FBT are "shared taxes" in which the revenue is split evenly between the State of Alaska and the Borough or city at which the offload occurred. These fisheries taxes are shared as follows:

- Fisheries Business (AS 43.75.130)
  50 percent of fisheries business taxes are shared with the municipalities where fishery resources were processed. Taxes are shared as follows:
  1) If processing occurred within an incorporated city, which is not located within an organized borough, 50 percent of the tax collected is shared with the city.
  2) If processing occurred in an incorporated city, which is located within an organized borough, 25 percent of the tax collected is shared with the city and 25 percent of the tax is shared with the borough.
  3) If processing occurred at a location within an organized borough but not within an incorporated city, 50 percent of the tax collected is shared with the borough.
- Fishery Resource Landing Tax (AS 43.77.060)
  50 percent of the fishery resource landing taxes are shared with the municipality where fishery resources were landed. The mechanics of sharing landing taxes are the same as fisheries business taxes, except that the proration applies to boroughs incorporated after January 1, 1994.

The State of Alaska reports FRT and FBT revenues by community and borough each year. Since the information is not separated by species or gear type so the standard reports cannot be used to assess the

tax impacts of AM80 operations, an estimated AM80 shared fish taxes from 2013 through 2022 was prepared for the program review.

Table 9-6 shows the results from the AM80 share fisheries tax calculations relative to the total reported shared fish taxes for those same communities and boroughs. For this review, the analysts used Product Transfer Reports to estimate the percent of AM80 transfers by community and applied the total annual nominal exvessel value of AM80 production to those community percentages. Next, a three percent tax rate is applied to these community exvessel totals followed by the appropriate sharing tax rate based on location of the AM80 transfer. As noted in the table, Dutch Harbor/Unalaska receives that largest share of fish taxes from the AM80 transfers ranging from a low of $1.3 million in 2014, 2015 and 2021 to a high of $2 million in 2022.

Table 9-6 Estimated AM80 shared fish taxes and total reported shared fish taxes published by Alaska Department of Revenue, Tax Division by community and borough from 2013 through 2022

Communities		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Dutch Harbor/Unalaska	AM80 Estimated Shared Fish Taxes	$1,574,675	$1,392,984	$1,322,684	$1,448,707	$1,817,212	$1,641,462	$1,485,295	$1,606,236	$1,271,316	$1,981,057
	Total Reported Shared Fish Taxes[1]	$10,593,755	$8,197,311	$6,741,362	$11,795,392	$7,940,853	$8,162,129	$8,377,533	$7,736,003	$8,325,561	$9,018,701
Homer	AM80 Estimated Shared Fish Taxes	$1,258	$2,302	$4,358	$0	$0	$2,750	$1,259	$0	$0	$0
	Total Reported Shared Fish Taxes[1]	$37,136	$54,283	$21,004	$20,456	$43,242	$59,449	$57,505	$69,693	$65,487	$114,534
Seward	AM80 Estimated Shared Fish Taxes	$3,773	$3,454	$1,090	$0	$0	$0	$0	$0	$3,474	$0
	Total Reported Shared Fish Taxes[1]	$498,298	$496,651	$349,029	$280,935	$443,029	$456,144	$350,482	$180,728	$351,805	$379,592
Kenai Peninsula Borough	AM80 Estimated Shared Fish Taxes	$5,031	$5,756	$5,448	$0	$0	$2,750	$1,259	$0	$3,474	$0
	Total Reported Shared Fish Taxes[1]	$794,447	$933,231	$644,063	$541,757	$775,640	$860,097	$636,386	$533,903	$636,934	$855,386
Juneau (City and Borough)	AM80 Estimated Shared Fish Taxes	$125,773	$172,684	$100,236	$134,225	$71,883	$112,730	$80,558	$52,347	$20,841	$0
	Total Reported Shared Fish Taxes[1]	$384,415	$395,010	$364,624	$312,519	$389,022	$447,875	$407,040	$388,624	$407,040	$463,327
Kodiak	AM80 Estimated Shared Fish Taxes	$27,670	$64,469	$70,819	$98,355	$107,825	$98,983	$88,111	$45,460	$32,420	$43,597
	Total Reported Shared Fish Taxes[1]	$1,205,081	$1,196,362	$1,032,358	$578,649	$936,112	$880,642	$1,070,610	$890,816	$1,092,518	$1,003,899
Kodiak Island Borough	AM80 Estimated Shared Fish Taxes	$27,670	$64,469	$70,819	$98,355	$107,825	$98,983	$88,111	$45,460	$32,420	$43,597
	Total Reported Shared Fish Taxes[1]	$1,563,636	$1,593,633	$1,321,434	$1,252,521	$1,035,571	$1,919,461	$792,261	$1,062,630	$900,528	$1,323,629
Petersburg Borough	AM80 Estimated Shared Fish Taxes	$0	$0	$0	$0	$2,875	$0	$0	$0	$0	$0
	Total Reported Shared Fish Taxes[1]	$760,516	$1,249,730	$820,118	$336,848	$882,924	$893,722	$749,771	$339,260	$855,021	$947,117
Sitka (City and Borough)	AM80 Estimated Shared Fish Taxes	$0	$0	$0	$0	$0	$2,750	$0	$0	$0	$0
	Total Reported Shared Fish Taxes[1]	$1,191,064	$1,141,686	$1,009,033	$894,104	$953,324	$1,279,885	$1,188,722	$621,756	$1,188,722	$1,399,342

Source: AKFIN for Amendment 80 Product Transfer Report percentages and exvessel value and annual Shared Tax Reports published by the Alaska Department of Revenue, Tax Division

[1]Total reported shared fish taxes is fisheries business tax and fishery resource landing tax

10 Unanticipated Impacts

The structure of the AM80 Program has provided members of the sector tools to decrease the vulnerability to negative impacts resulting from factors not directly related to the AM80 Program or to increase adaptive capacity or resilience of the fishery in responding to those impacts. Those program elements were designed to facilitate efficiency within the program. An example of some of these factors include declining TACs, changes in world markets, the global COVID-19 pandemic, and environmental/climate changes impacting the Bering Sea. Table 10-1 provides a list of AM80 Program elements and a description of outside factor impact outcomes.

Table 10-1 AM80 Program Elements and Outside Factor Impact Outcomes

AM80 Program Element	Impact
Cooperatives	The cooperative structure has allowed AM80 CPs to adapt to changes in the fishery caused by changes in environmental factors and world economic conditions. QS holders can join a cooperative and have greater flexibility to fish their own quota or utilize lease markets to increase their vessel's catch or to not fish using their vessel. Leasing AM80 QS to other vessel operators allows the QS holder to generate revenue while reducing costs.
Flatfish flexibility exchange program	The flatfish flexibility exchange program can be of benefit for maximizing flatfish TAC utilization, to the extent that additional constraints in targeting flatfish can be resolved through inseason flexibility in the choice of a flatfish target. The flexibility to exchange quota among target species allows the AM80 fleet to shift between targets when unexpected changes occur. The ability to respond inseason may also benefit the AM80 fleet with respect to changing environmental and/or market conditions. The AM80 sector, in managing their multiple hard caps, has to factor in considerable uncertainty in order to ensure that they can successfully prosecute their multispecies fisheries. If the sector has access to an additional tool, there may be more room for compromise with respect to balancing TACs under the 2 million mt optimum yield limit, especially in years where the pollock and/or Pacific cod biomasses are high. In addition, other BSAI groundfish fishery participants may benefit from the increased flexibility by a relief of pressure on the annual TAC negotiations. The CDQ groups would have the same opportunity as the AM80 cooperatives to access the ABC surplus or ABC reserve, and consequently would also be able to benefit from the flexibility in choice of target flatfish afforded by the program.
Excess capacity	The 30% QS ownership cap has been effective in limiting consolidation of the fisheries, but it still provides flexibility for those companies below the cap to purchase additional QS. The 20% use cap limit has also been effective in limiting consolidation, but flexible enough to provide opportunities for expanded harvest for vessels below the use cap.
PSC limits	Limitations on PSC were included to reduce bycatch. Experience with rationalization programs shows that as the race for fish ends, the AM80 fleet will utilize the flexibility of the cooperative program to make operational choices that promote PSC savings. However, PSC limitations can reduce the ability of the AM80 vessels to adapt to changes to the AM80 fisheries.
Sideboard limits	Limitations on participation in non-rationalized fisheries were included to provide protection for the GOA fleet because AM80 vessels were expected to have more flexibility when they would fish their AM80 allocations. Establishing protections for the GOA fleet could reduce the ability of the AM80 vessels to adapt to changes to the AM80 fisheries like changes in world markets. Sideboard limits could be modified but the analysis would need to consider the tradeoffs associated with allowing AM80 vessels to have greater flexibility to adapt to changing environmental and economic conditions compared to the negative impacts potential increased harvest by the AM80 vessels would have on persons more reliant on GOA fisheries.
Economic data collection	The Economic Data Report (EDR) Program collects data needed to monitor the social and economic outcomes of the AM80 Program on all participants. Information collected is useful for policy makers to understand the impact that factors outside the AM80 Program have had on participants and allows for a more thorough analysis of proposed amendments.

11 Safety in AM80 Fisheries

11.1 Introduction

This section updates the discussion of safety trends in the AM80 sector that was explored with relatively more comprehensive data in Section 4 of the 2014 AM80 Program Review. Historical data (2001-2012) that are excised from this review because certain data collections are not ongoing can be found in the 2014 Review. This section identifies relevant safety regulations, trends in fleet investment that have likely enhanced safety outcomes, and the incident data that are still available through the National Institute for Occupational Safety and Health (NIOSH).

Key vessel safety improvements and risk reduction measures implemented since 2008 include: adoption of AM80 which allowed vessels to fish in a cooperative structure eliminating the race for fish; enrollment of AM80 vessels in a U.S. Coast Guard approved risk-reduction program known as the Alternate Compliance and Safety Agreement (ACSA) starting in 2009; and implementation of BSAI Amendment 97 to the BSAI FMP which allowed for replacement of existing AM80 vessels with new vessels that are required to meet contemporary safety standards (e.g., vessel classification and loadline). Amendment 97 is summarized in Section 12.2, below. Classed and loadlined vessels will have state-of-the-art construction and safety systems, be purpose built to a specific standard, and receive third-party oversight by a recognized classification society. Classed vessels are likely to be more fuel efficient, have special-built factories (where, by frequency, safety incidents are more likely to occur), and contain labor-saving devices that enhance worker safety.

Unlike catcher vessels (CV) that catch and deliver fish in the round to shore plants, AM80 vessels catch, sort, head, eviscerate, clean, and prepare fish into various products onboard the vessel. To conduct these operations, AM80 vessels have relatively large crew complements. The majority of AM80 vessel crews are not professional mariners, but instead are fish processing workers. In addition to large crews, AM80 vessels also carry processing and freezing machinery, hazardous gases for refrigeration, and large amounts of combustible packaging materials that are not present on CVs. AM80 vessels operate nearly year-round. Because of their ability to freeze, package, and store frozen catch, AM80 vessels can operate in remote areas for extended periods of time, potentially farther from medical and rescue support.

In 2010, NIOSH provided information to the Council when it was considering alternatives to allow for vessel replacement under Amendment 97. NIOSH concluded that the inability to replace AM80 vessels, other than for actual total loss or total constructive loss, ultimately inhibited long term safety improvements for the AM80 fleet. Under Amendment 97, AM80 entities are allowed to replace vessels for any purpose and vessel replacement is not dependent on the total loss of a vessel. Replacement vessels cannot exceed a length overall (LOA) of 295 feet.

This section reports casualty data for the AM80 fleet since 2012, picking up where the data reported in the 2014 AM80 Program Review ended. This section reflects the extent to which safety indicators have improved as a result of the ACSA program and vessel replacement. A key conclusion of this review is that allowing for vessels replacement under Amendment 97 has improved overall fleet safety and less reliance on – or need for – participation in ACSA because new-build vessels enhance safety outcomes.

11.2 Summary of BSAI Amendment 97 and ACSA

Amendment 97 allowed for vessel replacement of the 28 vessels that originally qualified for the program (77 FR 59852, October 2012). Prior to implementation of Amendment 97, AM80 vessel owners were unable to diversify processing capabilities on their CP platforms. Vessels that were part of the originally qualified AM80 fleet were not necessarily specialized for CP groundfish harvest, leading to concerns about the ability to maximize retention and utilization. Amendment 97 indirectly led to the improvement of groundfish retention by allowing for modernized CP vessels to come into the sector over time. The

amendment established a regulatory process for the replacement of AM80 vessels, such as a limit on the overall length of a replacement vessel (295 feet), a prohibition on the use of an AFA vessel as an AM80 replacement vessel, measures to prevent a replaced vessel from participating in non-AM80 fisheries off Alaska, and the extension of AM80 sideboards to replacement vessels.

Safety at sea was a primary rationale for vessel replacement, and replacement vessels are required to meet certain USCG vessel safety standards of vessel classification (46 USC 4502) and loadline (46 USC 5102). The owner of an AM80 replacement vessel must demonstrate to NMFS that the vessel is in compliance with USCG safety requirements as found in 46 CFR 28. Since the previous AM80 Program review, a few companies that comprise the active AM80 fleet have made substantial investment in new-build and significantly converted vessels. Within the constraints of available data and confidentiality rules, this report can state that three new vessels delivered since 2014 cost on the order of $60-100 million each, and three major conversions to repurpose existing platforms into modern AM80 fish processing vessels and catcher vessels cost on the order of $25-40 million each.

The regulations modified by Amendment 97 give AM80 vessel owners the choice of assigning their AM80 quota share (QS) permit to the replacement vessel or to the LLP license derived from the original qualifying vessel (679.90(e)(3)). The revised regulations allow multiple AM80 QS permits or LLP/QS licenses to be used on a replacement vessel. As a result, harvest quotas can be concentrated on newer, larger, safer vessels in a manner that is economical and rewards investment in both safety and retention/utilization.

U.S. law (46 USC 4503) requires that any fish processing vessel that is built or undergoes a major conversion after July 27, 1990, meet all survey and classification requirements prescribed by the American Bureau of Shipping or another similarly qualified classification society (a non-governmental organization that establishes and maintains technical standards and rules for the construction and operation of ships). Similarly, all vessels 79 feet LOA or greater that are built or converted for use as a fish processing vessel after January 1, 1983, are required to have a load line that establishes the maximum draft of the ship and the legal limit to which a ship may be loaded for specific water types and temperatures (46 USC 5102). At the time of the Amendment 97 final rule, the average age of the AM80 fleet was 32 years and thus the vast majority of AM80 vessels were not classed or loadlined.

As an effort to improve safety at sea in the near term – prior to fleet improvement through vessel replacement – the UCSG and AM80 vessel owners collaborated to create ACSA, which was implemented over the 2006 through 2009 period. ACSA is a safety agreement between the USCG and trawl and hook-and-line vessels that operate in Alaska waters. The major objective of ACSA was to reduce worker fatalities in the AM80 and HAL CP fleets through prevention of vessel disasters. The decline in serious vessel casualties in both sectors suggests that ACSA had the desired effect on vessel safety.

Under the guidelines for ACSA, “fish processing vessels” are distinguished from “fishing vessels” based on the range of NMFS product codes that they produce at sea. Fish processing vessels must meet certain classification and load line requirements. CPs that merely head, gut, gill, skin and freeze fish (product code listed as “H&G”) are considered fishing vessels. Most Alaska trawl CPs that are not AM80 replacement vessels have opted to enroll in and comply with ACSA standards and thus are allowed to do “minimal processing”. Only fish processing vessels that are classed and loadlined are allowed to perform “extensive processing”. The definitions of minimal and extensive processing are provided in ACSA Guidance Annex 1. Some common examples of product codes that are considered “beyond minimal processing” include H&G with tail removed, kirimi (steak), roe, heads, and cheeks. Product codes that are considered “extensive processing” include fillets (various forms), salted & split, belly flaps, and surimi. Additional detail on relevant safety regulations that apply to AM80 vessels is provided in Section 4.5.

It was expected that as newer vessels entered the sector the number of vessels participating in ACSA would decrease and the number of classed/loadlined vessels would increase. Indeed, the number of classed vessels increased from two in 2006 (2 of 22 active AM80 vessels, or 9%) to nine in 2023 (9 of 18

active AM80 vessels, or 50%). The number of vessels participating in ACSA decreased from 20 in 2006 to nine in 2023. The final rule for Amendment 97 requires that AM80 vessel owners applying to NMFS to replace a vessel submit documentation demonstrating that the replacement vessel meets USCG requirements applicable to fish processing vessels.

11.3 Data Collection

Vessel safety was analyzed with data on marine casualties including fatal personnel casualties and vessel casualties resulting in total loss. Cases of marine casualties were identified through several data sources. Data referenced from the safety analysis in previous AM80 Program Review came from the USCG Marine Information for Safety and Law Enforcement (MISLE) database, the NMFS Observer Vessel Survey, and the Commercial Fishing Incident Database (CFID). Data from 2013 through 2022 are supplied exclusively through CFID. CFID is a national surveillance system managed by NIOSH that contains information on work-related fatalities and vessels disasters in the U.S. fishing industry; it contains fatal vessel disasters and personnel fatalities due to traumatic injuries from 2000 through 2022, as well as non-fatal vessel disasters from 2000-2019. CFID data are populated from multiple sources, including USCG marine casualty investigation reports, local law enforcement reports, medical examiner reports, and news media. CFID was queried for incidents involving the AM80 fleet using a list of vessels participating in the sector since its inception.

One limitation is that CFID does not include other safety measures, including non-fatal injuries, vessel system failures not resulting in abandonment, and search-and-rescue missions. The NIOSH analysis of casualty data in the AM80 fleet that went through 2012 (as reported in the 2014 AM80 Program review) included non-fatal injuries and vessel casualties, which are not part of routine data collection. Those data were collected from USCG reports of casualties as part of a special project by NIOSH researchers. That data collection effort did not continue beyond that special project; thus, non-fatal injury and vessel casualty data are not available for the years since that study concluded. Further, full-time equivalent (FTE) casualty rates cannot be calculated for more recent years because denominator data are not available and the case numbers are too small to calculate the FTE rate statistics that were part of the 2014 AM80 Program Review.

For personnel casualties, all fatal occupational injuries to workers onboard AM80 vessels from 2013 through 2022 were included. For vessel casualties, all reported fatal vessel losses involving AM80 vessels from 2013 through 2022 were included, as well as nonfatal vessel losses from 2013 through 2019. Brief summaries of the incidents recorded since 2013 are included in the following subsection.

11.4 Personnel and Vessel Casualties

The number of AM80 vessels operating in Alaska waters has ranged between 18 and 21, annually, from 2012 through 2023. The median length of active AM80 vessels was 177 feet in 2012 (range of 107 to 295 feet), and the median length in 2022 was 187 feet (range of 112 to 295 feet). Median vessel-level crew complements were reported at 36 individuals in 2012 and 39 in 2021, though several years within that range included higher median estimates of processing workers that would have pushed the fleet median crew complement as high as 42 individuals.

For the 10-year period 2013–2022, one fatal personnel casualty was reported, in which a line failure resulted in a plastic float striking a crewmember causing blunt force head trauma (2019). One non-fatal vessel disaster occurred in 2016 when the Alaska Juris flooded and sank while underway in the Bering Sea; all 46 crewmembers were rescued.

Vessel disasters and fatal injury events that occurred in the BSAI non-pollock trawl CP sector from 2001 through 2012 were reported in Table 25 of the 2014 AM80 Program Review. Those included two vessel sinkings (2001 and 2008), three fatal falls overboard (2009 [2] and 2011), and two onboard fatalities related to equipment (2007 and 2012).

Non-fatal injuries and vessel casualties that did not result in a loss were detailed in Section 4 of the 2014 AM80 Program Review using data that are no longer collected. Some general observations from that report are summarized here. The reader is also referred to Lucas et al. (2014) that evaluated the effectiveness of ACSA and, by logical extension, the positive potential for vessel replacement as preventative measure for fishing vessel disasters. Handling frozen fish was the most common job task for undiagnosed pain/swelling, sprains/strains/tears, contusions, fractures, crushing injuries, and intracranial injuries. Fish products manufactured in the factories onboard AM80 vessels are frozen in plate freezers and then packaged in boxes and stored in freezer holds. Boxes of frozen fish products are moved around by a combination of conveyor systems, chutes and manual labor. The job task of handling frozen fish was responsible for nearly half of all injuries in the 2001-2012 analyzed period and should have been a priority for injury prevention strategies considered in vessel replacement and upgrades.

11.5 Summary

This review differs from the prior AM80 Program Review published in 2014 in the scope of data presented. Data on non-fatal injuries, vessel system failures not resulting in abandonment, and search-and-rescue missions have not been collected since 2012. The prior review used a more extensive set of data to estimate risk of fatal and non-fatal injuries per 1,000 FTEs over the 2001 through 2012 period; that analysis is not carried forward into this document. This document is limited to the additional counting of fatal onboard injuries and vessel disasters, which were substantially reduced in the period beginning with 2013. The only direct data comparisons that can be made are that personnel fatalities fell from 25 in the previous period (noting that 20 of 25 were associated with two vessel sinkings; 2001 and 2008) to one onboard fatality since 2013, and that one vessel sinking occurred since 2012 (Alaska Juris, 2016) in which no lives were lost.

The authors and the consulted experts from NIOSH, USCG, and the AM80 sector draw several broad conclusions. Overall, safety in the AM80 sector has improved. The dominant driving forces behind this improvement in outcomes include: the implementation of a rationalized fishing model (AM80 itself), participation in ACSA, vessel replacement (or "fleet recapitalization"), and the exit from the sector of company-level entities that had been associated with a relatively higher incidence of vessel disasters resulting in loss. ACSA and AM80 implementation occurred at similar times, so it is impossible to say definitively which program influenced the decrease in serious vessel casualties the most. ACSA is more directly focused on vessel safety, but the AM80 Program and Amendment 97 created the conditions for consolidation into a safer and, in some cases, modernized fleet of vessels with somewhat greater operational flexibility under which skippers have additional latitude to promote safety considerations above other decision-factors. It is possible that adoption of ACSA was initially responsible for improved outcomes over the first five years of the program but, more recently, fleet modernization and the fishery stability that has invited continued capital investments in the fleet is the driver of safety outcomes in recent years and moving forward. USCG experts familiar with the AM80 sector have affirmed that the presently active AM80 vessels that are not enrolled in ACSA do not need to be because they are classed, loadlined, and meet USCG safety standards.

Presuming that fishery stability plays a role in safety outcomes vis-à-vis promoting continued investment in modern fishing platforms and robust maintenance, this review notes that the stability of the sector is influenced by matters that are both internal and external to fishery management. Internal factors would include management decisions that influence the fleet's ability to access a viable, year-round fishery on a predictable basis; for example: well-managed stocks that are open to directed fishing, flatfish specifications flexibility, and the ability to address bycatch minimization practically and effectively. External factors may include the vitality of markets for AM80 products and the geopolitical/economic landscape that affects international commodity trade (e.g., currencies, tariffs) and access to financing for continued fleet recapitalization and maintenance.

In 2006, when developing ACSA, the USCG stated that it considered the AM80 fleet high-risk due to the remote areas and extended fishing periods in which it operates, and other hazards associated with catching/processing/packaging fish with non-mariner crewmembers onboard (USCG 2006). Lucas et al. (2014) found that ACSA had a positive effect on vessel safety and thus it is recommended that vessels that are not eligible to be classed and loadlined maintain their enrollment in the program. One recommendation from the 2014 AM80 Program that is carried forward here – due to lack of new data on "moderate" vessel casualties (immediate return to port or rescue/tow to port) – is continued emphasis on preventing "loss of propulsion" events. Those events were the most common cause of vessel casualties with the greatest potential to develop into vessel disasters where crew lives are at risk.

12 Cost Recovery

The National Marine Fisheries Service (NMFS) manages the AM80 Program as a limited access privilege program (LAPP) since 2008. On January 5, 2016, NMFS published a final rule to implement cost recovery payments for the AM80 program (81 FR 150) in accordance with Section 304(d) of the Magnuson-Stevens Act.

The AM80 cooperatives are responsible for paying the annual fee for groundfish landed under the AM80 Program. The total dollar amount of the fee liability is determined by multiplying the NMFS published fee percentage by the ex-vessel value of all landings made under the program made during the fishing year. NMFS calculates the fee percentage each year according to the factors and methods described at 50 CFR 679.95(c)(2) and the Magnuson-Stevens Act Section 304(d) mandates that cost recovery fees not exceed three percent of the annual ex-vessel value of fish harvested by a program subject to a cost recovery fee. Those cost recovery fees shall be collected either at the time of landing, filing of a landing report, or sale of such fish during a fishing season, or in the last quarter of the calendar year in which the fish is harvested.

NMFS published the 2023 fee percentage notice for the AM80 program in the Federal Register on November 24, 2023 (88 FR 82336). Payments are due on December 31 of the year in which the landings were made.

NMFS calculates an annual standard ex-vessel price (standard price) for BSAI yellowfin sole, BSAI flathead sole, AI Pacific ocean perch, and BSAI Atka mackerel based on volume and value information reported in the First Wholesale Volume and Value Report, which for 2023 included data from January 1 through October 31. For rock sole, NMFS calculates a standard price for two time periods— January 1 through March 31 and April 1 through October 31—also based on volume and value information reported in the First Wholesale Volume and Value Report.

For fisheries that are primarily harvested by catcher/processors, there is no reliable ex-vessel price generated from the sale of fish from a harvester to a processor. Therefore, NMFS estimates the ex-vessel price for those fishery species by using reported information on the first wholesale price from catcher/processors that harvest AM80 species. The first wholesale price is the market price of the primary processed fishery product. The estimated standard ex-vessel price is the value of processed products from catcher/processors divided by the retained round-weight (unprocessed weight) of catch and multiplied by a factor of 0.4 to correct for the value added to the fish product by processing.

NMFS calculates an annual standard price for AM80 Pacific cod using volume and value data reported in the Pacific Cod Ex-Vessel Volume and Value Report, which includes data from January 1 through October 31.

Each landing made under the program is multiplied by the appropriate standard price to arrive at an ex-vessel value for each landing. These values are summed together to arrive at the total ex-vessel value of the AM80 program fisheries (fishery value 'V') (Table 12-1).

The 2023 fee percentage for the AM80 Program is 1.37%, calculation shown in Table 12-1. The previous 3 years of value, cost, and fees are shown in Table 12-2 and the specific departmental recoverable costs for 2023 are shown in Table 12-3.

When compared to 2022, the 2023 program recoverable costs have increased: NMFS (37%), ADFG (28%), PSMFC (109%), and OLE (94%). The increased costs have been primarily due to filling vacant positions within multiple departments, contracts and training for maintaining the ADFG eLandings system, and implementation of the PSMFC electronic data reporting programs web-based application.

Table 12-1 The 2023 fee percentage calculation

Factor	Value	Activity
Direct Program Cost (DPC)	$1,361,951	divided by
Total Fishery Value (V)	$99,604,629	multiply by 100
=	1.37%	yields

Table 12-2 Historical program cost, fishery value, and fee percentages

	2022	**2021**	**2020**
Total Fishery Value (V)	$113,604,377	$76,254,313	$89,235,457
Direct Program Costs	$992,935	$1,094,144	$1,058,662
Fee Percentage	0.87%	1.43%	1.19%

Table 12-3 The 2023 recoverable costs by department.

Cost Recovery Component	NMFS								**Totals**
	OMD	RAM	SFD	ISD	ADFG	PSMFC	AKFSC	OLE	
Personnel Costs	$1,594	$18,257	$25,228	$61,461	$8,946	$111,957	$288,907	$493,867	**$1,010,216**
Contracts/Training Costs	$0	$49,725	$69,369	$15,439	$1,312	$6,198	$62,983	$31,086	**$236,113**
All Other Costs	$0	$0	$10,355	$10,436	$0	$1,750	$28,584	$64,497	**$115,622**
Total Costs	**$1,594**	**$67,981**	**$104,953**	**$87,336**	**$10,258**	**$119,906**	**$380,474**	**$589,450**	**$1,361,951**

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